Pedodontics

INTRODUCTION

1. **Who is the Father of Pedodontics?**
   a) Joseph Hurlock
   b) Robert Bunon
   c) R Ahmed
   d) BR Vacher

(Ref: Textbook of Pedodontics, Shobha Tandon 2nd ed, p 8; Pediatric Dentistry: A Clinical Approach by Göran Koch 2nd ed, p 1-2)

Robert Bunon in 1743 published a book called "*Essay sur les maladies dentes.*" He can be rightly called as "***Father of Children Dentistry***". He discussed the dental problems in children in his book.
1743—**Josep Hurlock** publishedl **book on children's dentistry**—It is a complete book on child dentistry in English (as per Karnataka 2011 key).
(But according to Pinkham the first comprehensive textbook on dentistry for children was published in 1924—**M. Evangeline Jordon** in English language.)
Dr BR Vacher—the Father of **Pedodontics** in India.
Dr Ahmed, the Father of Dentistry in India is also known as "The Grand Old Man of Dentistry".
The foundation of **Pedodontics** was laid down in Government Dental College, Amritsar, in 1950.

2. **The first book on child dentistry was published by**
   a) GW Wright
   b) Joseph Hurlock
   c) Gerauldy
   d) Robert Bunon

(Kar 2011)

It is Joseph Hurlock according to the key given by RGUHS.

3. **A neonatal child will have age of**
   a) 10 weeks
   b) 4 weeks
   c) 6 weeks
   d) 8 weeks

(Ref: MCDONALDS 8th ed p 183 & Shobha Tondon 2nd ed, p 108)

Newborn/neonate	Birth to 28 days
Infancy	Till 1 year to 15 months
Toddler	5 mon–2 yrs
Pre-school	3–6 years
School age (Middle year child)	6–10 years
Adolescents	Boys – 14–16 years Girls – 10–14 years

4. **Toddlers are**
   a) Just born
   b) 0–1 year old
   c) 1–3 year old
   d) 3–6 years old

(COMED 10)

(Ref: Textbook of Pediatric dentistry, Huther & Shivkumar 1st ed, p 50)

5. **According to Stone and Church's classification, John, age 4, can be classified developmentally as**
   a) Toddler
   b) Preschooler
   c) Middle years child
   d) Adolescent

(Kar 02)

Ans: **1–B** **2–B** **3–B** **4–C** **5–B**

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6. **The period of infancy usually refers to** (COMED 06)
   a) First 2 years after birth
   b) First 1 year after birth
   c) First 6 months after birth
   d) First 3 years after birth

(Ref: Mc Donalds Dentistry for Child and Adolescent 8th ed, p 266 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 254. Refer table above).

7. **At birth, child shows marked convex profile. This is due to** (AIIMS 03)
   a) Protruded maxilla
   b) Retruded mandible
   c) Large size maxilla
   d) Small sized mandible

(Ref: Shobha Tandon Textbook of pedodontics 1st ed, p 455 and Proffit's contemporary orthodontics 4th ed, p 110)

8. **What is the height (length) of a normal newborn child**
   a) 35–40 cm
   b) 40–45 cm
   c) 45–50 cm
   d) 50–55 cm

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 52)

9. **If tooth is present at the time of birth it is known as** (COMEDK 08)
   a) Neonatal tooth
   b) Perinatal tooth
   c) Natal tooth
   d) Prenatal tooth

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 183 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 108)

- **Natal teeth**—present at birth.
- **Neonatal teeth**— Teeth that erupt within 30 days after birth.
- **Premature teeth**—which erupt before three months of age.
- 90% of the precociously erupted teeth are deciduous teeth (mandibular incisors) and 10% are supernumerary teeth.
- Natal teeth are more common than neonatal teeth.

10. **PREMATURE TEETH are those which erupt within**
    a) First one month of life
    b) First two months of life
    c) First three months of life
    d) First four months of life

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 108)

11. **Ulcers commonly seen in ventral surface of tongue and lingual vestibule in children due to mucosal irritation is known as**
    a) Crohns disease
    b) Regafeda
    c) Darrier disease
    d) Ranula

(Ref: Shoba Tandon, Textbook of Pedodontics, 1st ed, p 678)

Rega-Fede disease: Early eruption of teeth (natal or neonatal teeth) cause ulceration on the ventral surface of the tongue by the sharp edges of the tooth. This may interfere with the infant's feeding and suckling, which may in turn affect nutrition.

REGAFEDE is the name of the ulcers formed on the breast of the feeding mother due to the natal/neonatal teeth during feeding (old Burkitt editions).

12. **By what age a child can sit without support?**
    a) 4 months
    b) 6 months
    c) 12 months
    d) 15 months

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 36 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 67)

Normal milestones

4th week	Begins to smile, watches the moving objects. No self-support of head
12th week	Early head control
16th week (4th month)	Laughs, sits with truncal support

Ans: 6–B 7–D 8–C 9–C 10–C 11–B 12–B

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9th month	Sits on own, crawls, transfers objects from one hand to another
10-12th month	Stands and walks with support. Repeats consonant sounds. Responds to sounds of name
12-15th month	Walks without support, vocabulary increased

The approximate age at which the child begins to walk is at
a) 0-2 months b) 3-6 months c) 7-8 months d) 9-12 months (COMED 07)

Speech retardation may be considered if the child does not talk by
a) 12 months b) 18 months c) 24 months d) 36 months (AIPG 05)

(Ref: Clinical pedodontics by Finn, 4th ed, p 80)
It is a straight line pick from FINN.
- Between age 21 and 24 months children begin to use Phrases.
- Between age 2 to 3 years children usually speak in sentences.
- Speech retardation should be considered if the child does not talk by age of 3 years.

When does the sucking reflex develop during pregnancy
a) 14th to 17th week b) 17th to 20th week
c) 25th to 28th week d) 3rd to 7th week

(Ref: Shobha Tandon, Textbook of Pedodontics 2nd ed, p 46-48/Textbook of orthodontics by Gowrisankar 1st/234)
- Sucking reflex (sucks when area around mouth stimulated).
- Sucking begins around 17-20th week. Swallowing begins around 12½ weeks of intrauterine life.
- The process of suckling is a reflex occurring in the oral stage of development and is seen fully established by 30-36 weeks of IU.
- Full swallowing and sucking is established around 32-36 weeks IU life.
- Sucking may disappear during normal growth between the ages of 1 and 3½ years.
- GAG reflex is seen by 18.5 weeks of IU life.
- Cry begins by 21-29th week of IU life.

Rooting reflex disappears in normal infants by the age of
a) 4 months after birth b) 7 months after birth
c) 9 months after birth d) 12 months after birth (MAHE 2001)

(Ref: Textbook of orthodontics by Gowrisankar 1st ed, p 234)
The infant will turn toward the side that was stroked and begin to make sucking motions with its mouth. Rooting reflex is the movement of the infant's head and tongue towards an object touching his cheek. The object is usually the mother's breast but may also be finger or pacifier. The ROOTING REFLEX is elicited by stroking the cheek. It develops around 28th week IU and disappears in normal infants around 7-8 months of age. It is maximum during 1st 3 months.

By what age does the startle and grasp reflex disappear?
a) 1 year b) 1½ year c) 2 years d) 3 years (AIPG 05)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 545 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 60-61.)
1. **Moro reflex:** Any sudden movement of the neck initiates this reflex. A satisfactory way of eliciting the reflex is to pull the baby half-way to a sitting position from the supine and suddenly let the head fall back a short distance. The reflex consists of a rapid abduction and extension of the arms with the opening of hands. The arms then come together as in an embrace.
   Clinical importance: Its nature gives an indication of the muscle tone. The response may be asymmetrical if muscle tone is unequal on the two sides, or if there is a weakness of an arm or an injury to the humerus or clavicle. This reflex usually disappears in 2 or 3 months.
2. **Startle reflex:** It is similar to Moro reflex, but is initiated by a sudden noise or any other stimulus. In this reflex, the elbows are flexed and the hands remain closed, there is less of the embrace, less outward and inward movement of the arms.
3. **Grasp reflex:** When the baby's palm is stimulated, the hand closes. There is also a corresponding plantar reflex. Grasp reflex developed by 28th week. **Both normally disappear by 24 months.**
4. **Step reflex** (stepping motions when sole of foot touches hard surface).

Ans: 13–D 14–D 15–B 16–B 17–C

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18. **When does the "PARACHUTE REFLEX" appear in a child**
a) 6-9 months b) 3-6 months c) 0-3 months d) 9-12 months

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 61)

- **The PARACHUTE REFLEX** occurs in the slightly older infant, and is elicited by holding the child upright then rotating the body quickly face forward (as if falling). The arms are reflexively extended as if to break a fall even though this reflex appears long before walking. It appears by 6-9 months and persists afterwards. Absent or abnormal in child with cerebral palsy.

Other infant reflexes include:

- **Tonic Neck Reflex:** This is also called the fencing reflex, because of the position the baby assumes. When you lay your baby on her back and her head turns to one side she will extend her arm and leg on that side while the opposite arm and leg bend, assuming a "fencing" position. Asymmetric tonic neck reflex disappears by 2-3 months
- The TRUNCAL INCURVATION or Galant reflex is elicited by stroking or tapping along the side of the spine while the infant lies on the stomach. The infant will twitch his or her hips toward the side of the stimulus in a "dancing' movement.

19. **When does the growth of heart complete in an adult**
a) 5 years b) 10 years c) 15 years d) 20 years

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 69)

- Growth of eyes completes by 5 years of age.
- Growth of brain completes by 10 years of age.
- Grasp reflex developed by 28th week.
- **CVS starts functioning by 3rd week of fetal period. Remember it is the earliest system that starts functioning.**
- Limb movements begin by 17th week.

20. **The intrauterine fusion of the primary palate (lip, alveolus and palate anterior to the incisive foramen) occurs at** (AIPG 96)
a) 2-4 wk b) 4-8 wk c) 8-12 wk d) 13-17 wk

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 674)

Embryologically, the area of the lip and palate is divided into primary palate and secondary palate.

a. *Primary palate*: It includes the central portion of upper lip (philtrum), alveolus bearing far incisors and the palate anterior to the incisive foramen. Primary palate develops from median nasal process and fuses with maxillary process **between 4 and 7 weeks of intrauterine life.**
b. *Secondary palate*: It includes the palate behind the incisive foramen. **Fusion of secondary palate taken between 7 and 12 weeks of intrauterine life.**

21. **The time of greatest sensitivity of an organ or system to environmental influence or hereditary pattern is** (Man 2K)
a) Growth spurt b) Critical growth period
c) Growth trend d) Growth precedence

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 66)

Growth spurts are the timings where a sudden spurt of growth takes place.

22. **The most rapid growth in humans occurs during** (COMED 06)
a) Prenatal period b) 6-12 months after birth
c) 3-5 years of life d) Beginning of teenage years

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 582)

The most rapid growth in humans occurs just before birth.

- Characteristic of an incremental human growth curve is rapid accelerating prenatal growth, rapid decelerating postnatal growth for the first 2 or 3 years, and a period of relatively slow incremental growth during childhood followed by growth acceleration for 2 or 3 years during pubertal adolescence.

23. **The mean daily eruption velocity of a tooth is** (Kar 2011)
a) 51 micrometer/day b) 61 micrometer/day
c) 71 micrometer/day d) 81 micrometer/day

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 94)

The mean daily eruption velocity of a tooth is 71 micrometer/day

Also remember: The growth of palatal vault is 10 micrometer from birth to adolescent

Ans: 18–A 19–D 20–B 21–A 22–A 23–C

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24. **Interdental spacing found in the maxillary arch of the deciduous dentition is**
a) 2 mm b) 4 mm c) 6 mm d) 8 mm

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 113)

Interdental spacing of primary dentition	▪ 4 mm in maxillary arch ▪ 3 mm in mandibular arch
Intercanine arch width increases by	▪ 4.5-6 mm in maxilla ▪ 4 mm in mandible
Intercanine arch length increases	▪ 3-4 mm
Decrease in overall arch length during mixed dentition	▪ 2-3 mm in maxilla ▪ 3-4 mm in mandible

25. **Dentitia tarda**
a) Resorption of the deciduous dentition
b) Premature loss of the deciduous dentition (TNPSC 99)
c) Retarded eruption of deciduous dentition
d) Early eruption of deciduous dentition

(Ref: Stones's Textbook of oral and dental diseases 4th ed, p 113)

Dentitia tarda	Retarded eruption of deciduous dentition
Dentitio precox	Predeciduous dentition
Dentitis dificilis	Teething problem
Difficult eruption	Eruption gingivitis

26. **Which of the following factors are primarily contributory to the shedding of deciduous tooth?**
a) Hydrostatic pressure b) Vascular pressure
c) Oncotic pressure d) Masticatory pressure

(Ref: Oral development and histology by James k Avery 3rd ed, p 134)

CAUSES OF SHEDDING OF PRIMARY TEETH

1. **LOSS OF ROOT**: pressure from growing and erupting permanent teeth which induces differentiation of osteoclasts that leads to resorption of primary roots.
2. **LOSS OF BONE**: weakening of supporting tissues of primary teeth due to root resorption and modification of alveolar bone. Also there is facial growth of alveolar bone which provides sufficient space for positioning of permanent teeth
3. **INCREASED FORCE**: inceased masticatory forces on weakened teeth due to muscular growth.

27. **While charting the dentition of a child, the pedodontist finds that the following teeth are present in all the four quadrants: permanent central incisor, permanent lateral incisor, deciduous cuspid, deciduous first molar, deciduous second molar and permanent first molar. This eruptive pattern may be considered most nearly normal for a child aged**
a) 3-6 years b) 7-10 years c) 11-14 years d) 15-18 years (MAHE 95)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 881)
Knowledge of eruption timings is a must to answer such type of questions,so friends please mug the tables given in standard texts to solve such riddles

28. **The normal interincisal angle between mandibular and maxillary incisors in primary dentition is about**
a) 130 degrees b) 123 degrees c) 120 degrees d) 150 degrees

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 114)
In permanent dentition the interincisal angle is 123, whereas in primary dentition it is 150 degrees.
The permanent incisors are relatively labially inclined, whereas the deciduous incisors are relatively straight with increased interincisal angle. This accentuates the deep bite.
(Growth and development, development of dentition are covered in orthodontics in detail)

Ans: 24–B 25–C 26–D 27–B 28–D

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CHILD PSYCHOLOGY

1. **Which of the following is not a psychodynamic theory?** (MP 2010, KCET 2013)
   a) Psychosexual theory by Freud
   b) Psychosocial theory by Eric Erickson
   c) Cognitive theory by Piaget
   d) Social learning theory of Bandura

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 122)
Basically, child psychology theories can be classified into two groups:

I. Psychodynamic theories	II. Behavioural theories
▪ Psychosexual or psychoanalytic theory of Freud (1905) ▪ Psychosocial theory of Eric Erickson (1963) ▪ Cognitive theory of Piaget (1952)	▪ Hierarchy of needs by Maslow (1954) ▪ Social learning theory by Bandura ▪ Classical conditioning by Pavlov (1927) ▪ Operant conditioning by Skinner (1938)

2. **Cognitive theory of child development was given by**
   a) Sigmund Freud b) Jean Piaget c) Pavlov d) Bandura (Man 01)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 122)
- *Cognitive development* theory is given by _____ (Kar-99) – Jean Piaget
- The classical psychoanalytic theory was given by _____ Sigmund Freud

3. **Who proposed the operant conditioning theory of child psychology**
   a) Pavlov b) Skinner c) Jean Piaget d) Sigmund Freud (AIPG 05)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 122)
According to operant conditioning theory, the consequence of behaviour itself acts as a stimulus and affects future behaviour.

The operant conditioning theory of child psychology was proposed by _____ (AIPG-05) (Skinner)
Classical conditioning theory was proposed by _____ (MAHE-07) (Pavlov)

4. **Which is not a stage in Sigmund Freud's classical psychoanalytic theory**
   a) Oral b) Phallic c) Latent d) Maturation (MAHE 06)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 60-61)
- Maturation stage is not seen in Sigmund Freud's classical psychoanalytic theory
- Psychoanalytical theory was given by Sigmund Freud

Personality of child depends on **id**, **ego** and **super ego** (The three components of the theory).
- **Id** is unconscious instinctive urge that motivates behaviour.
- **Ego** is integrating or mediating part of personality.
- **Super ego** is the conscience; it is internal part of individual that makes value judgements

5. **The three components of Frued's psychodynamic theory are**
   a) Id, ego, superego
   b) Assimilation, accomodation, equilibration
   c) Generalisation, extinction, and discrimination
   d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 545 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 60-61)

6. **One of the following is not a component of psychic structure**
   a) Ego b) Superego c) Super id d) Id

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 122)
The three components of Freud's psychodynamic theory are id, ego, superego. It is not super id as given in option C.

Ans: 1–D 2–B 3–B 4–D 5–A 6–C

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7. **Id is related to**
a) Instinct
b) Reality
c) Social consciousness
d) Self consciousness
(MAHE 10)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 122)

According to Freud, the basic instinct or personality is known as Id.

1. **Id**: It is the basic structure of personality, which serves as a reservoir of instincts or their mental representative. It is present at birth, impulse ridden and strives for immediate pleasure and gratification (**pleasure principle**).
2. **Ego**: It develops out of id in the 2nd to 6th month of life when the infant begins to distinguish between itself and the outside world; it is the mediation between id and super ego. Unlike id, ego is governed by the reality principle. It is concerned with memory and judgement. It is developed after birth, expands with age and it delays, modifies and controls id impulses on a realistic level (**reality principle**).
3. **Super ego**: It is the prohibition learned from environment (more from parents and authorities). It acts as a censor of acceptability of thoughts, feelings and behaviour. It is determined by regulations imposed upon the child by parents, society, and culture (ethics & morals). It is the internalised control which produces the feelings of shame and guilt.

The expression of discomfort as a result of conflict between the three components of the psychic structure is defined as **anxiety.**

As a result of satisfaction of a set of instincts of which sexual instinct was the most important, he described five psychosexual stages. At each stage, sexual energy is invested in a particular part called an erogenous zone. Psychic structure proposed by Freud in psychodynamic theory is composed of three parts.

Oedipus complex—Young boys have a natural tendency to be attached to the mother and they consider their father as their enemy.

Electra complex—Similarly the young girls develop an attraction towards their father and they resent the mother being close to the father.

8. **The third staging of Sigmund Freud's psychosexual theory**
a) Anal
b) Phallic
c) Latency
d) Genital
(MAHE 10)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 125)

Stages of Sigmond Frued's Psychosexual Theory

1. **Oral** — birth to 18 months
2. **Anal** — 18 months to 3-4 years
3. **Phallic** — 3-4 to 6 years
4. **Latency** — 6-11 years
5. **Genital** — 11 years onwards

If birth and the Urethral stage are considered, the third stage will be anal stage.

9. **According to the Freudian psychosexual stages of development the stage which corresponds with development of mixed dentition and character formation is**
a) Concrete operational
b) Latency
c) Phallic
d) Genital
(AIPG 05, COMED 09)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 125, 132)

Latency stage starts at 5-6 end and continues up to 10-12 years of age. Latency stage characterstics are:

- Maturation of ego takes place.
- There develops a greater degree of control over instinctual impulses.
- Child gains better sense of initiative and starts adapting to adverse environment.

The objectives of latency stage are:

- Further development of personality.
- Consolidation of sex roles occurs.
- There is maturation of ego and mastery over skills.

Genital phase starts during beginning of puberty (11-12 yr) through adolescence.
The phallic stage defined by Freud is seen in the following age group _____ (3-6 years)
The phase that ends in puberty according to Frued's psychosexual theory? _____ (Latency stage)

10. **Most of the children have IQ range**
a) Below 70
b) 90-110
c) 120-140
d) 140-200
(Man 2K)

Ans: **7–A** **8–B** **9–B** **10–B**

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 37 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 631)

$$\text{Intelligence quotient (IQ)} = \frac{\text{Mental age}}{\text{Chronological age}} \times 100$$

- **The correct IQ for a child is** 90–110 for 8–12 years.
- A child having IQ below 70 is considered to be an idiot and mentally retarded.

11. **According to Stanford-Binet test, non-trainable type of mental retardation has an IQ of** (COMED 05, MP 2011)
    a) Below 20 b) Between 36–51
    c) Above 51 d) Between 90–130

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 37)

- Intelligence quotient was measured by **Alfred Binet** by examining the **memory, spatial relations** and **reasoning**.

12. **According to American Association of Mental Deficiency classification scheme, a trainable mentally retarded child has an IQ range of**
    a) 52–68 b) 36–51 c) 20–35 d) Below 19

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 37 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 631)

Mental retardation severity	IQ range (Stanford-Binet test)	IQ range (American Association of Mental Deficiency)	Description	Treatment/ training
Mild	55–69	52–68	Preschool-age children with mild MR often do not seem very different than other children to most people	Can be educated in special cases to gain elementary school level academic skills
Moderate	40–54	36–51	Preschool-age children with moderate MR show noticeable delays in development of motor skills and speech	Can be trained to perform self-help skills. **Trainable child**
Severe	25–39	20–35	Preschool-age children with severe MR have delays in motor development and little or no communication skills nication skills	Abilities limited to simple language and basic help skills such as feeding themselves and bathing. **Limited trainability**
Profound	<24	< 19	Children with profound MR frequently have other medical problems, such as cerebral palsy, and may need nursing care	Consistent custodial care required. They have delays in all areas of development. They are unable to take care of themselves. **NOT Trainable**

13. **A boy and girl of same age having same IQ but their behaviour is extremely different in dental office. This difference is related to**
    a) Maturation b) Sex c) Age d) Learning (PGI 97)

(Ref: Learning & Human abilities 3rd ed, p 206-208)

14. **Rapid form of learning is known as**
    a) Motivation b) Imprinting
    c) Change of behaviour d) Change of attitude

(Ref: Clinical pedodontics by Finn, 4th ed, p 20/National Boards July 1977 Ortho Pedo Question no 92)

Ans: 11–A 12–B 13–D 14–B

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- Actually it is a **rigid form** (not rapid form) of learning but it had been printed in the same way in question paper
- Imprinting is a rigid form of learning which occurs even before the onset of fear and is of lasting duration

15. **During what stage of development is Peer group identity strongest?**
a) Toddler b) Latency c) Teenager d) Prepuberty (AIPG 03, Kar 01, 10)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 267)
- Peer pressure is maximum during **middle adolesecent age (puberty)**.
- Puberty or Adolescence is the best option if given in choices. Teenage is the closest answer given in the options.

The benefits of belonging to a peer group and the consequences of deviating from the crowd are typically strongest during early adolescence.

16. **The age of the child considered to be in the pre-cooperative stage of development is**
a) 10 years old b) 8 years old c) 2 years old d) 4 years old (Maharashtra 2011)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 35)
- **The age group** 2–3 years **is most difficult to control in the dental office.**
- A 2-year-old child is often referred to as in the stage of the "terrible twos" or "pre-cooperative stage".
- The age group of 2–3 years is called **terrible two** and most difficult to control.
- Most of the children of this age group are active in waiting hall but in operatory room a two-year-old child will show negative behaviour.

17. **Group activities are expected in a child by what age group**
a) 2–3 years b) 5–6 years c) 10–12 years d) 12–15 years

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 36)

Two years	Geared motor skills such as running, jumping, attached to parent, plays alone Limited vocabulary and shows early sentence formation.
Three years	Active imagination; still attached to parents;likes stories and less egocentric
Four years	Participates in small social groups, shows independent self-help skills, knows 'thank you' and 'please'
Five years	Takes pride in possession, plays cooperitively with peers

18. **Common response to frustration**
a) Anxiety b) Fear c) Aggression d) Submission

(Ref: Basic psychology by Toylor 1st ed, p 401)
Common response to frustration is aggression.

19. **Which of the following emotions is first seen, usually seen from birth to six months of age**
a) Cry b) Anger c) Anxiety d) Fear

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 63, 135). Cry is seen first.

20. **Fear of closed spaces like "dental clinics" is called as**
a) Nyclophobia b) Zoophobia c) Xenophobia d) Claustrophobia

(Shobha Tandon Textbook of Pedodontics 2nd ed, p 140)
Phobia is isolated fear of a single object or situation.

Common Phobias	
Zoophobia	Animals
Acrophobia	Height
Agoraphobia	Open space

contd

Ans: 15–C 16–C 17–B 18–C 19–A 20–D

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Arachnophobia	Spider
Anthropophobia	People
Aqua (Hydrophobia)	Water
Cynophobia	Dog
Pyrophobia	Fire
Xenophobia	Stranger
Claustrophobia	Closed space
Astraphobia	Lightening

21. **Which of the following extremes of parental behaviour were manifested either in Extreme Dominance or Indulgence**
a) Overanxiety b) Rejection c) Identification d) Overprotection (COMED 09)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 147)

Parental (Maternal) attitude	Child's behaviour
Overprotective dominant	Shy, submissive and anxious
Overindulgent	**Aggressive**, demanding, display of **temper tantrums**
Underaffectionate	Well behavior uncooperative, shy and cries easily
Rejecting	Aggressive, overactive and disobedient
Authoritative	Evasive and dawdling

22. **A mother who does NOT encourage her child to cope up with new situations thereby making him shy, submissive, anxious and timid**
a) Overprotective mother b) Underaffectionate mother (Kar 2011)
c) Authoritarian mother d) Rejecting mother

(Ref: Textbook of Pedodontics by Shobha Tandon, 2nd ed, p 147; and Clinical Pedodontics: Finn, 4th ed, p 25)
Exaggeration of overprotection is harmful to normal psychological development of the child.

Causes of overprotection
Child conceived after a long time
Only child
Sick/handicapped child.

Features
Child is not permitted to use his own initiative or make his decisions himself
Mother takes active role in child's social activities
Child is submissive, shy, timid, fears new situations and lacks self-confidence

23. **Suspicious, aggressive, revengeful, pugnacious and disobedient nature of child is seen in ____ type of parental behaviour**
a) Overprotection b) Rejection c) Overanxiety d) Domination (MP 2010)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 147)

24. **Which of the following maternal attitudes leads to shy, submissive, anxious child behaviour**
a) Overprotective dominant mother b) Overintelligent mother
c) Under affectionate mother d) Rejecting mothers

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 147)

25. **Authoritarian mother behaviour results in which type of child's behaviour**
a) Shy and submissive child
b) Evasive and dawdling
c) Aggressive overactive disobedient child
d) Non-cooperative and shy child

Ans: 21–D 22–A 23–B 24–A 25–B

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26. **The most commonly used scale for behaviour rating in dentistry is which classification**
a) Lampshire b) Frankel's c) Wright's d) Garcia-Godoy

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 155)

27. **According to Frankel behavioural rating scale, a negative child is the one**
a) Who shows reluctance to accept treatment with some evidence of negative attitude
b) Who accepts treatment but at times cautiously
c) Cries forcefully but accepts treatment
d) Who refuses treatment and cries forcefully (UPSC 01)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 143)
Frankel's behaviour rating scale (1962)

Definitely negative (-)	Rating 1	Refuses treatment, cries forcefully. Associated with fear
Negative (-)	Rating 2	Reluctant to accept treatment and displays evidence of slight negativism
Positive (+)	Rating 3	Accepts treatment but during treatment may become uncooperative. He had a bad experience
Definitely positive (++)	Rating 4	Unique behaviour, looks forward to and understands the importance of good preventive care

28. **Frankel behaviour rating system does not include following behaviour**
a) Definitely positive b) Definitely negative
c) Positive d) Indifferent (Kar 02)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 143)

29. **A crying two-year-old child brought to your dental clinic would be classified under Wright's classification of child behaviour as a**
a) Potentially cooperative child b) Uncooperative child
c) Child lacking cooperative ability d) Timid child (Kar 2011)

(Ref: Textbook of Pedodontics by Shobha Tandon 2nd ed, p 143-145)
WRIGHT'S CLASSIFICATION OF CHILD BEHAVIOUR (1975)
A. Cooperative (positive behaviour)
A) Cooperative behaviour
b) Lacking cooperative ability: seen in young child (0–3 years), disabled child, physically and mentally handicapped.
c) Potentially cooperative
B. Uncooperative behaviour (negative behaviour)

Hysterical/Uncontrolled	Pre-school children at their first dental visit characterized by temper tantrums
Defiant/Obstinate	Seen in spoilt or stubborn child
Timid/Shy	Overprotective child
Stoic	Physically abused child
Whining type	Complaining type
Tense cooperative	Borderline between positive and negative behaviour

30. **Which of the following uncooperative behaviours is seen in physically abused child**
a) Timid/Shy b) Stoic
c) Whining type d) Hysterical

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 143)

Ans: **26–B 27–A 28–D 29–C 30–B**

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31. **Which of the following adolescents is maladjusted individual?**
   a) Defiant person
   b) Submissive person
   c) Self-directed youth
   d) Self-adoptive person

   Defiant person is a maladjusted individual.

32. **When a child is crying which is characterized as a "SIREN LIKE WAIL", this is an example of**
   a) Obstinate cry
   b) Hurt cry
   c) Frightened cry
   d) Compensatory cry

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 135)

OBSTINATE CRY	Loud high pitched Characterized by SIREN-LIKE WAIL Represents child's external response to anxiety Accompanied by SMALL WHIMPER
HURT CRY	Single tear running from corner of eye and runs along child cheeks without creating any resistance towards dental treatment
FRIGHTENED CRY	Torrents of tears Breath-catching sobs Child is overwhelmed by the treatment situation
COMPENSATORY CRY	Not a cry, sound is slow and monotonous Sort of coping mechanism to unpleasant auditory stimuli

33. **DISTRACTION & INVOLVEMENT are the two components of**
   a) Externalization b) Coping c) Humour d) Shaping

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 155)

CHILD MANAGEMENT

1. **The main areas of concern in diagnosis and treatment planning for the child are** (Kar 95)
   a) Oral medical problems
   b) Dental caries and restorative dentistry
   c) Occlusion and craniofacial growth and development
   d) All the above

   (Ref: Pediatric Dentistry by Barber and Luke 1st ed, p 30)
   Four basic areas of concern in *diagnosis and treatment planning* of the child are as follows:
   1) Oral-medical problems;
   2) Periodontal considerations—long term;
   3) Dental caries—restorative;
   4) Occlusion—craniofacial growth and development.

2. **Place of the child in the pedodontic treatment triangle is**
   a) At the base b) In the centre c) At the apex d) None of the above (AP 99)

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 35 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 5)
   - Pedodontic triangle was given by **GZ Wright**.
   - Apex of the pedodontic triangle is formed by _____ *(Child)*
   - A major difference between the treatment of children and adults is the relationship.
   - Treating adults generally involves a **one-to-one** relationship, that is, a dentist-patient relationship.
   - Treatment of a child, however, usually relies on a **one-to-two** relationship, dentist-child, patient and family.
   - The child is at the apex of the triangle and is the focus of attention of both the family and the dental team.

Ans: **31–A** **32–A** **33–A** **1–D** **2–C**

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3. **Recently added in the centre of paediatric treatment triangle is**
   a) Type of treatment
   b) Society
   c) Child response
   d) Facilities in clinic

(Kar 2009)

(Ref: Child dentistry by McDonald, 7th/34)
A major difference between the treatment of children and the treatment of adults is the relationship. Treating adults generally involves a one-to-one relationship, that is, a dentist-patient relationship. Treating a child, however, usually relies on a one-to-two relationship among dentist, paediatric patient, and parents or guardians.This relationship is illustrated by which is known as the ***paediatric dentistry treatment triangle.*** Recently, society has been centered in the triangle.

4. **Which of the following has greatest influence on a child's reaction to his initial visit to the dental office**
   a) Parent
   b) Dentist
   c) Dental assistant
   d) School teacher

(AP 96)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 235)
Parent has greatest influence on the child during his initial visit.

5. **Key to effective child control management is**
   a) Developing rapport with parents also
   b) Developing rapport with child only
   c) Ignoring child's fear
   d) Domination and genuineness

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 40, 54, 724)
Key to effective child control management is Developing rapport with parents also.

6. **The most important aspect of pedodontic management is**
   a) Child and parent education
   b) Case presentation
   c) Regular dental examinations
   d) Parental concurrence

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 235,236)

7. **Understanding child's behaviour requires knowledge of basic concepts of**
   a) Dependence and independence
   b) Maturation and learning
   c) Masculinity and feminity
   d) Generalisation and specification

(PGI 98)

(Ref: NATIONAL BOARDS July 1977, Question No 70)

8. **The aims of the first session with a child patient are all except**
   a) Establish general communication with the patient and parents
   b) Start restorative procedures
   c) Obtain background information of child
   d) Take radiographs

(Man 2K)

(Ref: Paediatric Dentistry by Muthu and Shiva kumar 1st ed, p 222 and McDonalds Dentistry for Child and Adolescent 5th ed, p 43)
- The aim of the first visit with a child includes the options A, C and D.
- The treatment should be started in subsequent visits except in acute conditions like an abscessed, badly carious or painful tooth, etc.
- However if the child is very cooperative then few simple restorative procedures can be carried out.

9. **What is to be done in the initial stage of behaviour modification in children**
   a) Adaption
   b) Awareness
   c) Evaluation
   d) Motivation

(COMED 09)

(Ref: Seaward's Principles of health 7th ed, p 233)
No direct reference is found. May be child has to be made aware of his abnormal behaviour or awareness of dental treatment.

10. **Fear is**
    a) A primary emotion acquired soon after birth
    b) A primary emotion acquired in utero
    c) A primary emotion acquired several years after birth
    d) Not a primary emotion

(Man 94)

Ans: **3–B** **4–A** **5–A** **6–A** **7–B** **8–B** **9–B** **10–A**

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 136)

- **Fear** is a primary emotion acquired soon after birth
- Fear is a primary reaction due to a known danger, while anxiety is a reaction to unknown danger.

Types of fear

Innate fear	Without stimuli or previous experience. Fear of unknown or anxiety
Subjective fear	Fears transmitted (suggested) to the individual by family, friends, etc.
Objective fear	Fears due to own experience and direct stimulation of sense organs

11. **The fear of a 6-year-old related to dentistry is primarilary/A young child's fear of dentistry is primarily**
    a) Subjective in nature b) Objective in nature
    c) Subjective and objective d) Introspective in nature
    (PGI 96, AIPG 2007)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 136 and National Boards)

- Most of the fears of dentistry in children are incurred by mothers and are of subjective type.
- Fears transmitted to individual are called _____ *(Subjective fears)*

"For most children, fear of dentistry is subjective and is not the result of previous dental care."

- Subjective fears are those based on feelings & attitudes that have been suggested to the child by others about him without the child's having had the experience personally.
- Children have intense fear of unknown.
- Objective fears are those produced by direct, stimulation of the sense organs and are not transmitted by Parents.

12. **Fears produced by direct physical stimulation of sense organ of child**
    a) Wholesome b) Objective
    c) Subjective d) Inordinate
    (AP 95, COMED 10)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 136)
Most of the fears in dental situation are subjective in nature and long standing subjective fears are very difficult to overcome.

13. **The basic fear of a child below 2 years on his first dental visit is related to**
    a) Anxiety from being separated from parents
    b) Fear of infection
    c) Fear of bur sound
    d) Fear of white dress worn by dentist and nurses
    (AIPG 91, 98 AIIMS 91, COMED 05)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 47, Contemporary Orthodontics by Proffit 3rd ed, p 54, Clinical pedodontics by finn, 4th ed, p 21)

- A preschool children may have a fear of separation from the parent.
- From birth to 18 months, in initial stages of development a basic trust or lack of trust in environment is developed. So a tight bond between parent and child is developed.
- If a child is separated from parent, a strong 'separation anxiety' develops in child.
- If it is necessary to provide a dental treatment, it is better that the child is being held by one of the parents.
- It should be noted that children 3½ to 4 years of age appeared to benefit most from the parent's presence.
- Those older than 4 years demonstrated similar levels of response to dental care regardless of parental presence.
- Dentist holding the syringe needle in front of child is reported to be most fearful to a matured child.

14. **Which type of fear is the most usually difficult to overcome?**
    a) Long-standing objective fears b) Long-standing subjective fears
    c) Short-term objective fears d) Short-term subjective fears
    (Kar 01)

(Ref: Clinical pedodontics by Finn 4th ed, p 18-19)
Long-standing subjective fears are usually difficult to overcome.

15. **A child visiting a dentist for the first time has basic fear of**
    a) Unknown b) Equipment c) Tooth extraction d) Pain
    (AP 94)

Ans: 11–A 12–B 13–A 14–B 15–A

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 138 and Clinical pedodontics by Finn 4th ed, p 21)

- The child's earliest fears associated with dentistry are those of the unknown and unexpected.
- A child visiting dentist for the first time has basic fear of unknown. So don't start the treatment until the child becomes familiar with the environment.

16. Fear of strangers and Fear of separation from parents for the children will be diminished by

a) First birthday
b) Fifth birthday
c) Third birthday
d) Seventh birthday

(COMED 10)

(Ref: Pinkham JR, Pediatric Dentistry: Infancy Through Adolescence, ed 3.)

Fear of strangers is almost universal after seven to 12 months of age. Between 13 and 18 months of life, the feeling of fear peaks, and then begins to decline. Children below 3–4 years show fear of separation and abandonment. Above 4 years the children show cooperative behaviour whether the parent is in the operatory or not.

17. The best way to help a frightened child to overcome his fear

a) Identify the fear
b) Ignore the fear
c) Ridicule the frightened child
d) Divert the patient's attention

(AIPG 91, 98)

(Ref: Clinical pedodontics by Finn 4th ed, p 35)

- First identify whether child is suffering from fear or anxiety.
- Fear is related to real events, whereas anxiety is related to imaginary condition.
- The common denominator of fear and anxiety is stress.

18. Basic reason for a 4-year-old child who is aggressive in dental office

a) Basic reaction of fear
b) Basic reaction of rejection
c) Basic reaction to underaffection
d) Spoiled child

(AIPG 2007, AIIMS 2007)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 144; NATIONAL BOARDS July 1981 ortho-pedo FINN 4th ed, p 21-22))

It is a basic reaction of fear.

19. Fear is more common in

a) Idiot child
b) Intelligent child
c) Autistic child
d) Cerebral palsy child

(Ref: Clinical pedodontics by Finn 4th ed, p 22)

Intelligent child is more concerned with fears.

Perhaps because of their greater awareness of danger and more defined reluctance to accept verbal assuarance without proof.

20. Fear of the unknown is an approximate description for

a) Phobia
b) Cognition
c) Id
d) Anxiety

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 138)

21. A cooperative child patient demonstrating resistance in the dental office is usually manifesting

a) Anxiety
b) Anger
c) Inborn fear
d) Immaturity

Anxious **children** are essentially fearful of new experiences; **resistance** is one **manifestation** of anxiety or insecurity.

22. Which of the following are considered to be the effective methods of management of fears in a child

a) Reconditioning, reassurance and explanation
b) Reconditioning, overcorrection and indifference
c) Reassurance, reconditioning and ridicule
d) Overprotection, indifference and ridicule

(Ref: Clinical pedodontics by Finn 4th ed, p 28,35)

Reconditioning, reassurance and explanation.

"Behaviour Management Techniques" were labelled as "Embarrassment of Riches" In 1977 by David W.Chambers. (COMED 2009)

Ans: 16–C 17–A 18–A 19–B 20–D 21–A 22–A

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23. **A patient of 4-years-old will respond favourably if dentist shows**
    a) Submissiveness and compromise b) Domination and generineness
    c) Reasoning and concreteness d) Empathy and respect

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 145)

24. **The ability to understand and experience the fears of another without losing one's own positive and realistic differentiation of one's from the other's condition and behaviour is known as**
    a) Empathy b) Sympathy c) Understanding d) Common sense

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 628)

25. **During communication with a child patient the dentist can express involvement and interest primarily with**
    a) Positive reinforcement b) Verbal agreement
    c) Eye contact d) Body orientation

    (Ref: Shoba Tandon Pedodontics 2nd ed, p 149)
    Dentist should establish eye to eye contact.

26. **In managing a seven-year-old child, the dentist should keep in mind that a child at this age is** (Man 97, 98)
    a) Frequently negative b) Susceptible to praise
    c) Generally uncooperative d) Prone to sensation anxiety

    (Ref: Clinical pedodontics by Finn 4th ed, p 42)
    The child is susceptible to praise.
    Approving child behaviour in front of parents is known as **social reinforcement.**
    Praise, positive facial expression, appreciating the child, nearness and physical contact come under social reinforcers.

27. **The best method to obtain cooperation from an uncooperative child in dental office** (PGI 95)
    a) Persuade the child for cooperation
    b) Punish the child for his misbehaviour
    c) Display authority and command respect of child and continue with treatment
    d) Postpone the treatment until child shows cooperation

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)

28. **The best method to gain cooperation of a child with a different cultural background is** (PGI 98)
    a) Attempt to speak in his language
    b) Demonstrate the procedures before performing
    c) Communicate through auxillary who can understand
    d) All of the above

    (Ref: Taken from National Boards Dec 1982 Question No. 7)

29. **Most realistic approach in managing a difficult child in dental clinic** (Man 98)
    a) Disregard the behaviour of child
    b) Make child familiar with clinical atmosphere
    c) Recondition the child by applied psychological methods
    d) Physical methods to make child accept treatment

    (Ref: Clinical pedodontics by McDonalds and FINN 4th ed, p 43, 35-37)

30. **A child verbally trying to mask his apparent feeling is said to be**
    a) Neurotic b) Incongruent
    c) Inconsistent d) None of the above

    (Ref: Repeated National Boards 1989 Question No. 11)

Ans: 23–D 24–A 25–C 26–B 27–C 28–B 29–B 30–B

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31. **Vidya, a 3-year-old comes for her predental visit. Patient's family possess a high dental risk. She is highly intelligent with family members of high IQ. You would do most probably what type of treatment**
   a) Radiographs and topical fluoride
   b) Get the patient accustomed to the dental clinic
   c) Employ desensitization
   d) Employ behaviour modification

   (Man 02)

   (Ref: McDonald's 8th ed, p 41, 44)
   The first dental visit should be a predental visit. It should be a **get well acquainted visit followed by videotape session on modelling.**

32. **Which of the following is least likely to be effective in communicating with a mentally retarded patient**
   a) Combining verbal and visual demonstrations
   b) Verbal rationalization of patient's fears and anxieties
   c) Rewarding appropriate behaviour by praising him verbally
   d) Utilizing cooperative parents as models

   (MAHE 2001)

   (Ref: National Boards 1980 Question No 98)

33. **In treating mentally retarded children, generally find that they**
   a) Respond inconsistently
   b) Can be controlled in ways similar to normal children
   c) Respond similarly to normal children of the same mental age
   d) All of the above

   (Kar 2K)

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 632)

34. **One of the following is not a non-pharmacological approach of behaviour management**
   a) Voice control
   b) Conscious sedation
   c) Hypnosis
   d) Tell-show-do techniques

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 150,153,157)
   Indirectly, the question is pharmacological basis of behaviour management.

35. **A technique of child management towards a desired behaviour is called**
   a) Shaping
   b) Extinction
   c) Chaining
   d) Association

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 44 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 150-151)
   - Management of a child with step-by-step procedure is called **behaviour shaping.**
   - Behaviour shaping is a form of behaviour modification technique based on principles of social learning. It is the procedure that slowly develops desired behaviour.
   - The behaviour shaping techniques are:
     - Desensitization (TSD)
     - Modelling
     - Contingency management

36. **All of the following are behaviour modification (shaping) techniques in a normal child except**
   a) Desensitization
   b) Tell-show-do (TSD)
   c) Modeling
   d) Aversive conditioning

   (MAHE 10, 11)

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 150-151)
   Aversive conditioning is also called as HOME (hand over mouth exercise)

37. **Extinguishing of fears on successive dental visits, is an example of**
   a) Modelling
   b) Reinforcement
   c) Association
   d) Desensitization

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 150)
   - Desensitization is an effective method for reducing maladaptive behaviour.
   - It is accomplished by teaching the child a competing response such as relaxation and then introducing progressively more threatening stimulation.

Ans: 31–B 32–B 33–D 34–B 35–A 36–D 37–D

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38. **Making the child observe when a dentist is working on a cooperative child is an example of** (MAHE 2007)
a) Modelling b) Reinforcement c) Association d) Desensitization

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed pg no151)
- Modeling is based on social learning principle, allowing a patient to observe one or more models demonstrating positive behaviour in a situation.
  - Live models – siblings, parents
  - Filmed models
  - Posters
  - Audiovisual aids
- It is better to use sibilings as models. However, on his first visit to dentist never talk about siblings **because of unknown rivalry**.

39. **In a 3½-yr-old uncooperative for dental procedures which should be best** (PGI 2009)
a) Modelling b) Physical restraints
c) HOME d) Desensitization

(Ref: McDonald's 8th ed, p 35 and Shobha Tondon 2nd ed, p 150)

40. **Should a new patient be shown a co-operative brother or sister experiencing a dental procedure?** (Kar 96)
a) Not usually b) Only if the new patient is younger
c) Yes, it is a good idea d) Makes no difference

(Ref: Ref:Shobha Tandon Textbook of Pedodontics 2nd ed, p 151)

41. **When a child is rewarded for his cooperative behaviour, it is known as**
a) Punishment b) Restrainment
c) Positive reinforcement d) Desensitization

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 46 and Shobha Tandon 2nd ed, p 151)
- If a pleasant behaviour is rewarded by a praise or prize then there is more chance of this positive behaviour being exhibited by the child in future. This is called as **positive reinforcement.**
- Postpone treatment if child is not cooperative. Don't force the child. It may have negative reinforcement.
- Reward is recognition of good behaviour after the completion of operation without any implied promise.
- A bribe is promised to induce the desired behaviour. Bribing should be discouraged.

42. **Reinforcement technique is based on** (Man 2K)
a) Social learning
b) Freudian psychoanalytical theory
c) Reconditioning, reassurance and explanation
d) Massler's theory

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 127-128)
- Reinforcement technique is based on Skinner's theory of operant conditioning.

43. **The art of re-inforcing good behaviour displayed by the child with verbal praise applies the** (Kar 2011)
a) Operant conditioning theory b) Classical conditioning theory
c) Psychoanalytical theory d) Social learning theory

(Ref: Textbook of Pedodontics by Shobha Tandon 2nd ed, p 127-128)
OPERANT CONDITIONING BY SKINNER IN 1938
Individual response is changed by reinforcement or extinction of previous responses.
According to this theory consequence of behaviour itself acts as a stimulus and affects future behaviour.
He described 4 types of operant conditioning w.r.t. the type of consequences.
- **Positive reinforcement**: occurs if a pleasant result follows the response, e.g., child rewarded for good behaviour following dental treatment with a gift, pat on shoulder or verbal praise.
- **Negative reinforcement**: removal of unpleasant stimulus following a response
- **Omission**: removal of pleasant response after a particular response.
- **Punishment**: introduction of an aversive stimulus into a situation to decrease the undesirable behaviour.

The first two reinforcements are most suitable for dental operatory.

44. **The principle that 'the stimulus must be altered to elicit a change in the response' is applied in** (COMED 10)
a) Reinforcement b) Aversive conditioning
c) Retraining d) Modeling

Ans: 38–A 39–D 40–C 41–C 42–C 43–A 44–C

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(Ref: Pedodontics by McDonaldd 8th/47)
Children who require retraining, approach the dental office displaying considerable apprehension or negative behaviour. The demonstrated behaviour may be the result of a previous dental visit or the effect of improper parental or peer orientation. Individuals respond to stimuli to which they have been preconditioned. If the original stimulus and the new one are very similar, then the response will be similar. This is known as ***stimulus generalization***.

For example a child visiting a new dental clinic may have had fearful experiences in previous dental clinics. Then he shows generalization in new dental clinic and shows negative behaviour. Then there should be difference to offset the old stimuli so that it is not reinforced. **It is critical to remember that *the stimulus must be altered to elicit a change in the response.*** This is one of the reasons why the use of nitrous oxide-oxygen sedation often works when retraining children. It offers a difference.

45. **A frightened child is exposed to a dental clinic setting which is pleasant, colourful and different from a previous clinic where a painful experience occurred. The child is happy and treatment is completed. The psychological conditioning principle used here is**
a) Acquisition b) Generalization c) Extinction d) Discrimination (Kar 11)

(Ref: Textbook of Pedodontics by Shobha Tandon 2nd ed, p 126)
PRINCIPLES INVOLVED IN CONDITIONING PROCESS
ACQUISITION: learning a new response from environment by conditioning
GENERALIZATION: here a test stimulus similar to training stimulus results in a response. E.g. a child with previous bad experience with a doctor in white coat always will associate a doctor in white coat with pain.
EXTINCTION: occurs if association between the conditioned and the unconditioned response is not reinforced.e.g. in above example subsequent visits to a doctor without any unpleasant experience results in extinction of fear.
DISCRIMINATION: it is opposite of generalization. Here if the child is exposed to clinic setting which is different from those associated with painful experiences then the child learns to discriminate between the two clinics and even the generalized response to any office will be extinguished.

46. **White noise is a method of**
a) Distraction b) Music c) Analgesia d) All of the above (MAHE 06)

(Ref: Shobha Tondon 2nd ed, p 152)
Behaviour management
Child can be managed by the following methods:
1. **Audio analgesia or "white noise"** is a method of reducing pain. This technique consists of providing a sound stimulus of such intensity that the patient finds it difficult to attend to anything else (Gardner, Licklider, 1959). This technique consists of providing a sound stimulus such as pleasant music to reduce stress and reaction to pain.
2. **Biofeedback**
3. **Humour**
4. **Coping**: It is the mechanism by which the child copes up with the dental treatment. It is defined as the cognitive and behavioural efforts made by an individual to master, tolerate or reduce stressful situations (Lazaue 1980).
   Signal system: This method is followed as a part of coping; when it hurts, the child is asked to raise his hand as suggested by Musslemann 1991.
5. **Voice control**
   It is the modification of intensity and pitch of own voice in an attempt to dominate interaction between the dentist and the child.
6. **Hypnosis**: Hypnosis is one of the most effective nonpharmacologic therapies that can be used with children for a number of different procedures (Romanson. 1981) It is an altered state of consciousness characterized by; a heightened suggestion likely to produce desirable behavioural and physiological changes. When used in dentistry, it can be termed as hypnodontics (Richardson 1980) or psychosomatic or suggestion therapy.
7. **Relaxation**
8. **Implosion therapy**: Sudden flooding with a barrage of stimuli which have affected him adversely and the child has no other choice but to face that stimuli until a negative response disappears. Implosion therapy mainly comprises of HOME, voice control and physical restraints.
9. **Aversive conditioning**: Aversive conditioning can be a safe and effective method of managing Child who displays a negative behaviour and does not respond to moderate behaviour modification technique. Parenteral consent should be obtained prior to its application.

Two common methods used in the clinical practice are HOME and physical restraint.
HOME (hand-over-mouth exercise)— The behaviour modification method of aversive conditioning is also known as HOME. Introdued by Evangeline Jordan 1920. The purpose of this method is to gain the child's attention to establish communication.

Ans: **45–D** **46–A**

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Physical restraints: Last resort for handling uncooperative patients or handicapped patients. Restraints are usually needed for children who are hypermotive, stubborn or defiant. Physical restraints involve restriction of movement of the child's head, hands, feets or body. It can be:

- Active - restraints performed by the dentist, staff or parent without the aid of a restraining device.
- Passive - with the aid of restraining device

Types of restraints

- For body – Pedi wrap, Papoose board, Sheets, Beanbag with straps, Towel and tapes
- For extremities – Velcro straps, Posey straps, Towel and tape
- For the head – Head positioner, Forearm support
- Mouth — Mouth blocks, Banded tongue blades

47. **'Tell-show-do' technique of child management was introduced by** (Man 01, COMED 05, MAHE 06, MP 11)
    a) Bandura
    b) Addleson
    c) Coope
    d) Wright

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 45 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 150)

Tell-show-Do (TSD)	Addleson (1959)
Modelling	Bandura (1969)
Desensitization	Joseph Wolpe (1975)
Hand-over-mouth technique	Jordan

48. **Psychological basis of "tell-show-do" technique is**
    a) Desensitization due to familiarity
    b) Overcoming the influences of overindulgence
    c) Distraction from unpleasant things
    d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 45 and Shobha Tandon 2nd ed, p 150)

49. **In a fearful 9-year child which of the following techniques should be employed** (MAHE 11)
    a) TSD
    b) HOME
    c) Desensitization
    d) Normal conversation

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 45 and Shobha Tandon 2nd ed, p 150)

Indications for TSD (TELL–SHOW–DO)

- **Child more than 3 years of age.**
- **Fearful child**
- **First visit**
- TSD is the most popularly used technique for modifying behaviour by desensitization in children.

50. **Mode of technique used in blind child is** (MAHE 07)
    a) Tell-show-do
    b) Tell-feel-do
    c) HOME B
    d) Physical restraints

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 549-551)
Rather than using the tell-show-feel-do approach, invite the patient to touch, taste, or smell, recognizing that these senses are acute. Avoid sight references.

51. **Joseph Wolpe developed the following behaviour management technique** (COMED 09)
    a) Modeling
    b) Tell-Show-Do
    c) Desensitization
    d) Voice control

(Ref: Shobha Tandon 2nd ed, p 150)
Patient exposed step by step by a hiererarchy from the least to the most stressful procedures repeatedly until there is no evidence of stress, the procedure is known as **desensitization.**
Behaviour shaping, TSD, graded introduction of child to dentistry come under **preventive densensitization.**

52. **Which of the following techniques has been used to manage the disruptive child patient**
    a) Voice control, physical restraint
    b) Hand-over-mouth technique and its variations
    c) Hypnosis
    d) Premedication

(Ref: McDonalds Dentistry for Child and Adolescent 8th/46 and Shobha Tandon Textbook of Pedodontics 2nd/p 153-154)

Ans: 47–B 48–A 49–A 50–B 51–C 52–B

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53. **HOME is**
a) Aversive technique
b) Remodelling
c) Psychologic improvement
d) None

(PGI 02)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 46 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)
The primary objective of HOME and voice control is to gain the attention of a highly oppositional child so that the communication can be established.

54. **Hand-over-mouth technique was first described by**
a) Dr Evangeline Jordan
b) Addelson and Goldfried
c) Dr GV Black
d) Dr Goldman

(AIPG 06, Kar 10)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)
- **Jordan introduced the** hand-over-mouth technique. **Le Vistas** renamed it as HOME (hand-over-mouth exercise)
- Hand-over-mouth technique – Jordan.
- Tell-show-do technique – Addleson and Goldfried.

55. **Aversive conditioning (HOME) technique to control child will be applied to which category according to Frankel's behaviour rating?**
a) Definitely positive (++)
b) Definitely negative (–)
c) Positive (+)
d) Negative (–)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)

56. **Hand-over-mouth exercise (HOME) is effective behavioural modification technique in the age group of**
a) 3 to 6 years
b) Under 3 years
c) 6 to 9 years
d) Above 9 years

(COMEDK 03)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed pg no 154)
Hand-over-mouth exercise (HOME) is the behaviour modification method of "aversive conditioning".

Indications
- 3-6 years age
- A child who can understand simple verbal commands
- Children displaying uncontrollable behaviour
- Healthy child displaying uncontrollable behaviour

Contraindications
- Child under 3 years of age
- Handicapped/immature/frightened child
- Physical, mental and emotional handicap

57. **HOME technique should not be applied to**
a) 5-years-old child
b) Who exhibits hysterical behaviour during treatment but mentally sound
c) Child who can understand simple verbal commands but exhibiting inconsolable behaviour
d) Inmature frightened child

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 154)

58. **If the use of a technique on a child is objectionable enough that the child will cooperate in order to avoid it, that technique will come under**
a) Pharmacological domain
b) Physical domain
c) Aversive domain
d) Reward-oriented domain.

(COMED 10)

(Ref: Pedodonics by McDonald 8th/46)
The behaviour modification method of aversive conditioning is also known as *hand-over-mouth exercise*, or by the acronym *HOME*. Its purpose is to gain the attention of a highly oppositional child so that communication can be established and cooperation obtained for a safe course of treatment.

Ans: 53–A 54–A 55–B 56–A 57–D 58–C

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The technique fits the rules of learning theory: maladaptive acts (screaming, kicking) are linked to restraint (hand over mouth), and cooperative behaviour is related to removal of the restriction and the use of positive reinforcement (praise).
Restraining devices (Not retraining) come under physical domain.
Reward-oriented domain comes under behaviour shaping.

59. In making a child of temper tantrums to accept dental treatment, the dentist
a) Should apply principle of firmness
b) Should use physical methods to control the child
c) Should use general anaesthesia to treat this child
d) Should use premedication to treat this child

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 43, 44, 61 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)

60. Best approach for managing a 6-year-old child with temper tantrum
a) Tell-show-do technique
b) Voice control
c) Premedication
d) Postponing appointment

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 43, 44, 61 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)
Voice control is the effective communicative technique using sudden and firm commands to stop the disruptive behaviour and to get the child's attention.

61. Voice control has the effect of
a) Frightening the child
b) Making child know his limits of misbehaviour
c) Making child forcefully accept dental treatment
d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 43, 44, 61 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)

62. Which of the following is TRUE regarding voice control during dental treatment of children? (Kar 2011)
a) It should be a monotonous soothing conversation
b) It is a sudden and firm command
c) It is intended to frighten the child
d) It can be used on a two-year-old child

(Ref: MCDONALDS Textbook Pedodontics 8th ed, p 43-44)
Voice Control
According to chambers theroy voice controls most effective if combined with other communication methods.
Loud commands reduce distruptive behaviour.
There is a modification of pitch and own voice, hence not monotonous.
Should be sudden and firm.
It is used to gain the attention and not frighten the child.
Used in age group of 3–6 years.

63. The loss of voice control as behaviour therapy as child becomes familiar to it is an example of
a) Extinction
b) Superstition
c) Reinforcement
d) Association

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 126)

64. Best method for communicating with a fearful deaf child (Kar 98)
a) Speaking loudly
b) Normal conversation pace
c) Use sign language
d) Speak with prominent lip movements

(Ref: Mc-Donald-9th/481)
The text states that it is useful to know basic sign language to communicate generally and not in treatment phase, during the treatment phase the conversation should be slow and NORMAL PACE. Sign language should be known to dentist for communicating with deaf child. During treatment phase conversation should be normal and slow
- Verbal communication is best for children above 3 years of age in general.
- Voice should be constant, gentle and should express empathy and firmness.
- Use of euphemisms (word substitutes) or reframing is very important while dealing with the child patient.

Ans: 59–A 60–B 61–B 62–B 63–A 64–B>C

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65. **'Whistle' is a word substitute for explaining the following instrument in children**
a) Highspeed hand piece
b) Suction apparatus
c) Low speed hand piece
d) Air syringe
(COMED 09)

(Ref: McDonald 'Pedodontics' 8th ed, p 44)
For paediatric dentists, **euphemisms** or word substitutes are like a second language. Examples of word substitutes that can be used to explain procedures to children are:

Word	Substitute
Rubber dam	Raincoat for tooth
Rubber dam clamp	Button
Rubber dam	Coat rack frame
Sealant	Tooth paint
Topical fluoride gel	Cavity fighter
Air syringe	Wind gun
Water syringe	Water gun
Suction	Vacuum cleaner
Alginate	Pudding
Study models	Statues
High speed hand piece	Whistle
Low speed hand piece	Motorcycle

66. **Euphemisms are**
a) Fear promoting words
b) New words substitutes
c) Opposite words
d) Lisping words
(MAHE 2011)

(Ref: McDonald 'Pedodontics' 8th ed, p 44)
Euphemism words are defined as words that posses an inoffensive or indirect expression that is substituted for one that is considered offensive or too harsh or an inoffensive word or phrase substituted for one considered offensive or hurtful.

67. **Altered state of consciousness characterized by a heightened suggestibility to produce desirable behavioural and physiological changes is called as**
a) Coping
b) Hypnosis
c) Biofeedback
d) Implosion therapy

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 153)
It is also called psychosomatic or suggestion therapy.

68. **Before sedating a child**
a) Not essential to take the consent
b) Essential to take the written consent
c) Needed to consult the paediatrician
d) Essential for the parents to be present
(AIPG 97)

(Ref: Clinical pedodontics by Finn 4th ed, p 129)
- Before sedating a normal child it is important to take informed consent, and have the parents present during procedure.
- A child with previous medical history however requires consultation with the child's physician.

69. **Barbiturates in paediatric dentistry**
a) Are contraindicated
b) Have a low safety margin
c) Can be used safely
d) Are not required and therefore not necessary to use
(AIIMS 03)

Ans: 65–A 66–B 67–B 68–D 69–B

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 4)

- Barbiturates can produce all levels of CNS depression, ranging from mild sedation to general anaesthesia and deep coma.
- Their use has fallen out of favour, however, with the availability of sedatives and hypnotics with fewer adverse effects.
- Consequently, barbiturates are of very limited value for paediatric patients.
- **Hence barbiturates are not contraindicated but of very limited use in paediatric dentistry and their use should be discouraged.**

70. **Which of the following can result in paradoxical excitement in children** (AIIMS 2K, 99)
    a) Morphine b) Phenobarbitone c) Nitrous oxide d) Amphetamine

(Ref: Clinical pedodontics by Finn 4th ed, p 131)

- Paradoxical excitement is caused by barbiturates which also includes secobarbital.
- Reported to occur in approx. 3% of patients.

71. **Best time to see a 3-year-old child in the dental office** (PGI 03)
    a) Early in the morning b) Just before lunch
    c) Just after lunch d) Any time

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 46 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 144)

- Morning appointments have been suggested for children. It is a practice that has guided scheduling in many dental offices.
- The suggestion was based on the fact that children are more alert and the dental team is fresher in the morning. Also when age groups are kept together (preschoolers in the morning and older children in the afternoon), the peer group has a positive influence, with children serving as models for each other.

72. **Preschool child should not be given appointment at**
    a) Early morning b) Nap time c) Evenings d) Late morning

(Ref: Clinical pedodontics by Finn 4th ed, p 39)
Children brought at this time are generally sleepy, irritable and difficult to manage.

73. **How a two-year-old child is placed for examination in dental office** (Kar 97)
    a) On dental assistant's lap
    b) On mother's lap
    c) On the dental chair separated from parents
    d) On the dentist's lap itself

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 15)
A two-year-old for an emergency examination of a fractured incisor should be positioned _____ (AIPG 02, Kar 2010) *(On the parent's lap)*

- The infant is held on the lap of a parent, usually the mother.
- This direct involvement of the parent provides emotional support to the child and allows the parent to help restrain the child.
- Both parents may participate or at least be present during the examination.

74. **Lap to lap position is the recommended position for performing oral hygiene procedures in** (COMED 06)
    a) 0–1 year old b) 1–3 years old c) 3–6 years old d) 6–12 years old

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 252)

75. **Information of a tooth to be extracted in child of six to eight years old is**
    a) Given to child in preceding appointment after planning extraction
    b) Never given to child as it may hurt him
    c) Is given to child immediately before the procedure
    d) None of the above. No relation at all

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 541 and McDonalds Dentistry for Child and Adolescent 8th ed, p 181)

- 8–10 year old age group of paediatric patients are well adjusted to extraction procedures if they have been informed 4–7 days prior to the procedure.
- Younger patients should be told on the day of procedure.

Ans: 70–B 71–A 72–B 73–B 74–B 75–A

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- Never deceive a child patient. Give the child a preview of what will be done in next appointment in clean, simple, understandable words.
- Removal of a tooth during the first dental appointment of a child 6 to 8 years old probably compromises the dentist's ability to develop rapport with the child.

76. **To minimize gagging and overcome fear in a child while taking an alginate impession, it is recommended**
   a) Rinse the child's mouth with anaesthetic mouth wash
   b) Secure mandibular impressions first
   c) Secure maxillary impressions first
   d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 706)
While taking a maxillary impression first it results in gagging sensation and may have negative impact on child. So it is recommended to take mandibular impression first.

77. **Toys can be used in the management of child in dental clinic as**
   a) A bribe
   b) A gift
   c) Appreciation of good behaviour
   d) Reward

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 48 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 128)

78. **A child's mother can be allowed to remain in operatory room of dental clinic for which of the following children?**
   a) A child with temper tantrums
   b) An apprehensive but cooperative child of 2 years
   c) A child of 7 years with unknown fears
   d) All of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 145)

79. **Who among the following classified habits as "empty" and meaningful?**
   a) James 1923
   b) Kingsley 1958
   c) Klein 1972
   d) Finn 1987

(Ref: Textbook of Orthodontics by Gurkeerat Singh 2nd ed, p 582)

Author	Classification
James (1923)	a) Useful b) Harmful habits
Kingsley (1958)	a) Functional habits b) Muscular habits c) Combined ones
Morris and Bohnna (1969)	Pressure habits and non-pressure habits
Klein (1972)	Empty habits and meaningful habits
Finn (1987)	Compulsive and non-compulsive habits

80. **The most difficult form of child maltreatment to identify and treat is** (COMED 06)
   a) Sexual abuse
   b) Physical abuse
   c) Emotional abuse
   d) Munchausen syndrome by proxy

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 26)
Munchausen syndrome by proxy (MSBP)
- Child's illness fabricated or induced by the parent (usually the mother)
- Mother develops a dependent relationship with her child's doctor/medical staff.
- It is due to emotionally disturbed parents (think that the child is ill and take to doctor frequently). It is mostly due to own parents.
- Usually this syndrome develops with the mothers who are in medical field or other health related fields.

Ans: 76–B 77–C 78–B 79–C 80–D

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Clinical features include:
- Bleeding from various sites
- Recurrent sepsis due to injection of contaminated solutions
- Chronic diarrhoea due to administration of laxatives
- Recurrent fever
- Skin rashes

"Battered child syndrome" is a type of physical abuse reported by **"Henry Kenpe"** in 1962. Clinical features include:
- Fractures of long bones
- Subdural haematoma
- Failure to thrive
- Skin bruising
- Retinal haemorrhage

Child abuse is an acute condition, while child neglect is chronic condition. Child abuse may be physical, sexual or emotional.

81. **The concept of "Dental home" was introduced by** (COMEDK 06)
a) Arthur Nowak b) Evangeline Jordan
c) Paul Casayassimo d) George White

(Ref: Pediatric dentistry by Muthu 1st ed, p 172-173)

82. **The term 'anaesthesia by copper' was used to** (COMEDK 07)
a) Indicate extraction where copper was used as LA
b) Indicate the extraction done by Dr Copper
c) Indicate the incentive of a penny for good behaviour
d) Indicate surgical instrument made of copper

CARIOLOGY

1. **Arch criminal in caries** (PGI 99)
a) Sucrose b) Complex carbohydrate
c) Xylitol d) Glucose

(Ref: McDonalds Dentistry for Child and Adolescent 5th ed, p 229)
Sucrose is the main arch rival causing caries.

2. **Dental caries in primary dentition is highest at age group**
a) 2-3 years b) 4-5 years c) 7-8 years d) 8-10 years

(Ref: Clinical pedodontics by Finn 4th ed, p 457)
At age 5 three out of four kids have caries.

3. **Average caries attack per year between 5 and 15 years of age is**
a) 1 cavity b) 2 cavities c) 3 cavities d) 4 cavities

4. **Preeruptive caries is most common in permanent**
a) Maxillary first molar b) Maxillary second molar
c) Mandibular first molar d) Mandibular second molar

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 121)

5. **First dental visit of a child should be preferably**
a) Below 2 years b) 2-3 years c) 3-4 years d) 4-5 years

(Ref: Mc Donalds Dentistry for Child and Adolescent 8th ed, p 252)
- The child's first dental examination and dental visit should take place by at least 1 year of age as soon as primary teeth start erupting.
- It is generally recommended that children have their first dental visit at approximately the time of eruption of the first tooth or, at the latest, by the age of 12 months.

Ans: 81–A 82–C 1–A 2–B 3–A 4–D 5–A

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6. **Incipient carious lesion has following features**
   a) Opaque white area hard to explorer's tip
   b) Opaque area that can be ditched by explorer
   c) Saucer-shaped radiolucency in bitewing radiographs
   d) A dark brown pigmented soft area

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 184,268)
Incipient carious lesion are not caught by explorer. They appear as white opaque areas.

7. **Incipient or recurrent caries can be detected before they are visible on the radiograph by**
   a) Visible light
   b) Ultrasonic light
   c) Fibreoptic transillumination
   d) Digital imaging fibreoptic transillumination (AIPG 06)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 216; Shobha Tondon 2nd ed, p 209)

8. **In a 9-year-old which permanent tooth surface will show greatly increased caries incidence**
   a) Labial surface of central incisor
   b) Occlusal surface of central incisor
   c) Mesial surface of central incisor
   d) Mesial surface of lateral incisor (PGI 01)

No direct reference is found.
At nine years there will be no distal surface involvement of laterals since the primary canines might have exfoliated or the permanent laterals are at the stage of eruption.
Same is the case with mesial surface of the laterals as it might have not developed full proximal contact with the permanent centrals. The most appropriate is mesial surface of the centrals.
Please note that the maxillary lateral incisors, the lingual surface is more susceptible to caries than the labial surface.

Max Lat. Incisors → Lingual > labial for caries susceptibil

9. **The most susceptible area of caries in primary teeth is**
   a) Mesial surface of 2nd primary molar
   b) Distal surface of 1st primary molar
   c) Distal surface of 2nd primary molar
   d) Mesial surface of 1st primary molar

(Ref: Finn 4th ed, p 463, Fig 20-10)
Relative susceptibility is as:

(Mesial > Distal) – 1° – 2nd molar.

- Mesial surface of primary 2nd molar >Distal surface of primary 2nd molar (until permanent 1st molar erupts)
- Distal surface is always more susceptible as compared to mesial of any tooth, exception being mentioned above.
- Also note: Caries susceptibility of distal surface of a primary tooth is equal to the mesial surface of the tooth distal to it. For example, distal surface of primary canine is equally susceptible as mesial surface of primary 1st molar.

10. **Bitewings should be taken every 3 months for caries-susceptible child**
    a) 1 month
    b) 3 months
    c) 6 months
    d) 1 year

→ caries free patients

(Ref: Clinical pedodontics by Finn 4th ed, p 99)
- Bite-wing should be made every six months in caries free and every three months in caries susceptible individuals.

11. **Number of intraoral films recommended for child below 1-3 years for routine examination**
    a) 4 films
    b) 12 films
    c) 14 films
    d) At least 18 films

(Ref: Clinical pedodontics by Finn 4th ed, p 104-105)
Full mouth survey radiographs

Age	Anterior IOPA	Posterior IOPA	Bite Wing	Total
1-3 yr	2 mostly used	—	2	4
3-6 yr	6	4	2	12
6-12 yr	8	4	2	14
Above 12 yr	8	8	4	20

?

Ans: 6–A 7–D 8–C 9–A 10–B 11–A

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12. **Full mouth radiographic survey for a child is recommended by age**
    a) 2 years b) 5 years c) 12 years d) 15 years

    (Ref: Clinical pedodontics by Finn 4th ed, p 105)
    Full mouth radiographic survey for a child is recommended by age of 5 years. It consists of six anterior four posterior and two bite-wings.

13. **Film size used for bitewing in small child is** (Maharashtra 2011)
    a) 0 b) 1 c) 2 d) 1.5

    (Ref: White and Pharaoh Textbook of Oral Radiology 5th ed, p 74)
    Periapical View
    0 - For small children (22 X 35 mm)
    1 - Used for viewing the anterior teeth (24 X 40 mm)
    2 - Standard film size used for adults (31 X 41 mm)
    Bitewing View
    0 - for small children
    1 - for children
    2 - for adults
    3 - longer film for adults

14. **In a three-year-old child patient X-ray film is held in patient's mouth by** (AIPG 2009)
    a) Dentist b) Auxiliary personnel
    c) Parents d) Child only

    (Ref: Shobha Tondon 2nd ed)

15. **Fiberoptic transillumination (FOTI) method of caries diagnosis is based on the principle of** (Kar 04)
    a) When laser beam falls on caries enamel, it gives a bluish hue
    b) A fluorescent dye is taken up by carious dentin which can be viewed easily
    c) There is a different index of light transmission for decayed or sound enamel
    d) The conductance of normal and decayed tooth tissues is different

    (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 215- 216 and Shobha Tandon 2nd ed, p 208)

FOTI	Fiberoptic transillumination is based on the principle that there is a different index of light transmission for decayed and sound tooth. Decay is shown as darkened shadow along the path of dentinal tubules
Laser	Argon laser light illumination discloses a dark, fiery, orange-red colour
Diagnodent	Is based on fluorescence. It detects the precavitation stage and also the amount of decalcification

Diagnodent—Laser Diode Fluorescence
Scale 1–99
- 0–13—virgin teeth without caries
- 13–20—enamel caries – incipient lessin
- Above 20—dentin caries – definitely carious tooth

16. **Grade III root caries is characterized by**
    a) Soft surface texture but no surface defect but pigmented light tan
    b) Soft texture with surface defect less than 0.5 mm in depth, pigmented pulpal involvement
    c) Soft texture with penetrating lesion more than 0.5 mm without pulpal involvement
    d) Soft deeply penetrating lesion with pulpal involvement

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 184)
    Answers A, B, C, D grades are in order.

17. **What is "CRACKER BITE" or "COOKIE" procedure in paediatric dentistry used for**
    a) Bisecting angle technique for taking radiograph
    b) Paralleling technique for taking radiograph
    c) Occlusal radiographic technique
    d) Bitewing technique for taking radiograph

Ans: 12–B 13–A 14–C 15–C 16–C 17–C

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 21)
- The is use of smaller No.2 Film in this technique to take occlusal radiograph of either mandibular or maxillary arch.
- Technique is ideal for young children. (cookie | cracker bite)

18. TACT technique in radiography is used to detect
a) Salivary gland lesions
b) Root fractures
c) Internal resorption
d) External resorption

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 28)
TACT (Tuned Aperture computed Tomography) technique
- By using this technique superimposition of other overlying anatomical structures is decreased
- It produces three-dimensional radiography and easy dtetection of secondary caries.

3D radiography + 2° caries detection

19. Based on the alphabetical shapes Nango (1960) described the following basic types of fissures
a) A, B, C, D
b) U, V, I, K
c) C, V, U, M
d) M, N, I, K

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 258)
- 'V' and 'U' shaped fissures are self-cleaning, caries resistant and require noninvasive techniques.
- I and K shaped fissures are caries susceptible and require invasive technique.

20. What is the name for the form of caries, which is rapidly progressing? (Man 99)
a) Rampant caries
b) Nursing bottle caries
c) Acute dental caries
d) Chronic dental caries

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 208 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 229)
Rampant caries according to Massler is a rapidly appearing, widespread burrowing type of caries, with early pulpal involvement involving the surfaces of teeth that were otherwise immune to caries.

21. The term 'rampant caries' applies to a mouth having (Kar 2K, 10)
a) 5 or more lesions per year
b) 10 or more lesions per year
c) 2 or more lesions per year
d) 12 or more lesions per year

(Ref: McDonalds Dentistry for Child and Adolescent 5th ed, p 229; 8th ed, p 208 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 221)
- The term rampant caries should be applied to a caries rate of 10 or more new lesions per year.
- The distinguishing characteristics of rampant caries are the involvement of proximal surface of lower anterior teeth and the development of cervical type of caries.

22. Which of the following is true of flouride bombs (MAHE 2011)
a) It can be diagnosed clinically
b) It's a type of root caries
c) It's a type of arrested caries
d) It can be diagnosed radiographically

(Ref: Muthu 1st ed, p 153)
Flouride bomb or fluoride syndrome are seen in pre-eruptive caries or occult caries or hidden caries. This type of caries is not clinically diagnosed but detected only on radiographs. These lesions occur due to preeruptive defects and occur before the tooth erupts into the oral cavity. These lesions are not clinically diagnosed but detected only on radiographs, fibreoptic transillumination (FOTI), LASER luminescence, electrical resistance method (ERM). Repeated exposure to fluoride may remineralise the surface enamel but the cavitation in the dentine progresses and the lesion is masked by intact enamel surface layer. These hidden lesions are called 'fluoride bomb' or fluoride syndrome.

hidden

23. Which among the following statements regarding occult carjes is wrong
a) These lesions remain constant with age F
b) Also known as fluoride bombs T.
c) Not diagnosed clinically but only radiographically
d) May have its origin as pre-eruptive defects

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 186)
These lesions remain constant with age. This is wrong and is the correct option. These lesions increase with increasing age. Even if fluorides are applied, remineralization takes on the surface layer only and the cavitation in the dentine continues with marked intact surface.

Ans: 18–D 19–B 20–A 21–B 22–D 23–A

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24. **Linear enamel caries (or odontoclasia) occurs on**
   a) Maxillary primary posterior teeth
   b) Maxillary primary anterior teeth
   c) Mandibular primary anterior teeth
   d) Mandibular primary posterior teeth

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 191)
These lesions are more common in the labial surface of the primary upper anteriors in the region of neonatal line.

25. **In a preschool child, early carious involvement of the maxillary anterior teeth, maxillary and mandibular first primary molars and mandibular canines is called**
   a) Dental caries b) Feeding caries c) Milk caries d) Nursing caries (Man 94)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 209 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 221)

Characteristic feature	Rampant caries	Nursing caries
Definition	Acute widespread caries with early pulpal involvement of teeth, which are usually immune to decay. **Massler** has described the rampant caries	Specific form of rampant caries. **Jacobi et al** are given credit
Age group	Seen at all ages including adolescence	Seen in infants and toddlers
Dentition affected	Affects primary and permanent dentition—Bimodal attack	Affects primary dentition
Aetiology	Multifactorial. Genetic background Frequent intake of excessive sticky refined carbohydrate intake Decreased salivary flow	Bottle feeding with pacifiers dipped in honey or sweeteners before sleep Prolong breast-feeding
Characteristic features	Surfaces considered immune to decay, i.e., proximal surfaces of mandibular incisors, are affected Rapid appearance of new lesions	Specific pattern of involvement is seen Maxillary incisors followed by the molars are involved whereas mandibular incisors are usually spared
Treatment	▪ Multiple pulp exposures would require necessary pulp therapy ▪ Long-term treatment may be required when permanent dentition is involved	Acute stage is treated with ZoE Early stages can be managed by topical fluoride Directed towards maintenance of teeth till the transition occurs

26. **The most common lesions in anterior teeth seen in paediatric practice is due to**
   a) Nursing bottle caries b) Enamel hypoplasia
   c) Tooth fracture d) Peg laterals

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 357)

27. **Rampant caries. True is**
   a) Characterised by bimodal attack
   b) More than 10 new carious lesions occur in a year
   c) Mandibular incisors are affected
   d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 5th ed, p 229, 8th ed, p 208 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 221)
- Rampant caries is characterised by bimodal attack. It occurs in primary dentition period as well as early permanent dentition period mutilating whole dentition. Mandibular incisors are most affected whereas maxillary incisors are least affected.

Ans: 24–B 25–D 26–A 27–D

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- Rampant caries was defined by Massler as "suddenly appearing, widespread, rapidly burrowing type of caries resulting in the early involvement of the pulp affecting those teeth that are usually regarded as immune to tooth decay".

28. Nursing bottle caries may be attributed to
a) Human milk
b) Non-human milk
c) Non-human milk with additives
d) Feeding methods and susceptibility (APPSC 99)

(Ref: Mc Donalds Dentistry for Child and Adolescent 8th ed pg no 221)
It occurs with both human and non-human milk. It is attributed to the improper feeding methods.

29. All are true of nursing bottle caries except
a) Maxillary central incisors most affected
b) Mandibular central incisors least affected
c) Pacifying sugar solutions are the cause T
d) Breast milk does not cause the condition F ; as it causes. (Man 98)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 209-210 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 221)
- Breast milk also causes nursing bottle caries.
- The first teeth to become involved in nursing bottle caries usually are _____ (PGI 01, Kar 2K) *(Maxillary anterior teeth)*
- Teeth that are most resistant to nursing bottle caries _____ (AP 98) *(Mandibular anteriors)*

30. In nursing bottle syndrome, mandibular incisors are protected from caries because
a) Lower teeth are resistant to acidogenic bacteria
b) Submandibular secretions are adjacent to lower teeth
c) Lower teeth have more interdental spacing
d) All of the above (PGI 06, BHU 01)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 209-210 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 221)
The salivary secretions wash away the milk stagnant on the surfaces of the mandibular incisors.

31. Nursing bottle caries results from
a) Drinking human milk
b) Drinking non-human milk
c) Improper feeding posture
d) Drinking milk with sweetening additive (PGI 98)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 209-210 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 221)

32. The bacteria responsible for causing nursing bottle caries are
a) Lactobacillus only
b) Streptococcus and Lactobacillus
c) Streptococcus, Lactobacillus and Veillonella
d) Streptococcus, Lactobacillus and Neisseria (Kar 2K)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 189/Fejerskow Dental caries-1st/180)
- *S. mutans* is important in initiation of caries
- *Lactobacillus* is important in propagation of caries.
- *S. mutans* causes proximal or smooth surface caries and *Lactobacillus* causes pit and fissure caries.
- *Actinomyces* causes root surface caries.
- According to Fejerskow Actinomyces is associated with nursing bottle caries.

33. The first step in treating rampant caries
a) Restoring all teeth with stainless steel crown
b) Application of topical fluoride to all affected teeth
c) Excavation of softened tooth structure and filling with zinc oxide eugenol
d) Performing oral prophylaxis and instruction about oral hygiene (PGI 96)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 209)
- In a case of rampant caries the ideal procedure to perform in the first visit is _____ (Kar 02) *(Gross excavation and restoration of teeth)*
- Zinc oxide acts as obtundant. It also significantly reduces the bacteriological count in oral cavity.

Ans: 28–D 29–D 30–B 31–D 32–C 33–C

Blunts irritants

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RAMPANT CARIES.

First visit	▪ Lesions should be excavated and restored with ZOE ▪ Drainage of abscess ▪ Radiographs ▪ Diet chart should be given to record diet for 1 week. ▪ Parent counseling ▪ Topical fluoride administration
Second visit (one week after first week)	▪ Analysis of diet chart ▪ Isolate sugar factors from the diet chart and control sugar exposure (diet instructions) ▪ Caries activity tests
Third visit	▪ Endodontic treatment ▪ Extraction of unrestorable teeth followed by space maintenance ▪ Crowns ▪ Recall every 3 months

34. **The primary reason for replacing teeth destroyed due to nursing bottle syndrome is** (AIPG 91)
   a) Speech and aesthetics → As Ant (max) teeth are involved.
   b) Form and function
   c) Incising and mastication
   d) Arch perimeter requirements in the transitional dentition

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 638 and Clinical pedodontics by Finn 4th ed, p 274)
Since the teeth destroyed are mainly upper anterior teeth, no specific space maintainer is required for their early loss. They are usually replaced for esthetics.

35. **In diet counseling to reduce caries** (PGI 02, ABS 2013)
   a) Sugar is restricted to meals time
   b) Sugar is restricted to one time a day
   c) Restricted to only liquid sugars
   d) Restricted to fibrous food

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 243 and McDonalds Dentistry for Child and Adolescent 8th ed, p 220)
- It is better to avoid in-between meal snacks and promote mid-meal snacks. Refined sugar added to diet in the form of meal time supplement results in no caries activity while sugars taken in between meals results in significant caries activity.
- The frequency of ingestion of sugar-containing foods is important in causing caries than the total amount of sugar consumed.
- A high-risk dental caries individual is on preventive schedule _____ (PGI 01) *(Sugar or carbohydrates should be reduced to meal times)*

36. **Parents should begin cleaning a child's mouth** (PGI 02, Man 94)
   a) By the time first tooth erupts
   b) When all deciduous teeth erupt
   c) When all anterior teeth have erupted
   d) When incisors and first molars have erupted

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 252)
Plaque removal activities should begin on eruption of the first primary teeth.

37. **In children the main objectives of tooth brushing are**
   a) Gingival stimulation and plaque dispersion
   b) Food removal and plaque dispersal
   c) Gingival stimulation and food stimulation
   d) Plaque dispersal and salivary stimulation

Ans: **34–A** **35–A** **36–A** **37–B**

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38. **The most common brushing technique used in preschool child is**
a) Fone's technique
b) Modified Stillman technique
c) Charter's method
d) Bass method

(PGI 06)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 250)

Condition	Technique
1. In gingival recession and root exposure	Modified Stillman
2. In patients with healing wounds after surgery	Charter's
3. Routine technique in patients with or without periodontal disease	Bass or sulcular method
4. The most recommended technique in patients with periodontal disease	Sulcular technique
5. Recommended technique in children	Fone's
6. Least effective method	Roll
7. Most common method of brushing technique	Scrub

39. **According to Finn the best method of brushing in Mixed-Dentition and Young Adult dentition phase is**
a) Bass Sulcular Method
b) HorizontalScrub Method
c) Modified Stillman's Method
d) Fone's Method

(PGI 08)

(Ref: Primary preventive dentistry 6th/96)
Mentally retarded patients can often brush using a soft toothbrush with the plastic handle bent for better grasping. A horizontal scrub is often the best that these patients can manage. A three-headed toothbrush or a powered toothbrush assisted by a caregiver can be useful.

All are relatively ineffective in cleaning interproximal areas; and only **the Bass technique is effective in cleaning the sulcus.**

Natural Methods of Brushing
The most natural brushing methods used by patients are a reciprocating horizontal scrub technique, a rotary motion (Fones's technique), or a simple up-and-down motion over the maxillary and mandibular teeth (Leonard's technique). Patients managing effective toothbrushing with these methods without causing traumatic problems or disease should not alter their brushing methods just for the sake of change.
"The easiest and the most natural method of brushing technique recommended for pre-school and young children" _____ (comed 2008) Circular scrub (Fone's technique)

40. **The index age group for deciduous teeth in years is**
a) 12
b) 5
c) 35–44
d) 65–74

(COMED 06)

(Ref: Soben Peter 2nd ed, p 618)
(This is a funny question. Indirect indication of the answer is given in question itself)
- Recommended ages are 5 years for primary teeth and 12, 15, 35–44 and 65–74 years for permanent teeth.
- 5 years children should be examined between their 5th and 6th birthdays.
- This is of interest in relation to levels of caries in the primary dentition at other index ages.
- 12 years age is especially important as it is generally the age at which children leave primary school and in many countries is the last age at which a reliable sample may be obtained and also it is likely at this age that all permanent teeth except IIIrd molars will have erupted.
- 15 years age—permanent teeth may have been exposed to oral environment for 3–9 years.
- Assessment of caries prevalence is more meaningful than at 12 years.

Important for the assessment of periodontal disease indicators in adolescents 35–44 years (mean-40 years) – full effect dental caries, the level of severe periodontal involvement, and general effects of care can be monitored.

41. **The "diet" component in cariogram is indicated by**
a) Green
b) Light blue
c) Yellow
d) Dark blue

Ans: 38–A 39–D 40–B 41–D

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 204)

- Recently, a new method of illustrating the interaction of factors contributing to the development of caries has been introduced by **Brathall et al (1999) called 'CARIOGRAM'.**

Pie circle diagram is divided into 5 sectors, in the following colours.

Green	Shows an estimation of the 'chance to avoid caries'
Dark blue	Diet is based on a combination of diet contents and diet frequency
Red	Bacteria is based on a combination of amount of plaque and mutans streptococci
Light blue	'Susceptibility' is based on a combination of fluoride program, saliva secretion and saliva buffer capacity
Yellow	Circumstances is based on a combination of past caries experience and related diseases.

- DIAGNODENT is a new method of caries detection, which is based on the principle of fluorescence.
- The system has a range of -9 to 99 with -9 being the value where the tooth is the healthiest.
- The advantage lies in the early, precavitation stage of caries detection.

42. **Critical pH of saliva for Dental caries is** (PGI 2009)
    a) 5.4–5.5 b) 5.8–6.0 c) 5.7–5.8 d) 6.0–6.2

(Ref: Shobha Tandon 2nd ed, p 193]
The mineral content of tooth surface is hydroxyapatite $(Ca(PO_4)6\ (OH)_2$ which is in equilibrium and neutral environment saturated with calcium and phosphate.
It is reactive to hydrogen ions at critical pH of 5.5 and below.
Critical pH of saliva – The pH at which any particular saliva ceases to be saturated with calcium and phosphate is referred to as the critical pH; below this value inorganic tooth material may dissolve. Critical pH varies according to the concentration of calcium and phosphate but it is usually about 5.5.

43. **Dimineralisation of enamel is due to imbalance between** (PGI 2009)
    a) Calcium and phosphate in saliva b) pH in saliva and dental plaque
    c) pH of dental plaque and tooth d) Surface calcium and phosphate in dental plaque

(Ref: Principles and Practice of Pedodontics by Rao 1st/173)
The caries is the result of balance between demineralization and remineralization.
Plaque bacteria ferment sugar to organic acids (mainly lactic acid) which lower the pH and thus cause demineralization of tooth enamel.
The mineral content of tooth surface is hydroxyapatite $(Ca(P0_4)6\ (OH)_2$ which is in equilibrium and neutral environment saturated with calcium and phosphate.
It is reactive to hydrogen ions at critical pH of 5.5 and below.
Remineralisation is achieved by precipitation of calcium and phosphate fom saliva which is hastened by fluorides. The presence of even small amounts as low as 0.03 ppm of fluoride helps in remineralisation.

44. **The critical pH for enamel caries is 5.2–5.5 while for dentine it is around**
    a) 5.6 b) 5.8 c) 6.0 d) 6.2

(Ref: Clinical Textbook of Dental Hygiene and Therapy by Robert Ireland 2nd ed, p 83)
The dentin is more prone for demineralization at pH of 6 only. The root surface is more vulnerable to the demineralization process than enamel because cementum begins to demineralize at 6.7 pH, which is higher than enamel's critical pH.
In Pickard's manual of operative dentistry it is given that pH of dentinal caries is 6.2.

45. **The presence of higher amounts of proline-rich proteins (PRP) can have what kind of effect on caries causation?** (AIPG 04)
    a) Caries promoting since they help in bacterial adherence
    b) Make tooth surface resistant to caries since it enhances fluoride action
    c) It has role during tooth mineralization only, therefore no effect on caries
    d) Aid in supersaturation of saliva, therefore make tooth resistant to caries

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 198)

Ans: **42–A** **43–C** **44–C** **45–D**

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Salivary factors	Role
HCO_3, Urea, Proteins	Buffering action
Lysozyme, Lactoperoxidase	Breaks bacterial cell walls, Oxidation of susceptible bacteria
Statherin, Proline-rich proteins (PRPs)	Bind to hydroxyapatite, aid in supersaturation of saliva, make tooth resistant to caries

46. **Aspartame is a** non-caloric sweetener
a) Non-caloric sweetener
b) Caloric sweetener
c) Sugar complex
d) None of the above (AIPG 04)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 251)
- Caloric sugar substitutes – Sorbitol, xylitol, lactitol, lycasin, invert sugar.
- Non-caloric sugar substitutes – Saccharin, aspartame.

47. **The first National Oral Health Survey was planned by IDA in year** 1984 by IDA to achieve WHO goals in our country
a) 1954 b) 1964 c) 1974 d) 1984

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 188)
The First National Oral Health Survey was planned in **1984** by the **Indian Dental Association** with the commitment to achieve WHO goals in our country.

48. **Complexing and phosphosphorylating theory regarding caries aetiology was given in 1967 by**
a) Stephan Wei b) Laura c) Pincus d) Burch

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 193 and Shafer's Textbook of oral Pathology 5th ed, p 72-88)
This is also called as sucrose chelation theory.
- **Acidogenic or Chemico-parasitic Theory: MILLER**
- **Genes relation in causing caries hypothesis: BURCH**
- **Autoimmune theory: BURCH AND JACKSON**
- **Sulfatase theory: PINCUS**
- **Parasitic theory: LEEUWENHOEK**
- **Chemical or acidic theory: ROBERTSON**
- **Proteolytic theory: GOTTELIEB**
- **Proteolytic and chelation theory: SCHARTZ AND MARTIN**
- **Sucrose chelation theory: Egglers and Lura (according to Shafer 6th/423)**
- **Parasitic theory: DUBOS**

49. **Role of microorganisms in process of dental decay was explained by**
a) Virchow b) Koch's c) Angle d) Leeuwenhoek

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 205)

50. **On an average the fluoride content of carious enamel and dentin as compared to sound structures is**
a) 1–2 times less b) 2–3 times less c) 3–4 times less d) 4–5 times less

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 196)

51. **Lactobaccilus count test was introduced by?** Hadley in 1933
a) Miller in 1934
b) Gottlieb in 1932
c) Hadley in 1933
d) Listgarden in 1931 (MAHE 06)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 201)
This L.A colony Michigan test caries activity test was introduced by Hadley in 1933. This test estimates the number of acidogenic and aciduric bacteria in the patient's saliva by counting the number of colonies appearing on tomatao peptone agar plates (pH 5.0) after inoculation with a sample of saliva. A selective media favouring the growth of aciduric lactobacilli is the basis of the test.

Ans: **46–A** **47–D** **48–B** **49–D** **50–C** **51–C**

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No of organisms/c.c.	Symbolic designation	Degree of caries activity
0-1000	±	Little or none
1000-5000	+	Slight
5000-10000	++	Moderate
More than 10000	+++	Marked

52. **Which among them is a test to evaluate salivary defence**
a) Dentobuff test b) Oricult test
c) Alban's test d) Vanguard electronic caries detector

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 201)
- Dentobuff: simple chairside method to measure the buffer capacity of saliva
- **Oricult test**: microbial test to detect caries activity
- **Vanguard electronic caries detector**: test to evaluate tooth defense
- **Alban's test** is good for indicating caries inactivity. It is a modified Snyder test which measures production of amount of acids by lactobacilli.

53. **Vanguard electronic caries detector test is used to detect**
a) S. mutans count b) Salivary flow c) Lactobacilli count d) Tooth defense

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 201/Textbook of operative dentistry by Chandra-1st/41)
Vanguard electronic caries detector test — measures the electrical conductivity on numerical scale from 0 to 9. Zero indicates sound tooth and highest degree of demineralization is exhibited by 9. Diagnosis can be done in places where probe can reach.

DIAGNODENT is a laser type of caries detector. It detects soundness of teeth on occlusal surface. The signals of florescent wavelength are measured on a numerical scale 0 to 99. Higher the number, severe is the caries.

Reading	Conclusion
00-13	No caries
14-20	Enamel caries
Above 20	Dentinal caries

54. **The valuable test for evaluating caries activity in very young children is**
a) Lactobacillus colony count test b) Swab test
c) Alban test d) Calorimetric snyder test (Kar 2010)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 203)
Swab Test
- It has an advantage over other tests in that, no collection of saliva is necessary.
- So it is valuable in evaluating caries activity in very young children
- It is based on the principle of Snyder test.
- Important in predicting caries increment

Swab test is used to measure caries activity in ____ age group (Young children)
Interpretations
pH 4.1 and < 4.1—marked caries activity
pH 4.2-4.6—active
PH 4.5-4.6—slightly active
pH >4.6—caries active

55. **Viscosity of saliva is determined by comparing it with the viscosity of**
a) Saline b) Ringer lactate solution
c) Sialogogues solutions d) Water

Ans: 52–A 53–D 54–B 55–D

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 203)
Ostwald pipette with a calibrated bore is used

Some of the important values
- Resting flow rate of saliva in adults-0.3-0.4 mL/min
- Stimulated (using paraffin)-1-2 mL/min
- High caries risk if flow rate is less than 0.1 mL/min

56. **Opacity or discolouration visible on observation without drying is classified as under which stage of occlusal caries**
a) V1 b) V2 c) V3 d) V4

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 206)
Occlusal caries classification criteria as given by **EKSTRAND**
- **V0**—no/slight change in enamel translucency after air drying for more than 5 seconds
- **V1**—discolouration difficult to see on wet surface but easily seen on drying
- **V2**—discolouration seen without air drying
- **V3**—local enamel breakdown or greyish discolouration in underlying dentin
- **V4**—cavitation in enamel which exposes dentin

57. **Pickard has proposed which method to detect caries**
a) Use of floss to detect caries
b) Use of blunted explorer to check caries
c) Use of DIAGNODONT to check caries
d) Use of 'E' film to check caries

father of Air Abrasive System.
✓ Dr. J. Tim Kainey, USA
✓ first by – Dr Robert Black 1940.
✓ It has aluminium oxide particles (compressed air) with such force as to abrade tooth structure – PRECISION SANDBLAST CR
Removes decayed teeth without the use of CF

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 207)

58. **In XERORADIOGRAPHY, image formation is achieved by**
a) Photochemical process b) Chemico-mechanical process
c) Electrochemical process d) Photo-electrostatic process

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 208)
Image formation in conventional radiography is by photochemical process

AIR DENT

59. **Air abrasive system used to abrade tooth structure depends on all of the following for proportional tooth structure removal except**
a) Particle size b) Air pressure c) Particle quality d) Nozzle distance

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 213)
Uses short bursts of alpha alumina powder. Particle quality is not important. It depends on the particle size.

60. **In nursing caries how much time is the patient recall period**
a) After every 1 month b) After every 2 month
c) After every 3 months d) After every 4 months

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 220)

61. **Microorganisms are seen to be established soon after birth in an infant as soon as**
a) 0-2 hours b) 2-4 hours c) 4-6 hours d) 6-8 hours

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 226)

62. **The ideal time to clean teeth by parents for their 3-6-year-old child is**
a) Morning b) Naptime c) Evening d) Bedtime

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 237)
Bed time is the ideal time to clean the child's mouth because salivary flow rates slow during sleep

63. **Professional application of fluoride gels which are higher in concentration should begin at what age**
a) 6 years b) 5 years c) 3 years d) 4 years 3, 7, 11, 19.

Ans: 56–B 57–A 58–D 59–C 60–C 61–D 62–D 63–C

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 240)
It should begin at the age when swallowing can be controlled, i.e., at age 3 years.

64. **Which of the following formulae correctly depicts the time of exposure to acid**
a) Time of exposure = total exposure X 20 minutes
b) Time of exposure = total exposure X 30 minutes
c) Total exposure = time of exposure X 20 minutes
d) Total exposure = time of exposure X 30 minutes

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 245-246)
The time given is based on Stephan's curve.

65. **Which of the statements regarding total blood fluoride is correct**
a) Fluoride is present in plasma but not RBC
b) Fluoride is present in plasma and RBC in equal amount
c) Three-fourth fluoride is present in RBC and one-fourth in plasma
d) Three-fourth fluoride is present in plasma and one-fourth in RBC

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 272)

66. **Absorption of fluoride in the child through mainly in** (AIIIMS Nov 09)
a) Gingiva b) Lungs c) Oral cavity d) Intestine

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 271)
Fluoride is readily absorbed into the body mainly from the stomach.
Maximum amount of fluoride absorption occurs from upper GIT followed by small intestine.
Maximum plasma concentration (0.15 to 0.25 ppm) is reached within 60 minutes. Absorption can also occur from lungs and skin. Excretion is mainly through kidneys and 20–30% is excreted within 3–4 hours.

67. **Gaining the beneficial effects of fluoride by fluoride deprived populations from beverages bottled in fluoridated areas is known as**
a) Additive effect b) Synergestic effect c) Commensal effect d) Diffusion effect

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 276)
- Diffusion effect is also known as HALO effect.
- Accretion is a process where most of the fluoride is buried quickly within the mineral crystals during the process of crystal growth..Such fluoride is locked in the lattice interior for as long as the crystal exists.

68. **How much increase is recommended in concentration of fluoride (from normal community water fluoridation) in school water fluoridation programme**
a) 3–5% b) 4–6% c) 5–6% d) 6–8%

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 276)

69. **What is the age during which a fluoridated toothpaste is introduced in a child**
a) 3 years b) 4 years c) 5 years d) 6 years

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 285)
Below 4 years fluoride toothpaste is not recommended

70. **Fluoride supplement for above 3-year-old child living in an area with fluoride content of 0.25 ppm is**
a) 0.25 mg b) 0.5 mg c) 0.75 mg d) 1 mg (COMED 2009)

(Ref: Community Dentistry dentest vol II and McDonald's 8th ed, p 231)
The supplemental fluoride dosage depends on fluoride concentration of drinking water and age of the child.
Recommendation for use of fluoride tooth paste

	Fluoride content of water in ppm		
Age (yrs)	**< 0.3**	**0.3–0.7**	**> 0.7**
Birth to 2	0.25	0	0
2 to 3	0.5	0.25	0
3 to 13	1.0	0.5	0

Ans: 64–A 65–D 66–D 67–D 68–B 69–B 70–D

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71. **The CALCINED MAGNESITE TECHNIQUE is used for**
   a) Fluoride varnish and foams application
   b) Water fluoridation programme
   c) Water defluoridation technique
   d) Salt and milk fluoridation programme

in Tanzania along c Nalgonda technique

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 289)
- Introduced in Tanzania as a pilot study along with Nalgonda technique
- Impractical for rural regions as calcined magnesite is exhausted here and needs to be regenerated

72. **What is PRASINTI technology used for**
   a) Milk fluoridation
   b) Salt fluoridation
   c) Community water fluoridation
   d) Water defluoridation

[Active alumina is used]

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 289)
- Utilizes activated alumina
- One of the most popular and cost effective methods for defluoridation

73. **Which plant species can be used for water defluoridation**
   a) Moringa clefera
   b) Papavar somniferum
   c) Baragwanathia
   d) Cooksonia

MORINGA CLEFERA

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 289)
- Also known as DRUMSTICK PLANT
- Reduces water turbidity
- Excellent coagulative and clarifying properties
- Effect is due to calcium and magnesium content in plant

OTC PRODUCTS
- Listerine
- 0.05% NaF mouth rinses
- 0.1% SnF "
- 0.4% SnF Gels

1983 FDA app

74. **Fluoride ion is most effective at**
   a) Enamel-saliva interface
   b) Cementum-saliva interface
   c) Cementum-enamel junction
   d) Dentino-enamel junction

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 269)

75. **The first FDA approved fluoride toothpaste for OTC (Over-the- counter) in the year**
   a) 1945
   b) 1955
   c) 1964
   d) 1971

(PGI 2009)

(Ref: Soben Peter 1st ed, p 322; Pedodontics by MUTHU 1st ed, p 198)
- FDA (not ADA) approved stannous fluoride to be a content of dentrifice in 1955
- CREST is the first introduced FDA approved approved fluoride toothpaste in the year 1955. It contains the fluoride under the name **FLOURSTAN** (trade secret).

ADA accepted CREST and endorsed as a first OTC dentrifice with fluorides formulation in the year 1964.

Other points
- Listerine antiseptic is the **first OTC** antiplaque and antigingivitis **mouth rinse** to be **approved** by the **ADA**
- In 1983, the FDA **approved** the sale of 0.05% sodium **fluoride** mouth rinses, 0.1% stannous **fluoride** mouth rinses, and 0.4% stannous **fluoride** gels as **over-the-counter** products

76. **The first and only toothpaste to protect against gingivitis, caries and sensitivity is**
   a) Sensodent K
   b) Polyfluorite system
   c) Carioflorite system
   d) Cariotreat

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 294)
Also note:
- CREST PRO-HEALTH is a next generation ADA accepted toothpaste.
- It is a combination of stabilized stannous fluoride (0.454%) and sodium hexametaphosphate.

77. **Fluoride concentration in 0.05% mouth rinses is?** 225 ppm
   a) 250 ppm
   b) 225 ppm
   c) 900 ppm
   d) 1000 ppm

(PGI 2009)

(Ref. Soben Peter 3rd ed, p 317)
Sodium flouride mouth rinses are usually formulated at concentration of either 0.2% sodium fluoride (900 ppm) for weekly use or 0.05% sodium fluoride (225 ppm F) for daily use. ✗ weekly

Ans: **71–C** **72–D** **73–A** **74–A** **75–C** **76–B** **77–B**

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78. **Which lasers are used to alter the tooth surface of enamel and make it less prone for caries**
a) Argon b) Nd:Yag c) Helium d) CO_2

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 292)

79. **To predict the occurrence of caries in a 6-year-old child, which of the following gives best result** (AIIMS 08,10)
a) Sibling caries b) Mother's caries
c) Snyder's test d) Parental caries

(Ref: American Academy of Pediatric Dentistry Reference Manual V 29/NO 7, 07/08)
Here the question is about caries risk and not the activity. See caries (risk) assessment tool (CAT) by American Academy of Pedodontics.
For detailed descrition refer q no.85. of AIIMS Nov 2008 – Dental Bytes.

80. **CAT in paediatric dentistry refers to** (Maharashtra 2011)
a) Caries activity test b) Caries-risk assessment tool
c) Caries advancement test d) Child aptitude test

(Ref: Mcdonald's 8th ed, p 217, 218; Table 10-1)

Caries-risk assessment tool (CAT)
- Given by American Academy of Pediatric Dentistry,
- Assess the level of risk for caries (cavity) development in infants, children and adolescents based on a set of clinical, environmental and general health factors.
- Can be used by both dental and non-dental personnel.

Caries risk indicator

I. **Low Risk**
- Optimal fluoride exposures both systemic and topical
- Consumption of simple sugars or limiting to mealtime
- Higher socioeconomic status (financially stable)
- Regular dental visits

II. **Moderate Risk**
- Suboptimal systemic fluoride exposure with optimal topical exposure
- Between meal snacking (1-2)
- Midlevel caregiver socioeconomic status (eligible school lunch/SCHIP)
- Irregular use of dental services

III. **High Risk**
- Suboptimal topical fluoride exposure
- Frequent between-meal snacking (3 or more)
- Low level caregiver socioeconomic status (eligible for Medicaid)
- No usual source of dental care
- Active caries present in the mother
- Children with special health care needs
- Conditions decreasing saliva flow (medications)

If a child has one or more risk factors refer to a dentist immediately
*****CAMBRA – Caries management by risk assessment**

CHILDHOOD DISEASES

1. **All of the following are true of cleft of secondary palate except**
a) May be submucous b) Common in males
c) Causes cleft lip d) May involve hard and soft palates

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 679)

2. **A 3-year-old child presents with only deciduous canine and molars. The child has light fine hair, light complexion and overall appearance of an older person. The findings suggest** (AIPG 92)
a) Cleidocranial dysostosis b) Osteogenesis imperfecta
c) Crouzon's disease d) Ectodermal dysplasia

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 131 and Shafer's Textbook of Oral Pathology 5th ed, p 1099-1101)

Ans: 78–D 79–B 80–B 1–C 2–D

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3. **Treatment of geographic tongue**
   a) Topical application of Nystatin
   b) Split tissue shaving
   c) Pencillin therapy
   d) No treatment

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 139 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 795)

4. **Primary teeth of a 4-year-old child are grey in colour and exhibit extensive occlusal and incisal wear. Radiographic examination indicates secondary dentin deposition. The condition may be**
   a) Amelogenesis imperfecta
   b) Dentinogenesis Imperfecta
   c) Porphyria
   d) Cleidocranial dysostosis (AIIMS 94)

(Ref: Mc Donalds Dentistry for Child and Adolescent 8th ed, p 123,125 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 103,106)

5. **Transillumination of soft tissue is useful in detection of**
   a) Koplik's spots
   b) Sialolithiasis
   c) Aortic stenosis
   d) Sickle cell anaemia (AIIMS 94)

(Ref: Salivary gland diseases: surgical and medical management by Robert Lee Wit 1st ed, p 82-83)

6. **Small irregular bright red spots on a child's bucca mucosa with white specks in centre may indicate the onset of**
   a) Mumps
   b) Rubeola
   c) Rubella
   d) Herpes (PGI 95)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 802-803)
These are Koplik's spots and indicate the onset of measles.

7. **Most common cause of acute generalised inflammation in preschool children**
   a) Vit-B deficiency
   b) Vit-C deficiency
   c) Acute herpetic gingivostomatitis
   d) Necrotising ulcerative gingivitis (AP 95, COMED 05)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 417-418, Shobha Tandon Textbook of Pedodontics 2nd ed, p 799 Shafer's Textbook of Oral Pathology 5th ed pg nu 469)
Most common cause of acute generalised inflammation of oral cavity in preschool children is herpes. ANUG is common in adolescents.

8. **A child with a fever of 102°C and vesicles in the oral cavity is probably suffering from**
   a) Herpes simplex type I
   b) Juvenile periodontitis
   c) Acute herpetic gingivostomatitis
   d) Neutropenia (AIPG 96)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, 417 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 771)

9. **A 4½-year-old child suffering from intraoral herpetic lesions reports to you. Line of treatment**
   a) Immediately prescribe 10 mg of prednisone
   b) Immediately inject 10 lakhs of procaine penicillin
   c) Symptomatic treatment for temperature and prevent secondary infection and dehydration
   d) None of the above. Refer to physician

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 772)

10. **Aphthous ulcer should be treated by**
    a) Tetracycline therapy
    b) Penicillin therapy
    c) Mycostatin application
    d) Palliation and patience

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 421-422 and Shafer's Textbook of Oral Pathology 5th ed, p 921)
There is no definite treatment for aphthous ulcer. Only palliative treatment with local topical anaesthetics is indicated.

Ans: 3–D 4–B 5–B 6–B 7–C 8–C 9–C 10–D

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11. **Treatment of severe intraoral infections in children differs from that in adult because** (AIPG 92)
   a) More children are allergic to penicillin
   b) Dehydration occurs more rapidly and severely in children
   c) Leucocytopenia develops more frequently in children
   d) Incidence of bleeding disorders is greater in children

12. **A purulent lesion in oral vestibule of an 8-year-old patient is most likely** (AIPG 94, AP 95)
   a) Pyogenic granuloma b) Odontogenic fistula
   c) Infected aphthous ulcer d) Isolated herpes lesion

(Ref: Textbook of pediatric infectious diseases by Feigin 5th ed, Volume 1, p 150)
- The spread of infection from periapical region may be the cause of purulent lesion in oral vestibule.
- Pyogenic granuloma, aphthous ulcer and herpes do not produce purulent lesions.

13. **A light bluish dome-shaped lesion on the inside of a lip of 2-year-old chil is**
   a) Mucocele b) Haematoma c) Melanoma d) Haemangioma

(Ref: Neville's oral and maxillofacial pathology 2nd ed, p 389)

14. **Which of the following is more common in children?** (Man 2K)
   a) Gingivitis b) Periodontitis c) ANUG d) Pericoronitis

(Ref: Mc Donalds Dentistry for Child and Adolescent 8th ed, p 415)
- Numerous studies indicate that marginal gingivitis is the most common form of periodontal disease and starts in early childhood.
- The greatest increase in the incidence of gingivitis in children is often seen in the 6- to 7-year age group when the permanent teeth begin to erupt.

15. **Gingiva in children** (PGI 99, MAHE 2011)
   a) More keratinized, more stippled b) More keratinized, less stippled
   c) Less keratinized, more stippled d) Less keratinized, less stippled

(Ref: Carranza's 10th ed, p 404; FINN 4th ed, p 287-289 and Shobha Tondon 1st ed, p 656)

16. **Gingival stripping in children** (AIPG 09)
   a) Is due to narrow attached gingiva
   b) Is treated with gingivectomy
   c) Is due to increase in width of attached gingiva
   d) Is treated by gingivoplasty

(Ref: McDonald pedododontics 8th ed, p 482; Shobha Tandon 1st ed, p 672 and Pinkham 4th ed, p 417))
Out of the available options narrow width of attached gingiva is the best answer. Anterior teeth with narrow zones of keratinized gingiva are frequently encountered in children, as the width of KG varies greatly during the mixed dentition. The width of KG alone should not be the sole indicator of potential sites of gingival recession in children.

However, the frenum is the primary aetiologic factor in the stripping of the gingival tissue and labial pocket formation. If the recession has progressed after a 4- to 8-week period of observation, other periodontal procedures may be required based on the identified predisposing factor.

17. **Gingivitis is at its peak in children at age** (Kar 98)
   a) 3–4 years b) 6–7 years c) 11–13 years d) 15–18 years

(Ref: Clinical Pedodontics by Finn 4th ed, p 292)
- Chronic marginal gingivitis is the most prevalent type of gingival change in childhood.
- It reaches in its severity to peak at the onset of puberty. About 90% of children are affected by gingivitis by the time they reach 15 years of age **(although Finn gave this age to be at 11 years).**

18. **A 12-year-old girl develops vertical pockets around incisors and first molars. The presence of plaque is not consistent with inflammatory findings. Diagnosis is** (AP 94)
   a) Gingivosis b) Periodontitis c) Periodontosis d) Osteomyelitis

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 433 add and Shobha Tandon Textbook of Pedodontics 2nd ed, p 777)
This is typical of periodontosis or juvenile periodontitis.

Ans: 11–B 12–B 13–A 14–A 15–D 16–A 17–C 18–C

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19. **Which of the following usually not related to gingival inflammation in children**
a) Endocrine disturbances
b) Viral infection
c) Spirochetal infection
d) Streptococcal infection
(AP 94)

20. **All of the following are common in children compared to adults except one which is rare in children**
a) African Burkitt's lymphoma
b) Dentigerous cysts
c) Herpetic gingivostomatitis
d) Progonoma
(AIIMS 91)

(Ref: Nevelle Oral and Maxillofacial pathology 2nd ed, p 591 and McDonalds Dentistry for Child and Adolescent 8th ed, p 159)
Although dentigerous cysts may be encountered in **patients over a wide age range, they are discovered most** frequently in patients between 10 and 30 years of age.

21. **Pulp starts reacting to caries when carious lesion reaches**
a) Dental pulp
b) Cementoenamel junction
c) Dentinoenamel junction
d) Pulpodentino junction
(AIPG 97)

(NATIONAL BOARDS DEC 1982 Q. No: 98)

22. **Periapical abscess due to primary teeth infection more diffuse compared to permanent teeth because of**
a) Large pulp chambers in primary teeth
b) Roots in primary teeth are more slender
c) Alveolar bone surrounding the teeth is less dense
d) All of the above
(AIPG 2000)

(NATIONAL BOARDS DEC 1982 Q. No: 98)

23. **Most common cause of draining sinuses in oral cavity of children**
a) Periapical granuloma
b) Chronic Periapical abscess
c) Periodontal abscess
d) Periapical periodontis acute
(AIPG 1999)

(NATIONAL BOARDS DEC 1982 Q. No: 38)

24. **Eruptive cysts are best treated by**
a) Incision & drainage b) Curettage c) Excision d) No treatment, only observation

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 160,182 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 549)

25. **A disease that only affects formation and eruption of tooth but does not cause hypoplasia is**
a) Hypoparathyroidism
b) Hyperparathyroidism
c) Rickets
d) Syphilis
(Kar 05)

(Ref: Shafer's textbook of oral pathology 5th ed, p 453,901)
Although many reports are found in literature linking rickets with enamel hypoplasia, infantile rickets does not always result in hypoplastic enamel.

26. **Which one of the following does not cause delayed eruption of the teeth?**
a) Rickets
b) Osteogenesis imperfecta
c) PCM (protein calorie malnutrition)
d) Cretinism
(Kar 96)

(Ref: Shafer's Textbook of Oral Pathology 5th ed, p 957-958)

27. **Which one of the following teeth shows the greatest variation relative to the onset of mineralization of crowns seen through intraoral radiographs of permanent teeth**
a) Maxillary lateral incisor
b) Mandibular second premolar
c) Maxillary canines
d) Maxillary first premolar
(MAHE 96)

(Ref: A Comprehensive review of dentistry by Boucher 1st ed, p 457)

28. **Child with Down's syndrome is**
a) Affectionate and cooperative
b) Capable of understanding operative procedures
c) Fearful of quick movements
d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 542 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 634)

Ans: 19–C 20–B 21–C 22–C 23–B 24–D 25–C 26–B 27–B 28–D

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29. **Head shape in Down's syndrome is typically** (COMEDK 03)
a) Mesocephalic b) Dolicocephalic c) Brachycephalic d) Acephalic

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 633)

30. **Incidence of caries in patients with Down's syndrome is** (Man 02)
a) Same as general population
b) Less as compared to general population
c) Greater as compared to general population
d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 194 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 634)
- The incidence of dental caries is low in Down's syndrome while incidence of periodontal disease is much higher.
- Caries incidence (Kar 96) in patients with Down's syndrome is lower than in normal children.
- Whereas periodontal diseases in patients with Down's syndrome is higher than in normal children.
- ANUG occurs more commonly and there will be high prevalence of *Bacteroides melaninogenicus* in the plaque.

31. **Fluoride in any form is contraindicated in** (AIPG 97)
a) Chronic renal failure b) Osteoporosis
c) Hypertension d) Thyrotoxicosis

(Ref: Soben Peter 2nd ed, p 341)

32. **A serious complication of juvenile diabetes**
a) Deafness b) Blindness
c) Motor nerve paralysis d) Cystitis

(Ref: Nevelle Oral and Maxillofacial pathology 2nd ed, p 729)
Juvenile diabetes is also known as type 1 diabetes.

33. **A child suffering from acute leukaemia is susceptible to** (AIPG 1996)
a) Dental caries b) Oral infections
c) Developemnt of jaw deformities d) All of the above

34. **All of the following statements about acute leukaemia in children are true EXCEPT**
a) Myelomonocytic variety and causes gross gingival swellings
b) May cause bleeding gums (or) pallor mucosa
c) It is usually of the lymphoblastic variety
d) By slow enlargement of regional lymph nodes (Man 94)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 568-575 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 644-646,776)
- Leukamia in children is mostly of acute lymphoblastic variety. Gross gingival hyperplasia does not occur with lymphoblastic type.
- The peak incidence is between 2 and 5 years of age.
- It is mostly the characteristic feature of monocytic and myeloblastic variety which is not usually present in children.

35. **Acute leukaemia is characterised by**
a) Ulcers due to herpes infection b) Ulcers due to cytotoxic drugs
c) Bleeding gums d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 572)

36. **Drug given to a haemophilic child before surgical procedures to control bleeding?**
a) Penicillin b) Epsilon aminocaproic acid
c) Phenytoin d) Menandione

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 561)

Ans: 29–C 30–B 31–A 32–B 33–B 34–A 35–D 36–B

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37. **A Haemophilic/leukaemic child is suffering from periapical abscess. Line of treatment**
a) Endodontic therapy
b) Antibiotic administration and extraction of tooth
c) Obtain a blood count before extraction
d) Obtain medical consultation before treatment (Kar 98, Man 95)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 563)
- Preoperative evaluation and postoperative management of the patient with hemophilia undergoing extractions must be coordinated with the hematologist.
- The dentist should discuss with the hematologist the surgical procedure, including the anesthetic technique, the degree of surgical trauma anticipated, and the duration of the healing process.
- The hematologist can then determine the amount and duration of factor concentrate replacement required for surgery and postoperative management.

38. **If extraction is to be done in haemophilic patient, factor VIII should be at least**
a) 25% b) 50% c) 75% d) 100% (Kar 98)

Answer is given as 100%. The minimum levels of 30 percent is sufficient for elective surgery. But as a safety factor it is raised to 100 percent. The answer should have been then 50 percent if minimum levels are asked.
- For dental **extractions, factor** IX levels **should be raised to** 30 to 40 percent (Hematology by Joseph Williams)
- For simple extractions of erupted permanent teeth and multirooted primary teeth, a 30% to 40% factor correction is administered within 1 hour before dental treatment. For surgical extractions of impacted, partially erupted, or unerupted teeth, a higher factor activity level may be needed before surgery. This should be discussed with the haematologist, because there would be a greater degree of surgical trauma and a longer healing period. (**Mc Donalds Dentistry for Child and Adolescent 8th ed, p 563)**
- Prior to **dental extraction** the **patient's Factor VIII** level is **raised to** at least 50 percent (Howard Cone in medical practise)
- Before oral surgical procedures **factor VIII should** be administered to 100% level (Pedodontics by Muthu-1st/384)
- Procedures such as simple **dental** (forceps) **extractions** or suturing of lacerations require a level of 50%(Harris clinical oral sciences)
- A **factor VIII** level of between 50 and 75% is required (Cawson and Scully) for extractions.
- When life-threatening airway or neurologic bleeding has occurred, factor VIII level of 100% should be achieved.
- Similarly when major surgery is anticipated, correction to 100% factor VIII level should be done preoperatively and maintained postoperatively

39. **With what percent level of a normal range haemophiliac would lead normal life**
a) 1–5% b) 10–15% c) 15–25% d) Over 25% (COMEDK 07)

(Ref: Harrison's, Principles of internal medicine, 16th ed, p 686)
The minimal level of most individual factors needed for adequate haemostasis is 25%. The majority of patients with haemophilia A have factor VIII levels less than 5%.

40. **In haemophilic patient of age 5 years, a primary second molar with non-vital pulp is treated by**
a) Extraction
b) Conventional pulpectomy
c) Pulpotomy with calcium hydroxide
d) Pulpotomy with formocresol

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 563)
- Pulp exposures in primary and permanent teeth may be avoided if carious *dentin* is not entirely removed in one procedure (indirect pulp therapy). A pulpotomy or pulpectomy is preferable to extraction.
- The extraction of a tooth in an individual with haemophilia implies more complicated treatment and expense to the patient.
- Most vital pulpotomy and pulpectomy procedures can be successfully completed using local infiltration anaesthesia. Nitrous oxide-oxygen inhalation analgesia may also help alleviate any discomfort.

41. **In a child, a combination of malnutrition, steatorrhoea, chronic respiratory infection, thyroid deficiency, a great salt loss through the skin and functional disturbances in secretary mechanisms of various glands is indicative of**
a) Cystic fibrosis
b) Starch intolerance
c) Pierre Robin syndrome
d) Immune deficiency syndrome (Man 97)

Ans: 37–D 38–B 39–D 40–B 41–A

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 134,548)

- Cystic fibrosis is an inherited, chronic, multisystem, life-shortening disorder characterized primarily by obstruction and infection of the airways and poor digestion.
- It is autosomal recessive and is caused by mutations in both copies of the cystic fibrosis transmembrane regulator gene *(CFTR)*.
- Cystic fibrosis is a multisystem disease involving the exocrine glands. The features are chronic duct obstruction, airway infection and maldigestion. Defective gland secretions cause water and electrolyte imbalance.

42. **A preschool child has a definite yellow pigmentation of the primary teeth. Under ultraviolet light, the teeth have a faint overall yellow-green auto fluorescence. The most likely diagnosis is** (Man 95)
    a) Amelogenesis imperfecta
    b) Hypoplasia of the primary teeth
    c) Pigmentation associated with erythroblastosis fetalis
    d) Tetracycline pigmentation

(Ref: Nevelle Oral and Maxillofacial pathology 2nd ed, p 65-66)
Intrinsic pigmentation of teeth is seen in:

Erythroblastosis fetalis	Blue-green colour of primary teeth only. It is due to excessive haemolysis of RBC. The staining occurs due to diffusion of bilirubin and biliverdin into the dentin
Porphyria	Purplish brown pigmentation. The other features are red coloured urine, hypersensitivity to light and blisters on hands and face
Cystic fibrosis	Yellowish gray to dark brown. It is due to tetracycline, which is the drug of choice in this disease
Tetracycline	Yellow or yellow-brown pigmentation in dentin and to a lesser extent in enamel that are calcifying during the time the drug is administered. The teeth fluoresce yellow under UV light

43. **Staining of teeth in cystic fibrosis is usually**
    a) Yellow in colour b) Red in colour c) Purplish in colour d) Bluish green in colour

(Ref: Nevelle Oral and Maxillofacial pathology 2nd ed, p 65-66)
This is indirectly related to the tetracycline intake as tetracyclines are used in the management of cystic fibrosis.

44. **Tetracycline stain of primary teeth occurs during the period of** (AIPG 96)
    a) Mineralization of first millimeter of dentin at dentinoenamel junction
    b) Mineralization of first millimeter of enamel at the dentinoenamel junction
    c) Mineralization of second millimeter of dentin at dentinoenamel junction
    d) Mineralization of second millimeter of enamel at dentinoenamel junction

45. **The sensitive period for tetracycline-induced discolouration in the permanent maxillary and mandibular incisors and canines is** (Kar 2009)
    a) 3 months postpartum to seventh year of life
    b) 4 months in utero to 3 months postpartum
    c) 5 months in utero to 9 months postpartum
    d) Birth to seventh year Ans is A

(Ref: Shafer Oral pathology 5th ed, p 778)
Moffitt and his coworkers have emphasized that the critical period for tetracycline-induced discolouration in the deciduous dentition (the period of mineralization of the first millimeter of dentin nearest the dentinoenamel junction) is four months *in utero* to three months postpartum for maxillary and mandibular incisors and five months *in utero* to nine months postpartum for maxillary and mandibular canines. The period for permanent maxillary and mandibular incisors and canines is three to five months postpartum to about seven years of age. The age at which tetracycline administration occurred can easily be pinpointed by reference to a chart on the chronology of odontogenesis.

46. **Tetracycline administration causes primary tooth staining**
    a) At birth b) Up to 3rd month of life
    c) Up to 6th month of life d) Up to 9th month of life

Ans: 42–D 43–A 44–A 45–A 46–D

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 135)

- The critical period for tetracycline-related discolouration in the primary dentition is 4 months in utero to 3 months postpartum for maxillary and mandibular incisors and 5 months in utero to 9 months postpartum for maxillary and mandibular canines."
- The sensitive period for tetracycline-induced discolouration in the permanent maxillary and mandibular incisors and canines is 3 to 5 months postpartum to about the seventh year of the child's life. The maxillary lateral incisors are an exception because they begin to calcify at 10 to 12 months postpartum.

47. **A 7-year-old child has a petit mal seizure in the office. The proper course of management** (AIPG 98)
   a) Administer oxygen
   b) Inject barbiturate
   c) Inject diazepam
   d) Watch until episode passes away

(NATIONAL BOARDS)

48. **Which of the following are associated with a diagnosis of slowness of mental development in a child?**
   a) Family history
   b) Metabolic disease
   c) Pregnancy and delivery history
   d) All of the above

(Ref: Clinical Pedodontics by Finn 4th ed, p 580)

Aetiological factors of mental retardation

Prenatal	Natal	Postnatal
▪ Maternal and fetal infections, e.g., rubella ▪ Genetic diseases, e.g., Down's syndrome ▪ Fetal alcohol syndrome ▪ Metabolic disorders	▪ Birth injuries ▪ Infection ▪ Cerebral trauma	▪ Cerebral trauma ▪ Meningitis ▪ Poisoning ▪ Malnutrition

Phenyl ketonuria and galactosaemia are two metabolic diseases associated with retarded mental development and they can be treated by appropriate nutrition measures.

49. **Two most common classifications for cerebral palsy are**
   a) Aetiologic and therapeutic
   b) Aetiologic and physiologic
   c) Physiologic and topographic
   d) Topographic and therapeutic

(Ref: Oski's pediatrics: principles & practice 4th ed, p 2251-2251; McDonalds Dentistry for Child and Adolescent 8th ed, p 544 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 635,636)

50. **All are seen in a child with cerebral palsy except** (AIPG 2009)
   a) Fluorosis
   b) Increased caries
   c) Increased salivation
   d) Trauma

(Ref: Pedodontics by Shobha Tandon, 1st ed, p 542)

Cerebral palsy is a group of non-progressive neuromuscular disorders caused by brain damage, which can be pre-, peri-, or postnatal in origin, and is classified according to the type of motor defect: 1. Spasticity, 2. Athetosis, 3. Rigidity, 4. Ataxia.

The oral and dental features that may be seen in children with cerebral palsy are:

1) Poor oral hygiene, increased periodontal disease, and drug-induced gingival enlargement
2) Malocclusion (increased prevalence of skeletal Class II with anterior open-bite)
3) A tendency to bruxism
4) Tongue thrust and mouth breathing
5) An increase in caries prevalence
6) Increased prevalence of anterior trauma
7) Enamel hypoplasia
8) Heightened gag reflex and peri-oral sensitivity
9) Drooling
10) Decreased parotid flow rate

51. **Most of the cerebral palsy children are** (Kar 06)
   a) Spastic
   b) Dyskinetic
   c) Ataxic
   d) Mixed

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 544 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 635, 636)

Ans: 47–D 48–D 49–C 50–A 51–A

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Common types of cerebral palsy _____ (Spasticity and athetosis)

- Cerebral is one of the most severely handicapping conditions affecting childhood. Cerebral palsy is defined as a non-progressive lesion which occurs in the developing brain before, during or after birth, leaving the child with a variety of neurological problems. 50% of these children die in infancy or require institutional care. The motor deficit is fully evident only as the child develops.
- The condition manifests itself as a number of neuromuscular dysfunctions and involves muscle weakness, stiffness, paralysis, poor balance, irregular gait, and uncoordinated or involuntary movement. There is a loss of voluntary muscle control.

52. **In a type of cerebral palsy characterized by sudden violent involuntary contraction of a muscle or group of muscles there is**
    a) Spasticity b) Ataxia c) Athetosis d) Rigidity

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 544 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 635)

- Cerebral palsy is a non-progressive lesion which occurs in the developing brain before, during or after birth.
- Its classification is mainly of anatomical and physiological type

Spasticity	▪ Seen in 70% cases ▪ Sudden violent involuntary contraction of muscles with marked hypertonicity
Athetosis	▪ Seen in 15% cases ▪ Slow, worm-like, purposeless involuntary muscle contraction ▪ Basal ganglia involved
Ataxia	▪ Disturbances in balance and equilibrium
Rigidity	▪ Marked resistance to passive movements ▪ Voluntary movements are slow and stiff

53. **Which of the following is not a type of cerebral palsy?**
    a) Spasticity b) Autism c) Ataxia d) Athetosis (MP 2011)

(Ref: Shobha Tondon 2nd ed, p 635)
Autism is not a type of cerebral palsy.

54. **A severely incapacitating disturbance of mental and emotional development that causes problem in learning, communication, and relating to others is**
    a) Autism b) Learning disability
    c) Mental retardation d) Dyslexia
    (COMED 10, AIIMS MAY 14)

(Ref: Pedodontics by McDonald 8th/543)
AUTISM—ALWAYS **U**NIQUE **T**OTALLY **I**NTERESTING **S**OMETIMES **M**YSTERIOUS
Autism is an incapacitating disturbance of mental and emotional development that causes problems in learning, communicating, and relating to others. This lifelong developmental disability manifests itself during the first 3 years of life, is difficult to diagnose, and has no cure. American Psychiatric Association, has listed autism as a neurologic disorder. It is now believed to be caused by a physical disorder of the brain.

55. **Autism is characterized by**
    a) Incapacitance of motor and mental coordination
    b) Mental retardation
    c) Delayed motor response or lack of motor skills
    d) Incapacitance of emotional and mental disturbance
    (AIPG 11, AIPG 09)

(Ref: Kaplan and Saddock Comprehensive Psychiatry 8th/3164)
Autism is an incapacitating disturbance of mental and emotional development that causes problems in learning, communicating, and relating to others.

Kanner syndrome: (Also called autism). A spectrum of neuropsychiatric disorders characterized by deficits in social interaction and communication, and unusual and repetitive behaviour. Some, but not all, people with autism are non-verbal.

Asperger's and Kanner's syndrome: Of the most common presentations of autism, Kanner's syndrome is often described as classical autism, implying low-functioning, while Asperger's syndrome is described as a high-functioning form of autism.

Ans: 52–A 53–B 54–A 55–D

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56. **Parrot-like repetitive speech is found in** (PGI 97)
a) Autism
b) Cerebral palsy
c) Marfan's syndrome
d) Mental retardation

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 543 and Shobha Tandon 1st ed, p 554)
- Autism is a disturbance of mental and emotional development that causes problem in learning, communication and is manifested in the first three years of life.
- Children have poor muscle tone, language disturbance, parrot-like repetitive speech, extreme loneliness and aggressive or destructive behaviour to fearful situations.

57. **A mother and her 4-year-old son are seated alone in a reception area with the child staring off into space, rocking and constantly twisting a strand of hair about his fingers. Upon entry of another person, the child begins to beat his fist against the side of his face and behaves as though he does not hear his mother speaking to him. This behaviour is most characteristic of** (AIIMS 03)
a) An autistic child
b) A mentally retarded child
c) First dental appointment
d) A child with a chronic seizure disorder

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 543 and Shobha Tandon 1st ed, p 554)

58. **Oral manifestations in cerebral palsy child** (Kar 97)
a) Periodontal diseases
b) High incidence of caries
c) Attrition of teeth due to bruxism
d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 545 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 638)

59. **Handicapped patients are usually taken care of by** (Kar 99)
a) Their families
b) Insurance companies
c) Sponsors of care programs
d) Themselves

It's simple as it is, no need for any references.

60. **In uncooperative child last resort is** (PGI 2009)
a) Physical restraints
b) Modeling
c) Desensitization
d) HOME

(Ref: Shobha Tondon 2nd ed, p 154)

61. **Which of the following is true about physical restraints?**
a) Papoose board is for restraining body
b) Use of restraining device is a passive method
c) Posey straps are used for restraining extremities
d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 534 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 154,155)

62. **Most commonly used restraining device for children with neuromuscular diseases**
a) Papoose board
b) Pedi wrap
c) Bean bag
d) No restraining required

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 534,535,543)
The Papoose Board has several advantages.
- Simple to store and use
- Available in sizes to hold both large and small children.
- It has attached head stabilizers and is reusable.

63. **Mouth props are used as** (MAHE 06)
a) Retractors
b) Restrainers
c) Feeding devices
d) Protectors

(Ref: Shobha Tondon 2nd ed, p 155)
1. Mouth props are used at the time of local anaesthesia to prevent child from closing his mouth. Mouth props can also be used for
2. Physical/mental handicapped child.
3. Young child who cannot keep the mouth open for a long time.

Ans: 56–A 57–A 58–D 59–A 60–A 61–D 62–A 63–B

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64. **Bean bag is used in dental chair for the following purpose** (COMED 09)
   a) Restraining body
   b) Restraining head
   c) Comfort of patient
   d) In spondylitic patients

(Ref: Shobha Tondon 2nd ed, p 154)

65. **In a child with a pre-existing cardiovalvular disease, antibiotic prophylaxis should be administered before a dental extraction so as to prevent** (Man 95)
   a) Bacterial endocarditis
   b) Congestive cardiac failure
   c) Pneumonia
   d) Rheumatic carditis

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 555 and Shobha Tandon 2nd ed, p 618-619)

66. **Antibiotic prophylaxis for bacterial endocarditis with dental manipulation should be started at least** (AP 94)
   a) 1 day before treatment
   b) 1 hour before
   c) 1 day after treatment
   d) 2 days before treatment

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 619)

67. **Which of the following is reliable is quantifying the extent of mouth breathing?**
   a) Cephalomenby
   b) Butterfly or cotton test
   c) Water holding test
   d) Rhinomanometry

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 513)
It is also called as inductive plethysmography.

68. **Increased incidence of caries is noted in open bite cases. This is because of mouth breathing and decrease in masticator scouring action in the area of open bite**
   a) Only first statement is true
   b) Only second statement is true
   c) Both statements are true
   d) Both statements are false

69. **An albino girl gets married to a normal boy, what are the chances of their having an affected child & what are the chances of their children being carriers?** (AIIMS 06)
   a) Non affected, all carriers
   b) All normal
   c) 50% carriers
   d) 50% affected, 50% carriers

- Albinism is an "autosomal recessive disorder". It occurs in **alternate generations** due to recessive nature.
- Trait appears only in siblings and not in parents. Unaffected parents may have affected offspring. 25% of the siblings of the affected individual have the trait, **not affected by sex.**

70. **An affected male infant born to normal parents could be an example of all of the following, except** (AIPG 06)
   a) An autosomal dominant disorder
   b) An autosomal recessive disorder
   c) A polygenic disorder
   d) A vertically transmitted disorder

(Ref: Harisons 16th ed, p 373)
Autosomal dominant disorder
- Trait appears in all the generations
- 50% of the offspring of the affected parents will also be affected
- Unaffected parents do not have affected offspring
- Not affected by sex. Males and females are equally affected
- In this disorder, either mother or father should express the abnormality. As it is given both parents are normal, in autosomal dominant disorder the child cannot be abnormal.
- In autosomal recessive, alternate generations may be unaffected as described in the earlier question. Polygenic disorders: These do not follow any particular mendelian pattern. This can be possible — an affected child for normal parents.
- **Vertical transmission** means transmission from parents to offspring via the egg or sperm, either as a provirus integrated in the cell's DNA or in mammals, via the placenta or during the birth process.

71. **A child with a small head, minor anomalies of the face including a thin upper lip, growth delay, and developmental disability can have all of the following, except** (AIPG 06)
   a) A chromosomal syndrome
   b) A teratogenic syndrome
   c) A mendelian syndrome
   d) A polygenic syndrome

Ans: 64–A 65–A 66–B 67–D 68–C 69–A 70–A 71–C

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Various internet references

- Chromosomal and polygenic syndromes are associated with many genes abnormalities and so above-said malformations can be possible.
- Teratogenic syndrome can also be a possibility because malformations can be due to abnormal growth pattern.
- Mendelian syndrome is not a possibility because this deals with only one gene abnormality and one gene cannot represent so many characters.

72. **In a family, the father has widely spaced eyes, increased facial hair and deafness. One of the three children has deafness with similar facial features. The mother is normal. Which one of the following is most likely pattern of inheritance in this case?**
   a) Autosomal dominant
   b) Autosomal recessive
   c) X-linked dominant
   d) X-linked recessive
   (AIPG 06)

Various internet references

Autosomal recessive can be ruled out as described earlier since the character is present in alternate generations instead of successive generations.

X-linked recessive: Males are most commonly affected. Affected father doesn't have affected son since the gene is not passed from father to son. All daughters of the affected father will receive the gene (X-linked trait) and in turn only the grandsons are affected through the daughters (*In the above case the mother should be carrier but she is normal). No reference to the sex of the offspring is also given.*

X-linked dominant: females are invariably affected. Her mother is normal, so this pattern can also be ruled out.

Only option left is autosomal dominant and hence it is the correct choice. In AD disorders, individuals are affected in successive generations; the disease does not occur in the offspring of unaffected individuals.

73. **Sudden cessation of the ongoing conscious activity without convulsive muscular activity or loss of postural control typically occurring in children occurring several times in a day with no involvement of aura is known as-----(Seizure commonly seen in children with no aura is)**
   a) Grand mal epilepsy
   b) Infantile spasm
   c) Petit mal
   d) Tonic-clonic seizures
   (AIPG 10, 07)

(Ref: Harrison-16th ed, p 2858; KDT-5th ed, p 369)

The most common type of epilepsy in children is——— (AIPG 2007, AIIMS 2007) (Petit mal)

74. **In which year did WHO start medical services for the handicapped children**
   a) 1971
   b) 1981
   c) 1991
   d) 2001

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 627)

75. **Radiograph of choice in handicapped child is**
   a) Occlusal
   b) Bitewing
   c) IOPA
   d) Panoramic
   (Maharashtra 2011)

(Ref: Textbook of Oral Radiology by Ghom 1st ed, p 490)
Panoramic radiographs are easy to obtain in these cases as there might be movement of the intraoral films and the intraoral method might cause discomfort to them.

76. **The most commonly recommended tooth brushing technique for handicapped patients is**
   a) Horizontal scrub
   b) Vertical scrub
   c) Leonards
   d) Stillman's sulcular

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 629)
Favoured because of the ease with which it can be performed.

77. **Which type of malocclusion is generally observed in patients with spastic type of cerebral palsy**
   a) Class I
   b) Class II div 1
   c) Class II div 2
   d) Class III

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 641)
While some studies have reported class II division 1 malocclusion to be common in spastic CP children, many have reported that these children usually exhibit a class II division 2 malocclusion with unilateral or bilateral cross bite.

Ans: 72–A 73–C 74–B 75–D 76–A 77–C

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78. **The primary cause of death in patients with leukemia followed by bleeding is**
a) Liver failure b) Kidney failure
c) Pulmonary dysfunction d) Infection

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 645)
The primary aim is to treat the child with prevention and control of oral infection, haemorrhage and inflammation.

79. **The most common type of diabetes mellitus is**
a) Type 1 b) Type 2 c) Type 3 d) Type 4

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 646)
- The most common type being type 2 also known as NIDDM or Non-Insulin Dependent DM
- Previously referred to as maturity onset diabetes
- It is most common and accounts for 80-93% of all DM cases

80. **At what levels of glucose in the body does a case of diabetic (ketoacidosis) coma developes**
a) 50 to 100 mg/dL b) 100 to 200 mg/dL
c) 200 to 300 mg/dL d) 300 to 600 mg/dL

(Ref:Shobha Tandon Textbook of Pedodontics 2nd ed, p 648)
- It develops when glucose levels are between 300 to 600 mg/dL when ketones are present in urine or when blood pH is below 7.36
- Case of hyperglycemia develops when blood glucose levels rise over 11.1 mmol/L (fasting 8.0 mmol/L)

Remember: If the child is unconscious and there is difficulty in diagnosing between hypoglycaemia and hyperglycaemia then the management should be for hypoglycemia emergency which is a life-threatening condition.

81. **The use of penicillin in a patient with asthma is**
a) Contraindicated b) Low safety
c) Can be given safely d) Amount given depends on patient weight age

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 649)
Use of aspirin, NSAID and penicillin is contraindicated in patients with asthma.

82. **'Chicken wire' appearance of alveolar bone is seen in disorder of**
a) Cystic fibrosis b) Diabetes c) Thalassaemia d) Leukaemia

(Ref:Shobha Tandon Textbook of Pedodontics 2nd ed, p 653)
Also seen are delayed pneumatization of sinuses and hair-on-end appearance.

83. **POPOVIC in 1983 made a breakthrough with identification of a virus responsible for causation of AIDS. The virus responsible is**
a) HTLV 1 b) HTLV 2 c) HTLV 3 d) HTLV 4

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 667)

84. **Which mode of anaesthesia is contraindicated in children with haemophilia**
a) IV b) IM c) SC d) Infiltration

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 672)

85. **Mohanlal age 21 years is suffering from a disease which includes cleft lip along with short neck and an missing cervical vertebra; which syndrome he may be suffering from**
a) Klippel Feil syndrome b) Wardenburg's syndrome
c) Pierre Robin syndrome d) Vander Woude's syndrome

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 676)
Wardenburg's syndrome includes abnormalities of pigmentation of hair, iris and skin as well as deafness.

86. **The denture-bearing mucosa in children as compared to adults is**
a) Thinner and poorly circulated b) Thicker and poorly circulated
c) Thinner and well circulated d) Thicker and well circulated

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 704)

Ans: 78–D 79–B 80–D 81–A 82–C 83–C 84–B 85–A 86–C

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87. **In paediatric prosthetic procedures which impression should be done first while constructing dentures**
   a) Upper first and then of lower jaw
   b) Lower first and then upper jaw
   c) Either can be done according to dentist preference
   d) Either can be done according to patient convenience

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 706)
Impression making is done first for lower jaw and then upper because gagging is frequently encountered in upper jaw.

88. **The green stains frequently seen in children's teeth are caused by**
   a) Chromogenic bacteria
   b) Materia alba
   c) Enamel defects
   d) Dentin defects

(COMED 05, AIIMS 10)

(Ref: Shafer's 5th ed, p 523)
The green and orange stains are due to chromogenic bacteria. It is found due to poor oral hygiene. It is seen in gingival third of tooth.
The black stains are protective in nature and free of caries.
Chromogenic bacteria – *Serratia marcescens, Flavobacterium lutescens*
Chromogenic fungi – *Aspergillus* and *Pencillium*.
Black stains – Actinomyces

89. **A disease that only affects formation and eruption of tooth but does not cause hypoplasia is:**
   a) Hypoparathyroidism
   b) Hyperparathyroidism
   c) Rickets
   d) Syphilis

(COMED 05)

(Ref: Shafer's 4th ed, p 642 Oral path.)
Although many reports are found in literature linking rickets with enamel hypoplasia, infantile rickets does not always result in hypoplastic enamel.

I. Match the clinical features with their disease

1. Tender, painful, unilateral or bilateral swelling of salivary glands	a) Dentinogenesis imperfecta with osteogenesis imperfecta
2. Poorly formed dentinoenamel junction. Dark brown coloured tooth. Frequently broken bones associated with blue sclera	b) Parotitis (or) mumps
3. Abnormal resorption of primary teeth, delayed eruption of permanent tooth and a large tongue	c) Scarlet fever
4. Permature exfoliation of primary teeth, premature eruption of permanent teeth and large tongue	d) Hypothyroidism (or) cretinism
5. Fever, acute, painful ulcerations, sore mouth, lymphadenopathy	e) Hyperthyroidism
6. Exanthematous fever and strawberry tongue	f) Acute herpetic gingivostomatitis

Ans: 1-b, 2-a, 3-d, 4-e, 5-f, 6-c

II. Match the manifestations with the diseases

1. Low caries incidence, high rate of periodontal diseases Retarded eruption and delayed exfoliation of teeth	a) Down's syndrome
2. Congenital anodontia and perspiration. But salivary glands not affected	b) Ectodermal dysplasia
3. Brown discolouration of teeth, malnutrition, steatorhoea, disturbances in functions of exocrine glands	c) Cystic fibrosis
4. Multiple supernumerary teeth unerputed with open fontanella and abnormal development of clavicles	d) Cleidocranial dysostosis
5. Causes both hypocalcified as well as irregular but well-calcified enamel	e) Amelogenesis imperfecta

Ans: 1-a, 2-b, 3-c, 4-d, 5-e

Ans: **87–B** **88–A** **89–C**

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III. Match the cerebral palsies with features

1. Rigidity
2. Ataxia
3. Athetosis
4. Spasticity

a) Slow worm-like constant, involuntary uncontrollable and purposeless movement
b) Hypertonic muscles that show marked resistance to passive motion
c) Disturbance of balance and equilibrium (disturbances of kinesthetic and balance sense)
d) Series of involuntary muscular contractions which are irregularly spaced and have no purpose

Ans: 1-b, 2-c, 3-a, 4-d

HIGH-YIELD FACTS

1. **The teeth to be first involved in nursing caries _____** [Maxillary central incisor]
2. **The drug which is used in cystic fibrosis resulting in tooth discolouration _____** [Tetracycline]
3. **Green stains seen on primary teeth usually are result of _____** [Chromogenic bacteria]
4. **_____ stains are associated with low caries prevalence** [Black]
5. **Common type of haemophilia is _____** [Haemophilia A]
6. **Most commonly used antibiotic in child allergic to penicillin is _____** [Erythromycin]
7. **Prophylactic antibiotic coverage for a child with a history of rheumatic fever is precaution against developing _____** [Subacute bacterial endocarditis]
8. **Common antagonist of meperidine used in emergency is _____** [Naloxene]
9. **_____ percentage of population having gingivitis at age 1–13 years** [90%]
10. **_____ percentage of population having periodontitis by age 18 years** [25%]

RESTORATIVE PROCEDURES

1. **Properly contoured restoration for primary teeth helps mainly in** (PGI 96)
   a) Maintaining vertical dimension by preventing overeruption of teeth
   b) Maintaining interarch relationships
   c) Maintaining proximal contacts and length of dental arch
   d) All of the above

   (Ref: National Boards July 1981 q no 1)
   - One of the aspects of preventive orthodontics is restoration of various lesions.
   - A restored primary teeth is considered to be a best space maintainer

2. **The most important modification of amalgam restorations on primary teeth**
   a) Rubber dam application
   b) Cavity preparation
   c) Placement of matrix band
   d) Use of zinc-free alloy

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 371 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 323-324)
   Cavity preparation should be modified in primary teeth keeping in mind the fact that enamel cap of primary teeth is only half that of permanent tooth.

Ans: 1–C 2–B

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3. **Class II cavity preparation for Amalgam restoration in primary teeth requires**
   a) More buccolingual extension
   b) More gingival
   c) More cervical
   d) More mesiodistal extension

(Ref: Pinkhum 3rd ed, p 315)
The **buccolingual extensions** of the proximal outline are directed by the contact area of the adjacent tooth. The primary teeth have broad proximal contact areas compared to permanent teeth.

4. **Ideal pulpal depth of amalgam preparations in primary molars**
   a) Just 0.2 mm into dentin
   b) 1 mm into dentin
   c) End at dentinoenamel junction
   d) Never into the dentin

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 323)
Never should a pulpal floor end at dentinoenamel junction. It should extend 0.2 to 0.5 mm in dentin.
REMEMBER: Ideal pulpal floor depth is 0.5 mm into dentin or approx 1.5 mm from the enamel surface (Pediatric dentistry infancy through adolescence by Pinkham 4th ed, p 346)

5. **A gingival wall is difficult to obtain in primary molar when it extends too far gingivally in class II cavities because**
   a) Facial pulp horn may be exposed
   b) Inclination of cervical enamel rods occlusally
   c) Of marked cervical constriction
   d) Proximal contact is broad and flat

(Man 97, AP 94)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 369)
- Gingival wall is difficult to obtain in deep Class II cavities due to marked cervical constriction.
- A bevel in gingival wall is not needed in Class II cavities of primary teeth because the enamel rods incline occlusally at gingival third.

6. **In primary teeth, gingival seat in a Class II preparation is**
   a) Left unbevelled
   b) Beveled so as to remove caries
   c) Beveled so as to remove unsupported enamel rods
   d) Beveled same as permanent tooth

(PGI 95, 09)

(Ref: Pediatric dentistry infancy through adolescence by Pinkham 4th ed, p 347 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 323-324)
- Gingival wall should be flat, left unbevelled and all unsupported enamel should be removed (Pinkham).
- In permanent teeth the gingival seat is beveled at 15–20° to remove the unsupported enamel rods (resistance form) as the enamel rods run cervically in the gingival region.
- The enamel rods have an occlusal direction in the gingival region in primary molars. So the gingival wall is left unbevelled as there are no unsupported enamel rods and rather should follow the enamel rod inclination..

7. **In primary molars when proximal portion of Class II cavity preparation extends deep gingivally, a satisfactory gingival seat is not obtained because**
   a) Enamel rods extend occlusally in gingival third
   b) Buccal and lingual surface converge occlusally
   c) Primary teeth have marked cervical constriction
   d) All the above

(COMED 05)

(Ref: Shobha Tandon Pedodontics p 289)

8. **The proximal walls of a class II cavity on a deciduous molar**
   a) Follow directions of enamel rods
   b) Converge toward occlusal surface
   c) Diverge toward occlusal surface
   d) Undermine enamel which is very thin

(AIPG 01, AIIMS 99)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 372 and Shobha Tandon 2nd ed, p 324)
The box should however converge occlusally with the buccal and lingual wall paralleling the external tooth surface.

Since the enamel rods, at the cervical area of the tooth, are oriented occlusally the gingival seat should not be beveled, rather should follow the enamel rod inclination.

Ans: 3–A 4–A 5–C 6–A 7–C 8–B

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9. **Facial and lingual walls of proximal box of a Class II cavity in primary molar should be**
   a) Parallel to external walls
   b) Should be rounded
   c) Parallel to each other
   d) Flared as much as possible

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 372 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 324)
The buccal and lingual walls necessarily diverge toward the cervical region, following the general con-tour of the tooth

10. **Most common cause of failure of class II restoration in children is** (AIPG 97)
   a) Margin failure
   b) Proximal box fracture
   c) Inadequate width
   d) Too much width

(Ref: McDonalds Dentistry for Child and Adolescent 5th ed, p 412)
Most common cause of failure of Class II restoration in primary teeth is due to proximal box fracture while in permanent teeth, it is due to marginal failure.

11. **A Class II amalgam restoration does not require a gingival bevel on a primary molar because enamel rods in this area**
   a) Incline occlusally
   b) Incline gingivally
   c) Are horizontal
   d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 324)

12. **The pulp horn that is most likely to be exposed during cavity preparation on deciduous molars is** (PGI 03, AIPG 01,02,07, Kar 10)
   a) Mesiobuccal of first molar
   b) Distobuccal of first molar
   c) Mesiobuccal of second molar
   d) Distobuccal of second molar

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 324)
Mesial **cavity** in any deciduous **molar** is **most likely** to involve the **pulp.**
- The mesiobuccal pulpal horn of the primary first molars occupies a prominent portion of the pulp chamber.
- It is the largest pulp horn in both the maxillary and mandibular first primary molar and is commonly exposed during cavity preparation.

13. **Cavity preparation in deciduous molars differs from that in permanent molars especially with reference to the** (MAHE 95, AIPG 03)
   a) Size of primary molars
   b) Thickness of enamel and dentin
   c) Direction of the roots below the cementoenamel junction
   d) Direction of the enamel rods at the cervical region

(Ref: Donalds Dentistry for Child and Adolescent 8th ed, p 369-370 and, Shobha Tandon Textbook of Pedodontics 2nd ed, p 304)
- The dentin also has less bulk or thickness, and so the pulp is proportionately larger than that of the permanent teeth.
- The enamel of the primary teeth is thin but of uniform thickness. The enamel surface tends to be parallel to the dentinoenamel junction.
- The primary teeth have thin enamel and dentin with large pulp chambers. The thickness of enamel is about 1 mm in primary teeth whereas it is about 2–3 mm in permanent teeth.

14. **Modified Class III preparation for amalgam is characterised by**
   a) Lack of aesthetics
   b) Lingual dovetail
   c) Straight axial walls
   d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 374 and, and Shobha Tandon Textbook of Pedodontics 2nd ed, p 324)

15. **During operative procedures child is positioned in**
   a) Semireclination b) Full reclining c) Pronation d) Supination

(Ref: Clinical Pedodontics by Finn 4th ed, p 138 and Mc Donalds Dentistry for Child and Adolescent 8th ed, p 531, Fig 23.4)

Ans: 9–A 10–B 11–A 12–A 13–B 14–B 15–B

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Children operated in a reclining position are not only comfortable but are also easy to control if they try to move suddenly during a clinical operative procedure.

16. **Main advantage of rubber dam in pedodontic practice**
   a) Aids in managing child behaviour
   b) Reduces necessity for careful caring of gingival margins
   c) Reduces the need for anaesthesia
   d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 367 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 317)

- A few explanatory words and reference to the rubber dam as a "raincoat" for the tooth or as a "Halloween mask" helps allay the child's anxiety.
- It has been found through experience that apprehensive or otherwise uncooperative children can often be controlled more easily with a rubber dam in place.
- Because the rubber dam efficiently controls the tongue and the lips, the dentist has greater freedom to complete the operative procedures.
- Rubber dam is thought to provide a sense of security to children during operative procedures and helps in child management.

17. **The thickness of rubber dam for children**
   a) 6 x 6″ b) 3 x 3″ c) 5 x 5″ d) 8 x 8″ (AP 02)

(Ref: Pediatric dentistry infancy through adolescence by Pinkham 4th ed, p 344)
5 x 5″ – Rubber dam size for children
6 x 6″ – Adult size rubber dam
The framework for rubber dam application is called as Young's frame.

Contraindications:
- A child with upper respiratory infections and nasal obstruction
- Presence of some fixed orthodontic appliance
- Recently erupted tooth
- Patients with allergy to latex

18. **First widely used rubber dam frame was made up of metal and known as**
   a) Young's frame b) Nygard-Ostby frame
   c) Quick dam (handidam) frame d) Fernauld's frame

(Ref: Rubber dam in clinical practice by Reid, Callis and Patterson 1st ed, p 29)
- Fernauld's frame is metal one, not readily available now.
- Only metal frame available now are versions of young's design.
- Plastic frames are preferred for endodontic purpose due to their radiolucent nature and are used now almost universally.

19. **Which among them is a rubber dam metal frame**
   a) Star visiframe b) Quick dam
   c) Nygard-Ostby frame d) Young's frame

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 318 and Rubber dam in clinical practice by Reid, Callis and Patterson 1st ed, p 29)
- **QUICK DAM** or **HANDIDAM** frame has built-in plastic frame.
- **LE CADRE ARTICULE** rubber dam frame is a recent advance, developed by **G.Sauveur** which facilitates endodontic radiography
- **INSTIDAM** is simple, effective and pre-punched frame
- **DRY DAM** is useful to quickly isolate anterior teeth

Nygaard-Ostby frame is non metal shield-shaped **frame** made up of nylon and is developed by **Nygaard-Ostby.**
One advantage of non-metal frame works is that they do not block important areas from X-rays, **do interfere with the path of x-rays.**
Non-metal frames are also known as **radiolucent frameworks.**

20. **Which rubber dam is considered ideal to use in paediatric endodontics**
   a) Heavy dam b) Medium dam
   c) Extra heavy dam d) Thin dam

Ans: 16–A 17–C 18–D 19–D 20–B

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 322)

- Heavy and extra heavy dam used for restorative purpose.
- Medium is ideal for endodontic work because it retracts better than thinner one and easier to place than heavier type.

21. **Which among them is first heatless liquid rubber dam**
    a) Kool dam b) Cool dam c) Cushees d) Hat dam

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 323)

It is formulated to eliminate problems associated with paint on dam material.

22. **The rubber dam is particularly adaptable to the primary second molar because** (AIPG 02)
    a) Occlusocervical height favours its retention
    b) Cervical constriction of the crown favours its retention
    c) Mesiobuccal bulge favours its retention
    d) Smaller diameter of the crown (as compared to permanent teeth) favours its retention

(Ref: National Boards Ortho-Pedo April 1979, Question no 23)

23. **14A Ivory rubber dam clamp is universal because**
    a) It allows for retention on partially erupted teeth
    b) It is made of precious noble metal
    c) It adopts to all the anatomical contours
    d) All of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 318)

Commonly used clamps for paediatric use	
a) Partially erupted permanent molar	154A, 8A ivory
b) Fully erupted permanent molar	14, 8 ivory
c) Second primary molar	26, 27-SS white, 3 ivory
d) First primary molar, bicuspids and permanent canines	2,2A ivory
d) Primary incisors and canines	0 ivory

24. **Universal clamp used for stabilising rubber dam during mixed dentition stage**
    a) 5.5 # 18 b) 5.5 # 206 c) 5.5 # 14 d) None of the above

25. **The APPCO clamp for rubber dam application is used exclusively in pedodontic practice because of**
    a) Automatically adjusts to conform to anatomy and size of tooth
    b) Provides great distal access
    c) Has four point contact giving positive retention
    d) All of the above

26. **How many minimum teeth are isolated when a rubber dam is placed for preparation of the mandibular second primary molar on a eight-year-old child?**
    a) All the teeth of the quadrant
    b) Second primary only
    c) Two primary molars and cuspid
    d) Two primary molars and first permanent molar

(Ref: Pediatric dentistry infancy through adolescence by Pinkham 4th ed, p 344)

- For single class I or class V restorations, only the tooth being restored must be isolated
- If interproximal lesions are being restored, at least one tooth anterior and one tooth posterior to the tooth being restored must be isolated.

27. **Which of the following types of matrices is frequently used on the teeth of the child?**
    a) Tofflemire b) Graimferential c) Custom F band d) Ivory

28. **Recommended etching time for primary teeth**
    a) 15–30 sec b) 30–60 sec c) 60–90 sec d) 90–120 sec

(Ref: Craigs Restorative Dentistry 11th ed, p 276)

Ans: 21–A 22–B 23–A 24–A 25–D 26–B 27–C 28–D

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- Deciduous enamel generally contains some prismless enamel that has not yet worn away.
- It takes longer to etch through this outer layer and to reveal characteristic etch patterns on the underlying prism enamel.
- It is therefore commonplace to recommend 120 seconds of acid etching for primary enamel.
- Recommended time for etching permanent teeth is 60–90 seconds.
- Pit and fissure are most effective in recently erupting permanent teeth while least effective in primary teeth.

REMEMBER: Etching time should also be increased in cases of hypoplastic enamel cases.

29. **You are working with pit and fissure sealants after etching the enamel surface, field is contaminated by saliva, you would like to**
    a) Wash off the saliva and dry the tooth
    b) Wash off, dry the tooth and reetch the surface
    c) Wash off the saliva and proceed as usual
    d) Dry the tooth surface and proceed as usual

    (Ref: Craigs Restorative Dentistry 11th ed, p 274,McDonalds Dentistry for Child and Adolescent 8th ed, p 49 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 260, National Boards)

30. **Pit and fissure sealants are bound to tooth surface by**
    a) Chemical bond
    b) Mechanical retention
    c) Adhesive bond
    d) Chemical and mechanical bond (PGI 01)

    (Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 238)
    Pit and fissures sealants retain primarily by micromechanical retention.

31. **Which of the following is least likely to be used as a pit and fissure sealant?**
    a) Cyanocrylates
    b) Urethane
    c) Gold alloy
    d) BIS-GMA (COMED 05)

    (Ref: Shoba Tandon 2nd ed, p 234)

32. **Fourth generation light cured pit and fissure sealants are those**
    a) Cured by UV light
    b) Cured by visible light
    c) Cured by infrared light
    d) Which release fluorides

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 259)
    MITCHELL AND GORDON IN 1990 differentiated sealents under following ways
    A. According to polymerization methods
    1. Self activation
    2. Light activated
        1st generation – UV light
        2nd generation – self cure
        3rd generation – visible light
        4th generation – fluoride releasing

    B. Resin syatems
    - BIS-GMA
    - Urethane acrylate

    C. Filled and unfilled
    D. Clear or Tinted

33. **GIC is done for primary teeth mainly because of**
    a) Its colour
    b) Its adhesion to dentin and enamel
    c) Fluoride release
    d) All of the above (AIPG 2K)

34. **Prophylactic restoration (odontotomy) was introduced by**
    a) Hyatt
    b) Bodecker
    c) Buonocore
    d) Herman (Kar 06)

    (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 232 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 257)

35. **Which of the following procedures is replaced by the use of occlusal sealants?**
    a) Occlusal amalgam restoration
    b) Topical fluoride restoration
    c) Prophylactic odontomy
    d) All the above. (COMED 05)

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 233)

Ans: **29–B** **30–B** **31–C** **32–D** **33–C** **34–A** **35–C**

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- Prophylactic odontomy proposed by Hyatt. In this technique fissures are filled with silver or copper oxy phosphate cement as soon as the teeth erupt into the oral cavity. Later when they are fully erupted, preparing a small occlusal cavity and filling it with amalgam.
- Fissure sealants are pits and fissures that occur on occlusal surfaces of molar and premolar teeth occluded by application of fluid materials which are then polymerized.

36. **Conservative restorative resin is another name given to** (BHU 2009)
   a) Preventive Resin Restoration
   b) Prophylactic Odontotomy
   c) Pit & Fissure Sealant
   d) GIC Restoration

(Ref: Hiremath Community dentistry 1st ed, p 422)
Pit and fissure sealants are used as a **preventive measure** to seal the fissures that are prone to caries. In case if already small caries lesion sets in, minimum intervention (air abrasion technique) is required. It includes the conservative cavity preparation as compared to amalgam. Small composite or GIC restoration referred to as "preventive resin restoration" is used in this case.

37. **Which of the following is not true of Caridex or Carislov** (PGI 2006)
   a) It is a chemicomechanical means of caries removal
   b) Has a slight acidic pH
   c) Contains Hypochlorite
   d) Has leucine, lysine and glutamic acid

(Ref: Essentials of operative dentistry by Laxminarayan 1st ed, p 181)
Caridex contains butyric acid, whereas **Carislov** contains the above mentioned three amino acids.
Both contain hypo which is a weak alkaline and the ultimate pH is alkaline in nature. The acidic solution is useful for etching the dentin.
An alternative for conventional caries removal and cavity preparation was the introduction of the chemo-mechanical caries removal system, **Caridex** or **Carisolv**.
In 1976 Goldman M and Kronman J reported on the effects of a **N-monochloro-DL-2 aminobutyrate (NMAB)** solution used as a caries removal agent.

Caridex	Carisolv
This system was based non-specific proteolytic effect of sodium hypochlorite. The main component is **N-monochloro-dl-2-aminobutyric acid** of sodium hypochlorite has been increased **(NMAB)**. (The apparent mechanism of action is based on chlorination of partically degraded collagen of Dentin. The hydroxyproline is converted to pyrrole-2-carboxylic acid).	Main difference compared to caridex is that butyric acid has been replaced with three amino acids **(glutamic acid, leucine and lysine),** and the concentration of sodium hypochlorite is also low.
Main drawbacks are low efficiency, short shelf life and the time taken and large volume of solution	It contains methyl cellulose to increase viscocity and a dye **EYTHROSIN** The agent is claimed to soften carious dentine by chemically disrupting the denatured collagen which is then scraped away with specially-designed hand instruments
Caridex is formed through the reaction of two separate components supplied: **Caridex solution I** (0.1 M Butyric acid, 0.1 M NaOCl 0.1 M NaOH) **Caridex solution II** (1% sodium hypochloride in weak alkaline solution) The Caridex delivery system includes a NaOCl pump, a heater, a solution reservoir and a handpiece to hold the applicator tip.	**Carisolv** was composed of two solutions: **Red gel (solution A)** contains 0.1 M amino acids (l-glutamic acid, l-leucine and l-lysine), NaOH, NaOCl, erythrosine and purified water **Clear liquid (solution B)** contains 0.5% NaOCl w/v The two separate gels, which had been stored at 48C before use were allowed to return to room temperature prior
Resultant pH is 12	Resultant pH is 11
20 minutes application time	**30–60 seconds**

Ans: **36–A** **37–B**

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Merit

- Used without a local anaesthetic and it may have particular use in the management of patients who fear an injection
- No use of burs
- It is self-limiting and it is not possible to take away much tooth structure

Demerits: Technique is more time consuming than the use of burs and excavators
Carisolv application did not change the hardness of the normal dentin or the inner layer of carious dentin; it decomposes degenerated collagen, which causes selective softening of the outer layer of the carious dentin. Carisolv is more effective in removal of the smear layer and smear plugs to primary dentin than to permanent dentin

38. **Which of the following is not present in carislov**
    a) Leucine
    b) Glutamic acid
    c) Glycine
    d) Lysine

    (AIIMS May 09 PGI June 07)

    (Ref: Essentials of operative dentistry by Laxminarayan 1st ed, p 181)
    Carisolv does not contain glycine.

39. **Caries excavation using carisolv**
    a) Conventional preparation design
    b) Clinical separation of sound and carious dentin
    c) Clinical separation of primary and secondary dentin
    d) Conventional rotary method of cavity preparation

    (Ref: Essentials of operative dentistry by Laxminarayan 1st ed, p 181)
    A chemical-mechanical approach to caries excavation known as **Carisolv**. **Carisolv** gel is applied to the **caries** affected area of the dentine. It softens the diseased portion of the tooth. The soft **caries** is removed with hand instruments and the cavity restored with a glass ionomer restoration.

40. **Carislov. True is**
    a) To stain smooth surface caries
    b) To stain the specimen histopathologically
    c) To stain the carious dentin in primary teeth
    d) To stain enamel caries

    (PGI 09)

    (Ref: Essentials of operative dentistry by Laxminarayan 1st ed, p 181)
    Carislov stains the carious dentin.
    Carisolv stains the degenerated collagen, which caused selective softening of the outer layer of the carious dentin. Carisolv was more effective in removal of the smear layer and smear plugs to primary dentin than to permanent dentin.

41. **Percentage of NaOCl in carisolv is**
    a) 0.5–1.0%
    b) 2.0–4.0%
    c) 5.0–7.0%
    d) 15.0–17.0%

    (Ref: Essentials of operative dentistry by Laxminarayan 1st ed, p 181)

42. **Where was the atraumatic restorative treatment first introduced?**
    a) Tanzania
    b) China
    c) USA
    d) New Zealand

    (COMED 07)

    (Ref: Community dentistry by Sobhan, 1st, 435)
    Atraumatic restorative treatment was pioneered in the mid 1980s in Tanzania. **American Association of Pediatric Dentistry:** Alternative restorative treatment (modified in 2004), formerly known as atraumatic restorative treatment, is defined as "a dental caries treatment procedure involving the removal of soft, demineralized tooth tissue using hand instrument alone, followed by restoration of the tooth with an adhesive restorative material, routinely **glass ionomer**". This technique may be modified by the use of rotary instruments. It has been endorsed by the World Health Organization and the International Association for Dental Research as a means of restoring and preventing caries. ART may be used to restore and prevent caries in young patients, uncooperative patients, or patients with special health care needs or when traditional cavity preparation and/or placement of traditional dental restorations are not feasible.

43. **The ART (atruamatic restorative treatment) was invented by**
    a) Frencken
    b) McDonald
    c) Eversole
    d) McLevan

    (PGI 2006)

    (Ref: Improving oral health for the eldenly by Lamster & Takamora 2nd ed, p 277)

Ans: 38–C 39–B 40–C 41–A 42–A 43–A

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Atraumatic Restorative Treatment was pioneered in the mid 1980s in Tanzania (according to some sources—Simultaneously in Zimbabwe also).
Prof. JE Frencken invented ART.
The **term** ART (Atruamatic Restorative treatment) was coined by **McLean.**
ART was officially endorsed by the World Health Organization in 1994.
Its inventor, **Prof. JE Frencken** introduced ART, to mainly academic dental institutions in South Africa in 1996.
A textbook on Atraumatic Restorative Treatment for Dental Caries has been written by JE Frencken and Chris Holmgren (1999).
American Association of Pediatric Dentistry: Alternative restorative treatment (modified in 2004), formerly known as atraumatic restorative treatment, is defined as "a dental caries treatment procedure involving the removal of soft, demineralized tooth tissue using hand instrument alone, followed by restoration of the tooth with an adhesive restorative material, routinely **glass ionomer**."
Indications and Contraindications for ART
In general, ART is carried out only in the small cavities (involving dentine) and in those that are accessible to hand instruments.
ART is not used when:
1. There is an abscess (swelling) near the carious tooth.
2. The pulp of the tooth is exposed.
3. Carious cavity not reachable with hand instruments.

44. **The term ART (atraumatic restorative treatment) was introduced by**
a) Mclean b) Mcdonald c) Mckay d) Mclevan

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 383 and Textbook of Operative Dentistry By Nisha Garg and Amit Garg 1st ed, p 398)
Previously ZoE was used. Now glass ionomer is used.

Year	Scientist	Description
1972	Wilson and kent	Development of GIC (U.K.) and ASPA (U.S.A)
1980	Simmons	Miracle mix
1984	Hunt & Knight	Tunnel preparation
1985	Mcclean	Sandwitch technique
1987	Mcclean & Gasser	Cermet
1994	Mcclean	Atraumatic restorative treatment (ART)

45. **The procedure where carious tooth tissue is removed by hand instruments, and the cavity is restored with a restorative material that 'sticks' to the tooth is**
a) Preventive resin restoration b) Atraumatic restorative treatment (Kar 09)
c) Type 4 restoration d) Pit & fissure sealants

(Ref: Shobha Tondon 2nd ed, p 346 and Donald's 8th ed, p 383)

46. **The technique known as "scoop and fill" is applied in conjunction with what restorative procedures in paediatric dentistry?**
a) Prophylactic odontomy b) Fissure eradication
c) Preventive resin restoration d) Atraumatic Restorative Treatment

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 662)
Used with materials like Fuji IX (self-curing), Fuji II (light cured) and Ketac nano (light cured)

47. **Prepmaster air abrasion system used in kinetic cavity preparation (KCP) uses which powder for cavity preparation**
a) Aluminium oxide b) Calcium fluoride c) Silica d) Sodium sulphite

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 325)
- Disposable single use air abrasion instrument
- Each instrument has pre-filled 7.25 g of aluminium oxide powder
- The standard 27-microns abrasive is three-fourths the size of a human hair.

Ans: 44–A 45–B 46–D 47–A

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- Can perform all classes of cavity preparation apart from surface etching for cement removal and bond preparation

48. **Which of the following statements regarding dentine forming cells is true**
   a) Dentin forming cells are functionally active by approx. 360 days in primary and 700 days in permanent dentition
   b) Dentin forming cells are functionally active by approx. 700 days in primary and 360 days in permanent dentition
   c) Dentin forming cells are functionally active by approx. 180 days in primary and 350 days in permanent dentition
   d) Dentin forming cells are functionally active by approx. 350 days in primary and 180 days in permanent dentition

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 306)
Dentin forming cells are functionally active by approx. 360 days in primary and 700 days in permanent dentition.

49. **Who introduced Class VI lesion in the original GV Black's classification for cavity preparation**
   a) Finn b) Charbeneu c) Simon d) Avery

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 309)
- Simon introduced Class VI lesion in the original GV Black's classification
- **Finn** modified Black's cavity preparation for primary teeth

50. **One of the recent advances in porcelain veneers which can be made as thin as contact lens and can be placed without causing painful removal of sensitive tooth structure is**
   a) Veneers b) Laminates c) Lumineers d) Perineers

(Ref: Shobha Tandon Textbook of Pedodontics 2nd Ed Pg no 347)
- Introduced as a cosmetic solution for permanently stained,chipped,discoloured and misaligned teeth
- Also can be used to revitalize old crown and bridge work

51. **Which of the following materials is referred to as "smart material"**
   a) ACP composites b) PCP composites
   c) Flowable composites d) Packable composites

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 352)
Amorphous calcium phosphate (ACP)
- Both preventive as well as restorative property
- Antecedent in biological formation of hydroxyapatite
- Releases calcium and phosphate ions when surrounding pH falls below 5.8, i.e., at pH where tooth dissolution starts
- Neutralize the acid and buffer the pH
- Reinforces tooth structure
- Long shelf life
- Does not depend on patient compliance

HIGH-YIELD FACTS

1. **The pulp horn most likely to be exposed during restorative procedures on primary molars** [mesiobuccal horn of first molar]
2. **The first introduced pit and fissure sealants are _____** [Cyanoacrylate]
3. **Chemical removal of caries (or) CARIDEX utilises _____** [N-Mono-solution amino butyric acid]
4. **Average life of silicate cements is _____ years** [Four]
5. **Percentage of fluoride in silicate cements is _____** [15%]

Ans: 48–A 49–C 50–C 51–A

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6. **Breast-feeding should stop at _____ age of child** [1½ years]
7. **First oral pain in children is due to _____** [Teething]
8. **A stainless steel crown for primary molars should extend _____ mm below gingival crest** [1 mm]
9. **In preparation of a stainless steel crown for primary molar, the surface which requires least reduction and surface which requires maximum reduction _____** [lingual; Proximal]
10. **Primary posterior teeth in which amalgam MOD cavities are difficult to prepare** [Mandibular first molar]
11. **Cervical mesiobuccal ridge is a feature of _____ primary molar** [Mandibular first molar]
12. **Ideal restoration after a formocresol pulpotomy on posterior primary tooth** [Stainless steel crown]
13. **Enamel cap in primary molars is _____ mm in thickness** [1 mm]
14. **Ratio of thickness of dentin in primary and permanent teeth** [1:2]
15. **Primary teeth more involved in nursing bottle caries _____** [Maxillary incisors]
16. **Teeth least involved in nursing bottle caries _____** [Mandibular incisors]
17. **Primary tooth most susceptible to caries _____** [Mandibular second molar] (FINN)
18. **Prophylactic odontomy is replaced by _____ materials** [Pit and fissure sealants]
19. **_____ percent of incipient carious lesion go undetected if good radiographs are not used** [75%]
20. **Calcium hydroxide for pulp capping was introduced by _____** [Herman, 1930]
21. **Formocresol pulpotomy was first advocated by _____ (Formocresol: 19% formaldehyde +35% cresol in 15% glycerin and water.) 1:5 Buckley's form cresol is used normally.** [Sweet 1930]
22. **Occult caries or hidden caries is also called as _____** [Fluoride bombs or fluoride syndrome]
23. **Linear enamel caries which begins in the neonatal line of maxillary anterior teeth is known as _____** [Odontoclasia]
24. **Cariogram (pie-diagram) is introduced by _____** [Brathall et al]

PAEDIATRIC ENDODONTICS

1. **Pulp of all primary teeth is active for a period of**
   a) 5 years b) 9.6 years c) 10.6 years d) 12.5 years

   (Ref: Orbans Oral histology and embryology, 11th ed, p 166)
   Though the average length of time is 8.3 yrs, the best option here will be 9.6 years only.

Ans: 1–B

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2. **Which of the following apply to infected dentin?**
1. There is demineralization but can be remineralised
2. There is loss of organic network
3. There is no loss of organic network
4. Sensitive
5. Not sensitive
6. There is irrevsible demineralization
7. Should be left out for remineralsation during cavity preparation
8. Should be excavated during cavity preparation

a) 1, 2, 3, 4
b) 1, 3, 5, 7
c) 2, 4, 6, 8
d) 1, 5, 6, 7

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 401)

3. **In the above, which of the following applies to affêcted dentin?**
a) 1, 2, 3, 4
b) 1, 3, 5, 7
c) 1, 5, 7, 8
d) 5, 6, 7, 8

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 401)

4. **Greatest problem in pulpal diagnosis is estimating the amount of**
a) Decay
b) Recession
c) Inflammation
d) Pathologic resorption

(AP 2001)

NATIONAL BOARDS
The extent of pulp inflammation is determined depending upon clinical signs and symptoms.

5. **Radiographs of permanent molar with acute apical abscess shows**
a) Involvement of bifurcation
b) Little change from normal structure
c) A large area of periapical radiolucency
d) Widened periodontal ligament space

(Ref: National Boards April 1979, Question Nu 57, McDonalds Dentistry for Child and Adolescent 8th ed, p 105 and Shobha Tandon Textbook of Pedodontics 2nd ed)
In the early stages the acute alveolar abscess can be diagnosed based on radiographic evidence of a thickened periodontal membrane (McDonalds).

6. **Chronic pulpal infection in primary molars is first noted radiographically**
a) As internal resorption
b) As rarefaction of periapical tissues
c) As rarifaction at bony furcation
d) As widening of periodontal space

(AP 95)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 333)
First radiographic sign to diagnose carious involvement in primary tooth _____ (AIPG 2011) (Radiolucency in furcation area)

7. **Which of following vitality tests measures the pulpal circulation directly**
a) Laser doppler thermometry
b) Pulse oximetry
c) Dual wavelength spectrometry
d) Thermal and electrical pulp testing

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 307 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 395)
Pulse oximetry is a completely objective test, requiring no subjective response from the patient, that directly measures blood oxygen saturation levels.
Vitality is purely a function of vascular health. Vitality is measured by:
I. **Conventional methods**: Thermal, electrical pulp testing, percussion and radiographs. These are all subjective methods. They depend on neural stagnation

Ans: 2–C 3–B 4–C 5–B 6–C 7–B

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II. **Newer techniques**

Laser doppler flowmetry	Measures velocity of red blood cells in capillaries. Objective method
Pulse oximetry	Measures directly pulpal circulation. Objective method, measures blood oxygen saturation levels
Dual wave spectrometry	Measures blood oxygen within capillary blood
Hughes probeye camera	Measures temperature changes as small as 0.1°C. Only experimental method

Oxygen saturation is determined with the help of _____ **(AIIMS 06) (pulse oximetry)**

8. **The non-invasive method to measure the blood flow is _____** (AIIMS 06)
   a) Electric pulp test b) Percussion
   c) Radiograph d) Laser Doppler flowmetry

9. **A non-invasive method to record blood flow in human pulp by use of laser Doppler flowmeter was introduced in dentistry by**
   a) Brazilius b) Gazelius c) Curt Goho d) Pinkham

(Ref: McDonald's 8th ed, p 460)
Laser Doppler flowmeter ____ (Gazelius)
Pulse oximeter ____ (CURT GOHO)

PULP THERAPY

1. **The simplest form of pulp therapy is** (Man 94)
   a) Apicocectomy b) Pulp capping c) Pulpectomy d) Pulpotomy

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 393)

Appropriate pulp therapy	Condition
	Primary teeth
Indirect pulp capping	▪ Vital tooth with deep caries ▪ Class II fracture without pulp but close to pulp done with glass ionomer
Direct pulp capping	▪ Class III fracture with minimum pulpal involvement and seen before 24 hours with glass ionomer
Formocresol pulpotomy	▪ Class III fracture with large pulpal exposure ▪ Vital tooth with carious pulp exposure while cavity cutting more than 1 mm
Pulpectomy	▪ Pulpless tooth with 2/3rd root length available, filled with zinc oxide eugenol ▪ Pulpless tooth with minimal periapical or bifurcation radiolucency
Extraction	▪ Tooth with poor prognosis, i.e., vertical root, displacement, luxation or any condition causing damage to permanent tooth
	Permanent teeth
Indirect pulp capping	▪ Class I and II fractures if tooth is sensitive
Direct pulp capping	▪ Vital tooth with small pulpal exposure ▪ Class III fracture with minimum pulpal involvement less than 1 mm, and seen before 24 hours

contd.

Ans: **8–D** **9–B** **1–B**

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Calcium hydroxide pulpotomy (apexogenesis)	▪ Vital, immature tooth with large pulp exposure ▪ Class III fractures, within 24–72 hr, large exposure more than 1 mm
Apexification	▪ Non vital, immature tooth ▪ Class III fractures, 72 hr have elapsed, large exposure more than 1 mm
Pulpectomy or root canal treatment	▪ Non vital, mature tooth ▪ Class III fractures, 72 hr have elapsed, large exposure more than 1 mm

2. **The most successful treatment for a vital primary second molar with a large carious and pulpal exposure is**
   a) Indirect pulp treatment
   b) Pulpotomy with formocresol
   c) Pulpotomy with calcium hydroxide
   d) Pulp capping with calcium hydroxide

   (Kar 01, Man 97)

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 397)
   Pulpotomy involves removal of the coronal portion of the pulp and it is an accepted procedure for treating both primary and permanent teeth with carious pulp exposures.

3. **Which of the following materials is the most ideal for indirect pulp capping**
   a) Calcium hydroxide
   b) Zinc oxide eugenol cement
   c) Zinc oxide powder only
   d) Zinc oxyphosphate cement

   (Man 95 AIPG 07)

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 404 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 402-403)
   - **Calcium hydroxide remains the standard material for pulp capping normal, vital pulp tissue.**
   - The possibility of its stimulating the repair is good.
   - It is generally agreed that the prognosis of any pulp therapy technique improves in absence of microorganisms.*
   - Pulp capping procedures should be limited to small exposures that have been accidentally produced by trauma or during cavity preparation or true pinpoint carious exposures that are surrounded by sound dentin.
   - Calcium hydroxide is used because of its predictability in dentin bridge formation and maintenance of vitality of the residual pulp.

4. **Indirect pulp capping by calcium hydroxide was introduced by**
   a) Sweet
   b) Teusherand zander
   c) Herman
   d) Fauchard

   (MAHE 2006)

   The concept of indirect pulp capping was first described by Pierre Fauchard as reported by John Tomes in the mid-18th century, who recommended that all caries should not be removed in deep, sensitive cavities "for fear of exposing the nerve and making the cure worse than the disease."
   Indirect pulp capping is indicated
   1. When there is no direct pulp exposure
   2. Used when pulpal inflammation is to be minimal
   3. Complete removal of caries would cause a pulp exposure

   Calcium hydroxide: Herman (1930) introduced calcium hydroxide for pulp capping. In 1938 Teuscher and Zander introduced calcium hydroxide in the United States.

5. **Indirect pulp therapy**
   a) Removes all the layers of carious dentin
   b) Removes all the bacteria from carious lesion
   c) Is successful with teeth having clinical evidence of pulpal or periapical pathosis
   d) Is dependent on remineralisation of affected dentin and reparative dentin formation

   (Kar 01)

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 393 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 398-399)

Ans: 2–B 3–A 4–C 5–D

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6. **Indirect pulp capping procedures on primary molars are indicated when** (AIPG 97)
   a) Removal of decay has exposed the pulp
   b) A tooth has a large, long-standing lesion with a history of continuous pain
   c) The carious lesion has just penetrated the dentinoenamel junction
   d) The carious lesion is suspected of producing an exposure of the pulp

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 393 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 399)

Indirect pulp capping	Direct pulp capping
Indications	**Indications**
▪ When there is no direct pulp exposure ▪ Used when pulpal inflammation has been judged to be minimal and complete removal of caries would cause a pulp exposure	▪ Small pulpal exposures less than 1 mm. ▪ Light red bleeding from exposure site that can be controlled by control pellet ▪ Traumatic exposures in dry, clean field reported within 24 hr.
Materials	**Materials**
▪ Calcium hydroxide (ideal) ▪ ZOE	▪ Calcium hydroxide ▪ Isobutyl cyanoacrylate ▪ Resin bonding agents ▪ Antibiotics ▪ Corticosteroids
Contraindications	**Contraindications**
▪ Soft leathery dentin ▪ Non-restorable tooth ▪ Signs of pulpal or	▪ Pain at night which is spontaneous ▪ Tooth mobility ▪ Excess bleeding at the exposure site periapical pathology like sensitivity to hot, cold and percussion, etc.

7. **Which of the following is an indication of indirect pulp capping?** (Kar 01)
   a) Lingering sensitivity to hot and cold
   b) Throbbing of the affected teeth after thermal stimulation
   c) No history of spontaneous pain
   d) Sensitivity to percussion

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 395 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 399)
It means tooth is asymptomatic only.

8. **Direct pulp capping is indicated in young permanent molars with an exposure when there is**
   a) Pain from tooth when eating
   b) History of unprovoked or spontaneous toothache
   c) Radiographic evidence of internal resorption
   d) Little or no haemorrhage from exposure site

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 397 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 399)
- Direct pulp capping is indicated in asymptomatic tooth and when mechanical exposure of 0.5 mm size occurs in clean and dry field.
- Pulp capping in primary teeth carries the risk of internal resorption.

9. **For at least how long calcium hydroxide remains when it is applied to residual carious dentin in the indirect pulp treatment technique?** (Kar 96)
   a) 6 months b) 6 to 8 weeks c) 2 weeks d) 5 to 7 days

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 393 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 400)

Ans: 6–D 7–C 8–D 9–B

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10. **Which of the following is a contraindication for pulp capping and pulpotomy** (PGI 01, 02)
   a) Accidental exposure in a vital tooth
   b) If there is inflammation of the radicular pulp and pain
   c) Greatly curved and tortuous roots
   d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 336,342)

Contraindications for pulpotomy
- Spontaneous pain
- Haemorrhage that is bright red and is not easy to control
- Internal resorption
- Existence of abscesses or fistulas in relation to the teeth

11. **During restoration, mechanical exposure of mesiobuccal pulpal horns in the primary max. 1st molar with moderate caries lesion on the mesial distal surfaces, the treatment now should be** (Kar 02)
   a) Pulp capping with dycal — restore with silver amalgam
   b) Pulpotomy – restore with stainless steel crown
   c) Pulpectomy – restore with stainless steel crown
   d) Pulp capping with dycal – restore with stainless steel crown

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 339,342)
- Direct pulp capping and calcium hydroxide pulpotomy are contraindicated in primary teeth as they cause internal resorption.
- Formocresol pulpotomy is the technique of choice in this situation followed by stainless steel crown.

12. **A vital pulpotomy was performed on a newly erupted central incisor of an 8-year-old boy with calcium hydroxide. The apical foramina of tooth will**
   a) Remain the same width (apexification)
   b) Gradually closes with age (apexogenesis)
   c) Development of an abscess
   d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 404 and Shobha Tandon Textbook of Pedodontics 1st ed, p 357)

13. **Success of a formocresol pulpotomy for a primary molar depends on** (AP 91)
   a) Vital root pulp
   b) Age of the patient
   c) Presence of permanent tooth
   d) Absence of internal root resorption

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 399)

14. **On the day following a formocresol pulpotomy of a mandibular molar, a three-year-old patient returned with a large ulcer near the midline of the lower lip. What is the probable cause of the ulcer?** (AIPG 01, AIIMS 01)
   a) Lip biting by the patient
   b) Allergy to the anaesthetic solution
   c) Pressure by the rubber dam frame
   d) Leakage of formocresol on the lip

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 382 and Shobha Tandon Textbook of Pedodontics 1st ed, p 469)
- Children who receive an inferior alveolar injection for routine operative procedures may bite the lip, tongue, or inner surface of the cheek.
- The parent may wonder if the accident occurred during the dental appointment; in all probability the child has chewed the area, and the result 24 hours later is an ulceration, often termed a *traumatic ulcer*
- Complications after a self-inflicted injury of this type are rare. However, the child should be seen in 24 hours, and a warm saline mouth rinse is helpful in keeping the area clean.

15. **Cotton pellet applied to the pulpal stumps after formocresol pulpotomy should be** (AIIMS 2K, AIPG 97)
   a) Dampened with formocresol
   b) Saturated with formocresol
   c) Left in place for 15 mm
   d) Left in place until second visit

Ans: 10–B 11–B 12–B 13–A 14–A 15–A

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 399 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 406)

The cotton pellet should be slightly moistened with formocresol and left for about 5 min over the pulpal stumps.

16. **In formocresol pulpotomy, the moistened cotton pellet should be placed in contact with pulp stump for**
    a) 60 minutes b) 30 minutes c) 15 minutes d) 5 minutes

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 399 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 406)

It should be dampened for 5 minutes

17. **The amount of pulp tissue to be removed during a formocresol pulpotomy should be**
    a) Half of all the coronal pulp
    b) The entire coronal pulp down to the cervical constriction of each root canal
    c) Coronal pulp down to the area of bifurcation
    d) Down to the apex of each root canal

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 344)

18. **Pulp therapy with which Sweet is associated** (Man 02)
    a) Formocresol pulpotomy b) Beechwood cresol pulpotomy
    c) Non-vital pulpotomy d) Pulpectomy

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 405)

Sweet technique	Multi visit formocresol pulpotomy
5 minute technique	Single sitting formocresol pulpotomy
2 stage technique—devitalization pulpotomy or mummification	Paraformaldehyde pulpotomy
Mortal or nonvital pulpotomy	Beechwood cresol pulpotomy
Pulpotomy	Partial pulpotomy

Minute pulpotomy: Garcia Godoy, Novakovic, Carv-djal have suggested that a shorter application time (1 minute) of formocresol may be adequate and perhaps superior to the recommended 5 minutes.

19. **Cvek pulpotomy refers to** (Kar 02)
    a) Partial pulpotomy b) Cervical pulpotomy
    c) Glutaraldehyde pulpotomy d) Formocresol pulpotomy

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 407)

- Partial pulpotomy was advocated by Cvek in 1978.
- Cvek partial pulpotomy is indicated when exposure is less than 3 mm and less than 48 hours.
- Only 2–3 mm of pulp is removed from exposed site.
- The principle behind this is the tooth becomes weaker when entire pulp is removed.

The Partial Pulpotomy Technique was advocated by ____ **(AIPG 2006, PGI 2009) (Cvek)**

20. **Complete pulpectomy technique for primary molars is developed by**
    a) Garcia-Godoy b) Buckely c) Starkey d) Sweet (Kar 06)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 401)

- Starkey has described a one-appointment and multi-appointment method of treating cariously involved primary pulp tissue.
- The one-appointment method is used in cases with vital pulp tissue, in which inflammation extends beyond the coronal pulp and no radiographic evidence of periradicular involvement is present.
- In these cases, Starkey recommended a partial pulpectomy to remove the coronal aspects of the radicular pulp, controlling haemorrhaging and filling the canals and crown with a creamy mix of ZOE cement.
- Starkey's multi-appointment method was advocated for cases with necrotic pulps.

Ans: 16–D 17–B 18–A 19–A 20–C

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21. **Which of the following medicaments is common in all types of devitalization pulpotomies (mummification)**
   a) Paraformaldehyde
   b) Cresol
   c) Glycerine
   d) Tricresol

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 406)

22. **Pulp mummification is indicated in** (AIIMS 99)
   a) Non-vital tooth
   b) Deep caries on a symptomatic vital tooth
   c) Traumatic exposure of a vital primary tooth
   d) Traumatic exposure of a permanent vital tooth with open wide apex

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 406)
- Pulp mummification is a two-stage devitalisation pulpotomy. It is used to devitalize the exposed primary vital tooth.
- The medicaments contain paraformaldehyde and fix the entire coronal and radicular pulp tissue.

23. **In which of the following treatment modalities entire pulpal tissues is removed**
   a) Pulpotomy
   b) Pulpectomy
   c) Direct pulp capping
   d) Indirect pulp capping

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 401-402 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 410)

24. **Pulp extirpation in primary teeth is difficult because**
   a) Sensitivity of primary teeth
   b) Lack of patient cooperation
   c) Tortorous anatomy and branching of canals
   d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 401 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 415)

25. **The major problem involved in performing pulpectomy in primary teeth is:** (AIPG 2007)
   a) Root resorption
   b) Inadequate operator skill
   c) Limited knowledge of pulpal anatomy of deciduous teeth
   d) All of the above.

(Ref:McDonalds-7th ed/pg 427)
- The morphohology of the root canals in primary teeth makes endodontic treatment difficult and impractical.
- Mature 1st primary molar canals are so small that they are inaccessible even to smallest barbed broach.
- If the canal cannot be cleaned of necrotic material, sterilized, and adequately filled, endodontic therapy is more likely to fail.
- **There are many variations in deciduous teeth, like lateral branching, connecting fibrils, apical ramifications and partial fusion of teeth, which really make endodontic treatment in them difficult.**
- Thus, the dentist has limited knowledge about deciduous teeth anatomy, due to the above mentioned reasons, hence the difficulty to treat such teeth with endodontics.

26. **Treatment for pulpless immature young permanent anterior tooth is** (AP 2K, 03 MP 06)
   a) Apexogenesis
   b) Apexification
   c) Pulpotomy
   d) Mummification

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 468 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 420-422)

27. **Which of the following results in apexification?**
   a) Pulpotomy of young permanent anterior tooth with incomplete root formation
   b) Direct pulp capping of young permanent anterior tooth with incomplete root formation
   c) Pulpectomy of young permanent anterior tooth with incomplete root formation
   d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 468 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 420-422)

Ans: 21–A 22–C 23–B 24–C 25–C 26–B 27–C

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28. **In an apexification procedure, any excess calcium hydroxide periapically** (Kar 2K)
    a) Will cause necrosis in the periapical tissues
    b) Will resorb on its own
    c) Will be removed by multinucleated giant cells
    d) Will have to be removed by apicoectomy

    (Ref: Endodontic Practice by Grossman 11th ed, p 114)

29. **Pulpectomy and pulp capping are more successful in primary teeth because of** (AIIMS 92)
    a) Increased odontoblastic activity in the young
    b) Increased blood supply through the wide apex
    c) Increased volume of pulp in primary teeth
    d) Lesser amount of collagen fibres in young

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30. **Ideal root canal filling for primary teeth** (Man 01)
    a) Calcium hydroxide–iodine mixture
    b) Zinc oxide–eugenol
    c) Gutta-percha
    d) Ferric sulphate

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 417)
    Root canal filling materials in deciduous teeth are:

Vitapex > KR.I > $Ca(OH)_2$

ZOE paste	▪ **Most commonly** used filling material ▪ Overfilling causes mild foreign body reaction ▪ There is difference between its rate of resorption and that of tooth root
KR-I paste	▪ It resorbs rapidly and has no undesirable effects on succedaneous teeth ▪ Contains bactericidal action ▪ Contains iodoform camphor
Maisto paste	▪ Similar to KRI with additions
Vitapex	▪ Contains calcium hydroxide + iodoform ▪ Nearly **ideal primary tooth filling** material
Gutta-percha	▪ Contraindicated, as it is not a resorbable material

31. **The commonly used filling material in deciduous teeth for RCT** (PGI 95, AIPG 02, MAHE 07)
    a) Gutta-percha
    b) Calcium hydroxide
    c) Zinc oxide eugenol
    d) Amalgam

    (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 400 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 417)
    Most commonly and traditionally used is ZOE.

32. **All the following materials can be used for obturating root canals of primary teeth EXCEPT** (Kar 2011)
    a) Zinc oxide eugenol
    b) Gutta-percha
    c) Zinc oxide–iodoform paste
    d) Calcium hydroxide and iodoform paste

    (Ref: Textbook of Pedodontics by Shobha Tandon 2nd ed, p 417)
    Gutta-percha is not a obturating material in primary teeth as it cannot be resorbed while the permanent tooth is erupting.

33. **In the absence of second premolar roots of primary second molar will most likely** (COMED 05)
    a) Resorb at normal rate
    b) Resorb more slowly than normal
    c) Resorb more rapidly than normal
    d) How no resorption due to absence of initiator force

    (Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 977)
    Remember: Teeth obturated with ZOE will resorb faster than their counterparts which are pulpless.

Ans: 28–C 29–B 30–A 31–C 32–B 33–B

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34. **Mandibular deciduous tooth with poor prognosis, alveolar abscess and necrotic pulp, the treatment of choice**
a) Extraction b) RCT c) Apicoectomy d) Drainage of abscess (PGI 99)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 555)
- Pulp therapy is not recommended for primary teeth with a poor prognosis because of the high incidence of associated chronic infection.
- Extraction of such teeth with appropriate fixed-space maintenance is preferred.

35. **Following amputation of the coronal portion of the pulp of an immature permanent first molar the stump should be capped with**
a) Formocresol b) Calcium chloride c) Thymol zinc oxide d) Calcium hydroxide (AIPG 97)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 398)

36. **The success of calcium hydroxide pulpotomy is determined by the**
a) Formation of calcified bridge.
b) Formation of hard base to support the restoration.
c) Continuation of root formation and apexogenesis.
d) All the above. (COMED 05)

(Ref: Shoba Tandon 1st ed, p 340 and McDonald's 8th ed, p 404)
In vital tooth apexogenesis is the answer. In non-vital teeth apexification is the answer. Pulpotomy is done on vital teeth.

37. **Dentin bridge in a molar tooth after a successful calcium hydroxide pulpotomy forms**
a) A level half-way between amputation and root apex
b) A level slightly below the amputation
c) At exact level of amputation
d) At the apical third of root

(NATIONAL BOARDS 1979 Ortho-Pedo Q. No 40)

38. **The effect of formocresol on the pulp of a primary tooth is**
a) Calcified bridge is formed (Man 99)
b) Massive infiltration of inflammatory cells
c) Surface fixation of pulpal tissue accompanied by degeneration of odontoblasts
d) Pulp remains vital throughout and relatively unchanged; however, all microorganisms are destroyed

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 405)
Commonly used materials in pulpotomy

Formocresol	Calcium hydroxide	Glutaraldehyde 2%
Sweet introduced formocresol pulpotomy	Hermen introduced calcium hydroxide to endodontics	Kopel introduced glutarldehyde pulpotomy
Tissue fixation is evident	Immediate reaction is increased inflammatory response followed by **necrosis** and later calcium bridge formation occurs	Non-reversible fixation, i.e., better fixative properties
Potent germicide	Have germicidal	Excellent antimicrobial activity
Vital tissue remains at apex	Vital pulp remains	Vital pulp remains
Reported toxicity and carcinogenicity and periapical leakage due to small molecule size	Causes internal resoprtion in primary teeth Bridging makes further endodontic treatment complicated	Less pulpal necrosis No periapical leakage due to large sized molecules
Success is 90%	65% success	98–100% success

Ans: 34–A 35–D 36–C 37–B 38–C

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39. **Formocresol pulpotomy histologically results in**
   a) Formation of dentin bridge
   b) Surface fixation of root pulp
   c) Severe inflammation of root pulp
   d) Destruction of all microorganisms

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 405)

40. **Which of the following has superior fixative properties and prepared in primary tooth pulpotomies?**
   a) Formaldehyde
   b) Glutaraldehyde
   c) Calcium hydroxide
   d) Beachwood cresol

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 405)
Advantages of glutaraldehyde over formocresol are:
1. Formaldehyde reactions are reversible, but glutaraldehyde reactions are not.
2. Formaldehyde is a small molecule that penetrates the apical foramen, whereas glutaraldehyde is a larger molecule that does not.
3. Formaldehyde requires a long reaction time and an excess of solution to fix tissue, whereas glutaraldehyde fixes tissue instantly and an excess of solution is unnecessary.

41. **When with calcium hydroxide pulpotomy, immediate reaction is**
   a) Formation of dentin bridge
   b) Fixation of tissues
   c) Severe inflammatory reaction
   d) Proliferation of pulp tissue

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 404)
Fixation of tissues is characteristic of formocresol pulpotomy.

42. **The failure of a calcium hydroxide pulpotomy done on a primary 1st molar is due to**
   a) Internal resorption
   b) External resorption
   c) Pulp calcification
   d) Pulp fibrosis

(PGI 01, TNPSC 99)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 339)

43. **Important criteria of success of partial pulpectomy in a permanent central incisor**
   a) Formation of pulpstones
   b) Root end completion
   c) Formation of calcific bridge
   d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 357)

44. **To stimulate root apex formation (apexification) in incompletely developed young permanent tooth "Frank" technique utilises**
   a) Formocresol
   b) Buckeye's fomocresol
   c) Beech wood creosote
   d) Calcium hydroxide and CMCP

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 468 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 422)
FRANK in 1966 was one of the first to describe the clinical methods using calcium hydroxide paste and camphorated monochorophenol (CMCP), to stimulate root closure.

45. **CMCP used for root apexification is allowed to remain for _____ months**
   a) One month
   b) Three months
   c) Six months
   d) Twelve months

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 470 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 423)

46. **After calcium hydroxide pulpotomy, formation of calcific bridge is evident within _____ months**
   a) One month
   b) Two months
   c) Three months
   d) Six months

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 404)
- **Herman** first introduced calcium hydroxide as a biologic dressing. Because of its alkalinity (pH of 12), it is so caustic that when it is placed in contact with vital pulp tissue the reaction produces a superficial necrosis of the pulp.
- The irritant qualities seem to be related to its ability to stimulate development of a calcified barrier.

Ans: 39–B 40–B 41–C 42–A 43–B 44–D 45–C 46–A

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- The superficial necrotic area in the pulp that develops beneath the calcium hydroxide is demarcated from the healthy pulp tissue below by a new, deeply staining zone comprising basophilic elements of the calcium hydroxide dressing.
- The original proteinate zone is still present. However, against this zone is a new area of coarse fibrous tissue likened to a primitive type of bone. On the periphery of the new fibrous tissue, cells resembling odontoblasts appear to be lining up.
- One month after the capping procedure, a calcified bridge is evident radiographically. This bridge continues to increase in thickness during the next 12 months.The pulp tissue beneath the calcified bridge remains vital and is essentially free of inflammatory cells.

47. **The % formaldehyde in Buckley's formocresol is**
a) 15% b) 19% c) 25% d) 20% (Man 01)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 399 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 405)
- Buckley's formocresol consists of 19% formaldehyde, 35% cresol and 15% glycerine and water. The formaldehyde to cresol ratio is 1:2.
- **In formocresol, ratio of formalin to cresol** is ____ **(PGI 03)** (1:2)

48. **The instrument which is not used in the widening of root canals in deciduous teeth is**
a) Broach b) Root canal spreader
c) File d) Reamer

It is obvious that spreader is used during obturation procedures and not in widening of canals.

49. **Restoration of choice in endodontically treated primary secondary molar in 9-year-old child is**
a) Stainless steel crown b) Cast gold crown (Man 98)
c) Amalgam d) Zinc oxide eugenol

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 404 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 363)
Indications for stainless steel crown
- Extensive decay in primary and young permanent teeth.
- Teeth deformed by development defects such as enamel dysplasia or dentinogenesis imperfecta.
- For teeth with hypoplastic defects.
- Following pulp therapy in severe cases of bruxism.

Formocresol pulpotomised primary teeth should be finally restored with _____ (Stainless steel crown)

50. **Stainless steel crown was introduced by**
a) Humphrey b) Stewart c) MacDonald d) Pinkham (Kar 99)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 379 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 359)

51. **Stainless steel crown is a**
a) Permanent restoration b) Temp. restoration (MAHE 06)
c) Semipermanent restoration d) None

(Ref: Shobha Tondon 2nd ed, p 358)
Stainless steel crown is a semi-permanent restoration used in the primary and young permanent teeth. It was introduced as chrome-steel crown by Humphrey in 1950.

52. **Stainless steel crowns are contraindicated in**
a) Medically compromised patient (VSD, ASD) (AIPG 06, Kar 2010)
b) After endodontic therapy
c) Rampant caries
d) Amelogenesis imperfecta

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 379 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 359, 364)
In children with heart problem (VSD, ASD) prophylaxis has to be taken as in tooth reduction, subgingival procedure done or in poor general condition of the child.

Ans: 47–B 48–B 49–A 50–A 51–C 52–A

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Indications of SS crowns

- Extensive decay in primary and young permanent teeth
- Teeth deformed by developmental defects or anomalies
- For teeth with hypoplastic defects
- Following pulp therapy
- As a preventive restoration
- As an abutment
- For temporary restoration of fractured tooth
- In severe cases of bruxism
- Single tooth crossbite
  For replacing prematurely lost anterior teeth

Although Shobha Tandon 2nd ed (p 364) says it can be given even in medically compromised patients we still feel it is better to choose option A as answer by keeping in mind that the question must have had been picked up from McDonalds.

53. **Iron content in 3M stainless steel crowns is** (Man 01)
    a) 20% b) 40% c) 60% d) 10%

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 317)

Composition of stainless steel crowns:

- Stainless steel (18-8) austentic type of alloy is used.
  Eg: Rocky mountain and Unitek

Iron	- 67%
Chromium	- 17%
Nickel	- 12%
Carbon	- 0.08-1.15%

- Nickel base crowns
  Eg: Iconel 600 and 3M crowns

Iron	- 10%
Chromium	- 16%
Nickel	- 72%
Others	- 2%

54. **Which among the following pre-veneered crowns are stain resistant as well as pre-crimped**
    a) Cheng crowns b) Dura crowns c) NU SMILE crowns d) Pedo pearls

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 359)

NU SMILE crowns: for full coverage of restoration to provide longevity and protection of remaining tooth structure.
Cheng Crowns: crown with pure resin facing that makes it stain resistant.
Pedo pearl: aluminium crown forms coated with tooth coloured epoxy paint.
Dura crowns: can be placed in conditions of poor moisture and haemorrhagic control.

55. **Countering of stainless steel crown is done at middle 1/3rd of crown to produce**
    a) Shelling effect b) Drilling effect c) Belling effect d) Jamming effect

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 367)

56. **Most common complication which arises during tooth preparation for stainless steel crowns is**
    a) Ledge formation b) Crown tilt
    c) Poor margins d) Ingestion of crown by paediatric patient

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 372)
Occurs due to incorrect angulation of tapered fissure bur

57. **Stainless steel crowns should extend intragingivally**
    a) 0.5-1.0 mm b) 1.0-1.5 mm
    c) 1.5-2.0 mm d) 0.0-0.5 mm (Kar 01, MAHE 07, BHU 09)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 365)

Ans: 53-D 54-A 55-C 56-A 57-A

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A stainless steel crown should normally extend below the gingival crest approximately by 0.5 to 1 mm.

The buccal and lingual surface are reduced at least 0.5 mm with the reduction ending in a feather edge, extending 0.5 to 1 mm into the gingival sulcus.

Tooth preparation for stainless steel crown

- Occlusal – 1.5–2 mm reduction
- Buccal and lingual – 0.5 mm, least reduction
- Proximal – 1–1.5 mm reduction
- Gingival termination – 0.5–1 mm into sulcus
  Gingival finish line – Feather edge

58. **In basket crown technique**
    a) Window is prepared on lingual aspect for aesthetics (BHU 09)
    b) Window is prepared on labial aspect for aesthetics
    c) Window is prepared on occlusal aspect for aesthetics
    d) Window is prepared in cervical region for aesthetics

(Ref: Kennedy's pediatric operative dentistry 3rd ed)

This is available in older versions of pedodontic textbooks. A basket crown is a temporary crown placed in the traumatic anterior tooth. Essentially it is ¾th crown with reduction on lingual and proximal sides. The labial surface is left untouched and the crowns have window cut on the labial side.

59. **Finish line for stainless steel crowns should be**
    a) Shoulder b) Chamfer c) Knife edge d) Feather edge

(Ref: Shobha Tondon 2nd ed, p 365)

60. **The difficulty in adopting a stainless steel crown to a primary mandibular first molar is**
    a) Wide buccolingual contact b) Buccal cervical ridge showing constriction (AIPG 03, Man 02)
    c) Prominent oblique ridge d) All of the above

61. **A stainless steel crown should normally extend below the gingival crest approximately**
    a) 1 mm b) 1.5 mm c) 2 mm d) 2.5 mm (Kar 01)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 380 and Shobha Tandon 2nd ed, p 368)

Tooth preparation for stainless steel crown

- Occlusal – 1.5–2 mm reduction
- Buccal and lingual – 0.5 mm, least reduction
- Proximal – 1–1.5 mm reduction
- Gingival termination – 0.5–1 mm into sulcus
- Gingival finish line – Feather edge

62. **In preparing a primary molar for a stainless steel crown, the surface requiring the least amount of reduction is**
    a) Occlusal b) Lingual c) Mesial d) Facial (Kar 01)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 365-366)

- Buccal and lingual surfaces should be reduced to a minimum
- In some cases of primary first molars it is necessary to reduce large buccal bulge

63. **Retention in a stainless steel crown is achieved primarily by**
    a) Chamfer b) Cement (PGI 2K)
    c) Parallel distal and mesial walls d) Crimping

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 366 and 1st ed, p 319)

64. **Which of the following is the most important for using burs in opening proximal contacts on primary teeth to receive a stainless steel crown?**
    a) Retention of proximal tissue b) Less trauma to soft tissues
    c) Prevention of ledging d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 371-372)

65. **The treatment of choice for amelogenesis imperfecta in the primary dentition is**
    a) Pin retained amalgams b) Cast gold crowns
    c) Full upper and lower dentures d) Stainless steel crowns

Ans: 58–B 59–D 60–B 61–A 62–B 63–C 64–C 65–D

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 379)

Indications of stainless steel crowns

1. Restorations for primary or young permanent teeth with extensive and/or multiple carious lesions
2. Restorations for hypoplastic primary or permanent teeth that cannot be adequately restored with bonded restorations
3. Restorations for teeth with hereditary anomalies, such as dentinogenesis imperfecta or amelogenesis imperfecta
4. Restorations for pulpotomized or pulpectomized primary or young permanent teeth when there is increased danger of fracture of the remaining coronal tooth structure
5. Restorations for fractured teeth
6. Restorations for primary teeth to be used as abutments for appliances
7. Attachments for habit-breaking and orthodontic appliances

66. **In the non-compliant pulp chamber, there occurs continuous fluid exchange between capillaries and tissues, which maintains a hydrostatic pressure; this is known as intrapulpal pressure and the value of this average intrapulpal pressure is normally**
    a) 15 mm Hg and is constant without any correlation with arterial pulse
    b) 10 mm Hg and is constant without any correlation with arterial pulse
    c) 10 mm Hg and varies with each arterial pulse
    d) 15 mm hg and varies with each arterial pulse

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 390)

67. **Which of the following is not a characteristic of 'C' fibers**
    a) Pain is throbbing, less bearable and lingering type
    b) High stimulation threshold, tissue damage is required to elicit response
    c) Fibers have a diameter of 0.3–1.2 micrometer
    d) Conduction velocity is 5–30 m/sec

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 390)

Conduction velocity (m/sec) of C-fibres is 0.4–2. The option given in D. 5–30 refers to A-delta fibers.

Characteristics of pulpal fibers

A-delta fibers	C fibers
Diameter (micrometer): 2-5	Diameter (micrometer): 0.3–1.2
Conduction velocity (m/sec): 5-30	Conduction velocity (m/sec): 0.4–2
Myelination: present	Myelination: absent
Pain characteristics: fast and momentary	Pain characteristics: throbbing, lingering and extremely unbearable
Stimulation threshold: low, no tissue injury required to elicit a response	Stimulation threshold: high, tissue damage must to elicit any response

68. **Which of the following is not a characteristic of acute alveolar abscess**
    a) Infection in primary molars spreads from the pulp chamber through the apical foramen into the peri-radicular tissues
    b) In permanent tooth it is more localized and is more diffuse in primary tooth
    c) There is a localized collection of pus at root apex in the alveolar bone
    d) There is swelling, mobility and elevation of tooth from its socket

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 393-394)

- In primary molars infection spreads into peri-radicular tissues through the porous furcation area rather than through the apical foramen
- Radiographically the changes are limited to widening of periodontal membrane.
- Infection is confined only in the medullary region

Ans: 66–C 67–D 68–A

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69. **After how many years of eruption does the primary and immature permanent teeth exhibit complete innervation of alpha myelinated neurons**
   a) 1-2 years after eruption
   b) 2-3 years after eruption
   c) 3-4 years after eruption
   d) 4-5 years after eruption

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 395)

70. **Which of the following is not a feature of pulp oximetry**
   a) Objective test requiring no subjective response from the patient
   b) Measures and compares amplitudes of ratios of transmitted infra-red light with red light
   c) Capable of evaluating the stature of blood vasculature
   d) Does not depend on pulsatile blood flow

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 396-397)
The dependence on a pulsatile blood flow appears to be a disadvantage of the use of pulp oximeter.
REMEMBER: *Dual wave spectrometry* measures blood oxygenation change within the capillary bed of dental tissues and ***thus not dependent on pulsatile blood flow***.

71. **The amount of tertiary or reparative dentine formed after 30 days of successful indirect pulp capping procedure should be about**
   a) 1.5 microns/day
   b) 2.5 microns/day
   c) 1.4 microns/day
   d) 2.4 microns/day

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 399-400)
According to Stanley, the reparative dentine formation is insignificant in first 30 days. between 30–45 days it reaches a maximum of 3.5 microns (Shaffer 5th/577). The pulp should respond favorably and tertiary dentin or reparative dentin should be formed as evidenced by radiographic evaluation (1.5 microns/day after 30 days of pulp capping) is it 1.5 or 1.4. We searched many books it is given 1.49. so if 1.5 is given select it or otherwise go for 1.4.

72. **Which of the following is the best one to remove the carious part of a tooth while doing indirect pulp capping treatment**
   a) Small round bur in high speed
   b) Small round bur in slow speed
   c) Large round bur in slow speed
   d) Spoon excavator with small dimensions

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 400)

73. **Which device is used to measure the thickness of dentin layer above pulp chamber**
   a) Prepometer
   b) Hughes probeye camera
   c) Diagnodent
   d) DIFOTI

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 400)
Prepometer
- Patented electronic dentin measuring device used to measure the thickness of dentin above pulp chamber with a simple touch of probe for safe preparation and guaranteed pulpal protection
- Digital LED readings
  - Green light—safe zone
  - Orange light—limit of safe zone
  - Red light—danger of penetrating through the dentin
- Allows the safer preparations of "special cases"

74. **Which among the following calcium hydroxide products is most capable of stimulating early dentinal bridge formation**
   a) Pulpdent
   b) Dycal
   c) Hydrex (MPC)
   d) All have equal potential

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 403)
REMEMBER: moisture susceptibility, failure to bond with dentin, and imperfect formation of tertiary dentine leads to bacterial invasion and internal resorption when using calcium hydroxide in primary teeth.

75. **Which of the following is used as a PULP PRESERVATIVE material in vital pulpotomy technique**
   a) Gysi triopaste
   b) MTA
   c) Formaldehyde
   d) Bone morphogenetic protein

Ans: 69–D 70–D 71–A 72–C 73–A 74–A 75–B

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(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 404)

PULPOTOMY

Vital pulpotomy technique

1. **Devitalization**
   - Single sitting
     a. Formocresol
     b. Electrosurgery
     c. Laser
   - Two stage
     a. Gysi triopaste
     b. Easlick's formaldehyde
     c. Paraform devitalising paste
2. **Preservation**
   a. Glutaraldehyde
   b. MTA
   c. Ferric sulphate
3. **Regeneration**
   a. BMP

Non-vital pulpotomy (mortal pulpotomy)

a. Beechwood cresol
b. Formocresol

76. **Primary function of MTA is** (PGI 2009)
    a) Root canal irrigant
    b) Apexification in immature traumatized pulpless tooth
    c) Pulpotomy
    d) Root canal obturation material in primary teeth

(Ref: Shobha Tandon 2nd ed, p 426]
MTA is new material developed for endodontics that appear to be a significant improvement over other materials. It is first restorative material that consistently allows for the overgrowth of cementum and facilitates regeneration of periodontal ligament.

77. **Which laser can be used in single sitting pulp devitalization technique and can give 100% success rates**
    a) Nd:YAG b) Argon c) CO_2 d) Yttrium laser

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 408)

78. **Glutaraldehyde was introduced as a pulpotomy medicament by**
    a) Starkey b) Cvek c) Mack and dean d) Kopel

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 406)

79. **Recommended concentration of glutaraldehyde to be used as an pulpotomy agent is**
    a) 0.5 to 2% b) 1 to 3% c) 2 to 5% d) 2 to 4%

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, P 409)

80. **Which of the following material has 100% clinical success rates when used during pulpotomy**
    a) Formo cresol b) MTA
    c) Calcium hydroxide d) Ferric sulfate

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 409)

FORMOCRESOL

- 95% clinical success rate and 70% histological success rates
- Toxic and potential leakage periapically due to smaller molecular size

MTA

- 93% clinical success rates
- Promotes regeneration of original pulpal tissues
- Better sealing ability and biocompability
- Dentinal bridge formation is seen

Ans: 76–B 77–A 78–D 79–C 80–D

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GLUTARALDEHYDE
- 98–100% clinical success
- Better and non-reversible fixation of tissues
- Less pulpal necrosis

CALCIUM HYDROXIDE
- Clinical success 65% and 35% histological success
- 91% success in dentinal bridge formation
- Associated with internal resorption in deciduous tooth

FERRIC SULPHATE
- 100% clinical success rate and 97.2% radiographic success rate
- Non aldehyde compound
- Forms metal protein clot at pulp stump acting as a barrier to irritating components of sub-base
- Functions passively

81. **Which among the following materials derived from bovine collagen can prevent the extrusion of root canal filling materials during primary molar pulpectomies**
a) Colla Cote b) Endoflas c) MTA d) Vitapex

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 418)

COLLA COTE
- Soft white palible sponge obtained from bovine collagen
- Applied on moist or bleeding canals
- Prevents extravasation of root canal filling materials during pulpectomies
- Also provides scaffold for bone growth apart from endodontic use

ENDOFLAS
- Composed of zinc oxide, penta chlorophenol, iodoform, calcium hydroxide and eugenol
- Alternative root canal filling material for primary teeth
- Prevention of microleakage is must for its success
- 70% success rate

82. **After apexification the root canals are best obturated by which technique of obturation**
a) Obtura(thermoplasticized b) Sectional technique
c) Inverted cone technique d) Lateral condensation

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 424)
Obtura is a thermoplasticized gutta-percha system that rapidly obturates most difficult root canals in very less time and less patient discomfort.

TOOTH TRAUMA AND PULP PATHOLOGY AND ORAL SURGICAL CONSIDERATIONS

1. **Injuries to primary teeth occur mostly at**
a) 6–12 months b) 3–4 years c) 5–6 years d) 1½–2½ years (Man 01)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 564)
- Dental injuries are common
- 30% of preschoolers have injured primary teeth, 25% of 12 y.o. have injured permanent teeth
- Most common cause of primary tooth fractures, occur at 2 years of age. Most of the fractures of primary teeth occur when child is learing to walk. This is due to lack of motor coordination.
- In permanent dentition, **Class II div 1** malocclusion is more prone for fracture due to proclined central incisors.
- The most susceptible age is 8–10 years of age.

2. **There is a real relationship between the incidence of fractured anterior teeth and the**
a) Caries in those teeth b) Hardness of the enamel
c) Hardness of the dentin d) Protrusion of those teeth

(Ref: Grossman 12th ed, p 361)
- Most common cause of primary tooth fractures occur at 2 years of age. Most of the fractures of primary teeth occur when child is learning to walk. This is due to lack of motor co-ordination
- In permanent dentition **Class II div 1** malocclusion is more prone for fracture due to proclined central incisors. The most susceptible age is 8–10 years of age

Ans: 81–A 82–A 1–D 2–D

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3. **Most common injury to primary dentition is** (PGI 06)
   a) Luxation
   b) Crown fracture
   c) Root fracture
   d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 397 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 589)

Dental injuries seen commonly in children include:
1. Subluxation (loosening of teeth without displacement)
2. Displacement
3. Tooth fracture

- In the primary dentition, teeth are more frequently displaced or luxated than they are fractured because the alveolar bone in the young child has large marrow spaces and is relatively pliable.
- It yields to blows to the primary teeth, allowing these teeth to be moved rather than holding them firmly and thus causing fractures.
- In contrast, injuries in the permanent dentition lead more often to crown or root fractures.

4. **The most common dental injuries which affect the paediatric age group are**
   a) Intrusions
   b) Fractures
   c) Contusions
   d) Displacements

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 568)
- In primary dentition teeth are mostly displaced or luxated rather than fractured, etc
- Reason being soft and pliable alveolar bone which allows the teeth to be displaced rather than holding them strong and leading to fracture
- Injuries in permanent teeth are though often crown or root #
- It can be intrusive,lateral or extrusive (p 589)

5. **All of the following are indicated in a tooth immediately after a trauma except**
   a) Clinical examination
   b) Radiographic examination
   c) Symptomatic treatment
   d) Pulp vitality tests

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 460)
- Failure of a recently traumatized tooth to respond to the pulp test is not uncommon and may indicate a previous injury with a resulting necrotic pulp. However, the traumatized tooth may be in a state of shock and as a result may fail to respond to the accepted methods of determining pulp vitality.
- The failure of a pulp to respond immediately after an accident is not an indication for endodontic therapy. Instead, emergency treatment should be completed, and the tooth should be retested at the next follow-up visit.

Also note: Laser Doppler flowmetry has been reported to be a significant aid in determining vascular vitality of traumatized teeth by Olgart, Gazelius, and Lindh-Strombergs and more recently by Mesaros and Trope.' Although this technology is not yet affordably priced for dental offices, it may be in the future.

6. **A definite method to determine the vitality of primary tooth after trauma is**
   a) Electric pulp testing
   b) Transillumination
   c) Temperature pulp testing
   d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 460)

7. **How reliable are electric pulp tests after trauma to permanent teeth**
   a) Never reliable
   b) Seldom reliable
   c) Usually reliable
   d) Highly reliable

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 459)
- Vitality tests are seldom reliable after trauma to a permanent teeth. Vitality tests are least reliable to determine pulp status in primary teeth.
- It should also be remembered that the electric pulp test is frequently unreliable even on normal teeth when apices are incompletely formed.

8. **The X-ray of a traumatized tooth is important because**
   a) To determine root fracture
   b) To assess the stage of root development
   c) As a base for future comparisons
   d) All of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 460 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 576 and 1st ed, p 506)

Ans: 3–A 4–D 5–D 6–D 7–B 8–D

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9. **Radiographs of traumatised tooth are mainly necessary**
   a) To assess stage of root development
   b) To rule out root fractures
   c) To have a baseline comparison with future radiograph
   d) To rule out hyalinisation of pulp

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 66 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 576 and 1st ed, p 506)
When a new patient is seen at the dental office and no previous radiographs are available, it may be necessary to obtain a baseline series of radiographs.

10. **Discolouration of primary tooth after injury is the result of**
    a) Degeneration of pulp
    b) Extravasation of RBC from blood vessels of pulp
    c) Resorption of dentin following trauma
    d) Resorption of cementum following trauma

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 471-472)
The sequelae of trauma to the tooth are:

Internal haemorrhage	Rupture of capillaries leads to escape of RBC and subsequent breakdown resulting in pigments called biliverdin and bilirubin which discolour tooth
Hyperaemia	Congestion of blood within pulp chamber leads to colour change after several weeks
Internal resorption	The tooth appears pink as the pulp shows through the enamel
Pulpal necrosis	Pulp undergoes autolysis and necrosis with deposition of blood pigments
Calcification	Partial or complete obliteration of the pulp chamber and canal may occur. The crowns of teeth may have a yellowish opaque colour

11. **Yellowish discolouration of the primary teeth following truama is due to** (COMED K 2013)
    a) Pulp hyperaemia
    b) Pulp necrosis
    c) Pulp chamber calcification
    d) Internal resorption

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 471)
- A frequently observed reaction to trauma is the partial or complete obliteration of the pulp chamber and canal. Although the radiograph may give the illusion of complete obliteration, an extremely fine root canal and remnants of the pulp will persist.
- The crowns of teeth that have undergone this reaction may have a yellowish, opaque colour. Primary teeth demonstrating calcific metamorphosis will usually undergo normal root resorption.

12. **The change in colour of a traumatized primary incisor usually results from all the following except** (TNPSC 99)
    a) Laceration of periodontal fibres
    b) Diffusion of biliverdin into the dentinal tubules
    c) Development of a heavy layer of secondary dentin
    d) Internal resorption of dentin within the crown

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 470-471, National Boards)

13. **Primary tooth was injured and discoloured. Tooth asymptomatic with no signs of infection. Treatment of choice**
    a) Bleaching
    b) Pulpectomy
    c) Pulpotomy
    d) No treatment, observe periodically

(Ref: Grossman 12th ed, p 362)
There are equal chances in such cases for pulp to regain its normal health or to undergo necrosis. If pulp is showing degnerating changes, pulpectomy is indicated.

Ans: 9–C 10–B 11–C 12–A 13–D

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14. **Babu, a 7½-years-old child, reports with a fracture of central incisor with an open apex; there is large pulpal exposure. The treatment of choice is** (AIPG 01)
    a) Smooth the edges and protect the exposed portion with ZOE dressing
    b) Pulpectomy and calcium hydroxide dressing
    c) Pulpotomy and calcium hydroxide dressing
    d) Direct pulp capping and calcium hydroxide dressing

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 520)

Treatment modalities for fractures involving pulp in permanent teeth

Pulp capping	▪ Exposure of less than 1 mm ▪ Exposure not over 24 hr ▪ Minimal haemorrhage ▪ Open apex
Pulpotomy	▪ Relatively large exposure ▪ Patient seen within 72 hr ▪ Infection confined to crown portion ▪ Moderate haemorrhage ▪ Open apex
Apexification	▪ Non-vital immature permanent teeth
Pulpectomy	▪ Degenerated pulp ▪ Pulp exposure greater than 72 hr

15. **8-year-old child had fractured his maxillary central incisor 10-months ago. The pulp shows no response. There is no periapical lesion in the radiograph. The treatment of choice is** (AIIMS 98,99)
    a) Ca $(OH)_2$ pulp capping
    b) Formocresol pulpotomy
    c) Conventional root canal treatment
    d) Complete debridement and apexification

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 468 and Shobha Tandon Textbook of Pedodontics 1st ed, p 357,520)

- There is history of trauma. Pulp is not responding to vitality tests indicating necrotic pulp. There is no periapical radiolucency means infection has not spread to periapical region.
- The patient is 8 years and injury has occurred 10 months back cleary shows that the root formation is not completed and hence the treatment of choice in pulpless immature teeth is apexification.

Apexification is the treatment of choice for a permanent tooth with wide open apex when _____ (COMEDK 03) –
The pulp is necrotic

16. **A boy 10-years-old, fractured his central incisor 1½ years back. The pulp test is negative. What is the treatment** (AIPG 2K)
    a) Debridement of pulp space and apexification
    b) RCT
    c) Debridement and pulpotomy
    d) Observe, no treatment

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 468 and Shobha Tandon Textbook of Pedodontics 1st ed, p 357,520)

- That means, the boy had fractured his central incisor at 8½ years and so the tooth is still immature (open apex).
- Apexification is the technique of choice for non-vital permanent teeth with incompletely formed roots.

17. **A 7-year girl has class I fracture exposing dentin of a upper central incisor. Pulp is vital (Tooth is asymptomatic). The immediate treatment of choice** (AP 96)
    a) Pulpotomy with calcium hydroxide
    b) Apply calcium hydroxide on exposed dentin followed by permanent restoration
    c) Smoothen the margins of exposed dentin
    d) Direct pulp capping with calcium hydroxide

Ans: **14–C** **15–D** **16–A** **17–B**

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(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 461,462,475)

- Class I fractures involve only enamel.
- Pulpotomy and direct pulp capping is not needed because there is no pulp exposure.
- Calcium hydroxide acts as temporary restoration and reduces the sensitivity.
- Smoothening of margins indicated when fracture is limited to enamel only.

18. **How many types of injury are there in classification of traumatic fractures of teeth by Ellis and Deway**
    a) 9 b) 5 c) 3 d) 4 (AIIMS 04)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 458)

Ellis and Deway classification

Class 1 : Fracture involving enamel
Class 2 : Fracture involving enamel and dentin
Class 3 : Fracture involving enamel, dentin and pulp
Class 4 : Non-vital tooth
Class 5 : Avulsion
Class 6 : Root fracture with or without crown fracture
Class 7 : Displacement of tooth without fracture of crown or root
Class 8 : Fracture of crown en masse
Class 9 : Deciduous tooth fractures

19. **In Class III Ellis fracture** (COMEDK 03, AIPG 07)
    a) Only enamel is involved
    b) Enamel and dentin are involved
    c) Enamel, dentin and pulp are involved
    d) Non-vital pulp

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 458)

20. **In Ellis classification of injured teeth, a class IV represents** (Man 02)
    a) Non-vital tooth
    b) Avulsed tooth
    c) Fracture involving only the enamel
    d) Fracture involving enamel and dentin

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 458)
According to Ellis classification tooth that becomes non-vital due to trauamatic injury is classified as **Class IV.**

21. **Exarticulation of teeth means** (PGI 02, BHU 09, COMED K 2013)
    a) Intrusion b) Extrusion
    c) Sublimation d) Avulsion

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 49 and, and Shobha Tandon Textbook of Pedodontics 2nd ed, p 518)

Injuries to the periodontal tissues are classified as:

Concussion	Injury to supporting tissues without loosening or displacement but with marked reaction to percussion
Subluxation	Abnormal loosening but without displacement of the tooth
Intrusion (central dislocation)	Displacement of the tooth into the alveolar bone accompanied by fracture of the alveolar socket
Extrusion	Partial displacement of the tooth out of its socket
Exarticulation (complete avulsion)	Complete displacement of tooth out of socket

Ans: 18–A 19–C 20–A 21–D

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WHO classification (Anderson-1983)

- 873.60 - Incomplete fracture (Crack) of enamel without loss of tooth substance
- 873.60 - Fracture involving enamel only
- 873.61 - Fracture of crown involving dentin and enamel but not pulp
- 873.62 - Fracture of crown involving enamel, dentin and pulp
- 873.63 - Fracture of root only involving dentin, cementum and pulp
- 873.64 - Fracture of root and crown involving enamel, cementum, dentin but not pulp
- 873.66 - Fracture of both crown and root involving enamel, dentin, cementum and pulp
- 873.67 - Concussion, subluxation, extrusive location or partial avulsion (or) peripheral dislocation, lateral luxation
- 873.68 - Intrusion (or) central dislocation
- 873.69 - Complete avulsion or exarticulation

22. **Contusion usually results from**
    a) Cut injury b) Crush injury c) Blunt trauma d) Penetrating injury (Kar 99)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 502)

Laceration	Shallow or deep wound in the mucosa caused by a sharp object
Contusion	Bruise produced by impact from blunt object
Abrasion	Superficial wound produced by rubbing or scrapping

23. **A 4-year-old patient sustained a class III Ellis fracture injury to primary central incisors one week ago. Pulp is exposed and necrotic but tooth is asymptomatic. Line of treatment** (AIIMS 2K)
    a) No treatment, only observation
    b) Extraction and space maintainer
    c) Pulpectomy and obturation with gutta-percha
    d) Pulpectomy and obturation with zinc oxide eugenol

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 516)

- Zinc oxide eugenol is indicated to obturate the canals of a primary tooth in which a pulpectomy was performed (AIPG 97).
- Pulpless primary incisor (abscess caused by trauma) in 4-year-old patient can be effectively treated by _____ (Man 97, Kar 97) *(Pulpectomy)*
- 3-year-old child has a central incisor that has turned bluish black. There is a small radiolucent area at the apex of the tooth. Ideal treatment is _____ (Kar 02) *(Pulpectomy; fill with zinc oxide eugenol)*
- Calcium hydroxide–CMCP paste is used for apexification in permanent tooth

24. **An hour-old Ellis class III injury to 21 in a 9-year-old boy is treated with**
    a) Pulpectomy b) Apexification (COMEDK 05)
    c) Direct pulp capping d) Pulpotomy

(Ref: Mc Donalds Dentistry for Child and Adolescent 8th ed pg no 465)

25. **Treatment for Ellis Class III fracture of anterior tooth in a 10-year-old patient reported after 72 hours is**
    a) Pulpotomy b) Root canal treatment (COMEDK 04)
    c) Direct pulp capping d) Indirect pulp capping

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 520)

- A 10-year-old child means that the root formation is complete. Pulp is exposed (class III fracture) and necrotic (since 72 hours have elapsed)—Line of treatment is Pulpectomy or root canal treatment.
- If the injury would have been attained around 7 years where root end formation is incomplete, indicated treatment would be apexification.

26. **Prognosis of tooth is least if fracture occurs at**
    a) Cervical third b) Apical third of root
    c) Middle third of root d) Equally in all of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 589 and Endodontic Practice by Grossman 11th ed, p 25)

Ans: 22–C 23–D 24–C 25–B 26–A

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- Root fractures may be vertical or horizontal. Vertical fractures has worst prognosis.
- Prognosis is most favourable when horizontal fractures occur at apical third of root. Prognosis is least favourable if fracture occurs at cervical level. This is due to difficulty to stabilise the fractured parts and contamination of fracture parts and contamination of fracture line with saliva.
- Extraction is the treatment of choice in fractures of roots of primary teeth.

27. **The prognosis for teeth with root fracture is best when the fracture occurs in the**
    a) Coronal one-third of the root
    b) Middle one-third of the root
    c) Apical one-third of the root
    d) Coronal half of the root
    (COMEDK 03)

    (Ref: Shobha Tandon Textbook of Pedodontics 2ND ed, p 89)

28. **11-year-old child comes to the dental office one hour after injury to a maxillary central incisor. The tooth is vital and slightly mobile. Radiographic examination reveals a fracture at the apical third of the root. What is the best treatment at this point of time**
    a) Render palliative therapy
    b) Extract the tooth
    c) Relieve the occlusion and splint the tooth
    d) Perform immediate root canal treatment and splint
    (AIIMS 03)

    (Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 521
    Fractures occurring in the apical third have the best prognosis. The teeth usually remain vital.
    After radiographic and clinical assessment, these teeth are usually subjected to digital reduction and stabilization by splinting.

29. **The following treatment is indicated for large non-carious exposure in asymptomatic maxillary primary molar**
    a) Pulp capping with calcium hydroxide
    b) Formocresol pulpotomy
    c) Calcium hydroxide pulpotomy
    d) Pulpectomy

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 399,404)
    - Formocresol pulpotomy is indicated in asymptomatic primary teeth whereas calcium hydroxide pulpotomy in permanent tooth.
    - When indicated, pulpotomy should be followed by a stainless steel crown restoration.

30. **Apexogenesis of incompletely formed roots is**
    a) Induce the formation of apical 1/3 of root
    b) Closure of apical formation in a developing tooth
    c) Induce the formation of apical 2/3 of root
    d) Deposition of cellular cementum at open
    (Kar 98, PGI 93)

    (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 420,421,593)
    - Apexogenesis is the natural process of root formation in a developing tooth.
    - Apexification is the process of induction of root end closure in incompletely formed roots.
    - In apexification, there is incomplete length of root, whereas in apexogenesis there is complete formation of root.

31. **The success of reimplantation procedures is related to**
    a) Vitality of the pulp
    b) Extent of soft tissue injuries
    c) Time elapse between tooth loss and replacement
    d) Media in which tooth was stored after avulsion

    (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 485)
    - The success of the replantation procedure is undoubtedly related to the length of time that elapses between the loss of the tooth and its replacement in the socket.
    - The condition of the tooth, and particularly the condition of the periodontal ligament tissue remaining on the root surface, is also an important factor that influences the success of replantation.
    - Replantation should generally be viewed as a temporary measure. Under favorable conditions, many replanted teeth are retained for 5 or 10 years and a few for a lifetime. Others, however, fail soon after replantation.

Ans: **27–C** **28–C** **29–B** **30–A** **31–C**

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32. **A child who has an avulsed tooth ½ hour back should carry the tooth to the dentist in** (AIIMS 99)
a) Cold milk b) Normal saline
c) Wrapped in a wet handkerchief d) Buccal vestibule

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 487)
- Isotonic saline or pasteurized whole bovine milk (low fat) are the most favourable storage medium. If neither of these solutions are readily available, human saliva is preferable.
- Buccal vestibule or underneath the tongue is best for carrying the avulsed permanent tooth in adults if the patient is conscious and not in state of shock.
- There is no treatment for avulsed primary tooth; usually they are not replanted.

33. **The best alternative storage medium for avulsed teeth in case culture media are NOT available is** (Kar 2009)
a) Milk b) Water c) Saline d) Blood

(Ref: Child dentistry by McDonald, 7th ed, p 488)
Milk has been shown to be a suitable storage medium that is also often readily available (skim or low-fat milk, if available, is preferred). Isotonic saline is another excellent solution to use for this purpose if it is available. Saliva is a better storage medium. Neither water nor saliva is as good as milk or saline, if the tooth must be stored for a long period (more than 30 minutes before replantation). A compilation of the information indicates that Hank's buffered saline, isotonic saline, and pasteurized bovine milk may be the most favorable known storage media. If none of these solutions is readily available, human saliva is an acceptable short-term substitute storage liquid. Presumably, the patient's saliva (and perhaps blood) would be readily available to collect in a small container. Because water is hypotonic, its use leads to rapid cell lysis and increased inflammation on replantation.

34. **Avulsed tooth may be stored in saliva for upto** (AIPG 2006)
a) 2 hours b) 3 hours c) 4 hours d) Indefinitely

(Ref: Cohem 8th ed, p 636)

35. **To store avulsed tooth. which kind of milk is shown to be suitable?** (COMED 08)
a) Hot milk b) Cold milk c) Low fat milk d) High fat milk

(Ref: McDonald's 8th ed, p 87)
Prognosis in the permanent dentition is primarily dependent upon formation of root development and extraoral dry time. The tooth has the best prognosis if replanted immediately.
If the tooth cannot be replanted within 5 minutes, it should be stored in a medium that will help maintain vitality of the periodontal ligament fibers. Transportation media for avulsed teeth include (in order of preference) **Viaspan™, Hank's Balanced Salt Solution (tissue culture medium), cold milk, saliva (buccal vestibule), physiologic saline, or water.**

The risk of ankylosis increases significantly with an extraoral dry time of 15 minutes. An extraoral dry time of 60 minutes is considered the point where survival of the root periodontal cells is unlikely.

In permanent avulsed teeth, there is considerable risk for pulp necrosis, root resorption, ankylosis, and subsequent infraocclusion during adolescent growth.

Viaspan, also known as University of Wisconsin solution (UW solution), was the first solution thoughtfully designed for use in organ transplantation, and became the first intracellular-like preservation medium.

Developed by Folkert Belzer and James Southard for pancreas preservation in the late 1980s, the solution soon displaced EuroCollins solution as the preferred medium for cold storage of livers and kidneys, as well as pancreas. The solution has also been used for hearts and other organs. Viaspan remains what is often called the ***gold standard* for organ preservation**, despite the development of other solutions that are in some respects superior.

The guiding principles for the development of Viaspan were:
1. Osmotic concentration maintained by the use of metabolically inert substances like lactobionate and raffinose rather than with glucose.
2. Hydroxyethyl starch (HES) is used to prevent oedema.
3. Substances are added to scavenge free radicals, along with steroids and insulin.

Composition
Potassium lactobionate: 100 mM
- KH_2PO_4: 25 mM
- $MgSO_4$: 5 mM
- Raffinose: 30 mM
- Adenosine: 5 mM
- Glutathione: 3 mM
- Allopurinol: 1 mM
- Hydroxyethyl starch: 50 g/L

Ans: 32–A 33–A 34–A 35–C

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36. **Which medium of storage for avulsed tooth is best for prolonged extraoral periods?** (COMED 10)
a) Hank's balanced salt solution
b) Milk
c) Distilled water
d) Saliva

(Ref: McDonald's 8th ed, p 487)
Transportation media for avulsed teeth include (in order of preference) Viaspan™, Hank's Balanced Salt Solution (tissue culture medium), cold milk, saliva (buccal vestibule), physiologic saline, or water.

37. **After avulsion of the tooth 60 minutes have elapsed, it is kept in doxycycline for 5 minutes for the purpose of** (BHU 09)
a) Revascularisation
b) Blocks Ca^{2+} channels
c) Conditioning of the cementum
d) Revitalisation of periodontal ligament

(Ref: Ingle 5th ed/838; Cohen—6th/508)
The answer should have been to make it resistant to resorption. This is not given in the options.
Doxycycline increases the revascularization if the time elapse is 30–60 minutes. After 1 hour it has to be used with the citric acid to make the root resistant to resorption.
Two factors are to be considered for success of replantation
1. Revascularisation of pulp
2. Maintain integrity of PDL ligament and prevent root resorption

Extraoral time	Condition of the apex	Prognosis and treatment	
30 minutes	Open	Revascularisation of the pulp and continued root development possible. **No need of pulp treatment**	
30 minutes	Close	PDL healing is excellent .**No need of pulp treatment**	
30-60 min	Open	Chances of revascularisation is poor. **Initiate apexification in the second appointment.**	The teeth should be soaked in doxycycline (1 mg/20 mL physiological saline) prior to replantation. This increases chances of revascularisation
30–60 min	Close	Root canal treatment has to be initiated within 7–10 days	The teeth should be soaked in doxycycline (1 mg/20 mL physiological saline) prior to replantation. This increases chances of revascularisation
More than 60 minutes	Open	Soaking is ineffective as all the cells might have died. **Here the main aim is to make the root resistant to resorption. Definitely the root canal treatment has to be initiated**	The teeth should be soaked in citric acid for 5 minutes followed by a 5-minute soak in 2% stannous fluoride, followed by another 5 minutes in doxycycline, after which they are replanted.
More than 60 minutes	Closed	Soaking is ineffective as all the cells might have died. **Here the main aim is to make the root resistant to resorption. Definitely the root canal treatment has to be initiated**	The teeth should be soaked in citric acid for 5 minutes followed by a 5-minute soak in 2% stannous fluoride, followed by another 5 minutes in doxycycline, after which they are replanted.

If the child is brought within 30 min—no need of endodontic treatment.
If the child is brought in 30–60 min—Root cancal treatment can be done at second appointment or 7–10 days of replantation.
If the child has brought after 60 minutes—do the Root canal treatment immediately before replantation.
The chances of revascularisation with doxycycline are double with immature roots compared to closed apex.

Ans: 36–A 37–A

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38. **Chief cause of failure of replantation of avulsed tooth**
   a) Ankylosis
   b) Infection
   c) External resorption
   d) Internal resorption

(Ref: Endodontic Practice by Grossman 11th ed, p 333-334 and McDonalds Dentistry for Child and Adolescent 8th ed, p 490)
- Ankylosis and external resorption are common sequela of replantation of an avulsed tooth.
- Most failures are due to external resorption. Replantation of primary tooth is not generally indicated after its avulsion.

39. **An avulsed permanent upper central incisor was replanted at 7 years of age. At age 11, replanted tooth compared to normal central incisor**
   a) Supraocclusion due to ankylosis
   b) Infraocclusion due to ankylosis
   c) Same plane on that of normal
   d) None of the above

(Ref: Endodontic Practice by Grossman 11th ed, p 333-334)

40. **Recommended time period of splinting for avulsed anterior tooth**
   a) One week
   b) 2–3 weeks
   c) 6–8 weeks
   d) 2–3 months

(Ref: Endodontic Practice by Grossman 11th ed, p 284,331)

Period of stabilisation for injured teeth

1. Avulsion - 1 week
2. Subluxation - 2 weeks
3. Extrusion - 2–3 weeks
4. Intrusion - 6–8 weeks
5. Lateral luxation - 6–8 weeks
6. Root fractures - 2–3 months

41. **In a 2-year-old child maxillary deciduous central incisor is intruded by 4 mm. Treatment is**
   a) Remove the intruded incisor
   b) Resorption of the intruded incisor
   c) Make patient comfortable and observe
   d) Resorption and splint

(PGI 2K)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 518)
- Treatment of choice for intruded upper primary central incisor in trauma is **radiographic examination and periodic observation.**
- Never an intruded primary teeth should be forced to erupt. It should be allowed to erupt on its own if radiographs indicate that it is not causing any damage to permanent tooth bud.
- Partially intruded primary teeth should be left undisturbed as they usually re-erupt naturally within **3–4 weeks**. If the intruded tooth is found impinging on the permanent tooth bud, extraction of the tooth is indicated.

42. **A 10-year-old child has intrusion of permanent maxillary central incisor. The choice of treatment is**
   a) Put tooth in its place and splint it
   b) Allow tooth to erupt on its own
   c) Treat it orthodontically
   d) Do nothing

(PGI 99)

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 522)
- Re-eruption potential is high in young permanent teeth, hence the tooth should be left for 3 months.
- If it does not re-erupt, orthodontic extrusion is the choice of treatment.
- Root canal treatment and filling with calcium hydroxide should be done to prevent external resorption.

43. **Traumatic injury to primary tooth leads to intrusion; after how much time the teeth usually re-erupts?**
   a) 1 month
   b) 3 months
   c) 6 months
   d) 12 months

(PGI 08)

(Ref: Pedodontics by Shobha Tandon 2nd ed, p 591)
Intrusion—Radiographs are valuable for locating the intruded teeth and checking whether the crypt of the permanent tooth has been damaged or displaced. If the intruded tooth is found to be impinging on the permanent tooth bud, extraction of tooth is indicated.

Ans: 38–C 39–B 40–A 41–C 42–B 43–C

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Apart from this, the treatment usually involves a "Wait and Watch" policy. These teeth usually re-erupt within 6 months. If after 6 to 12 months the tooth has not shown any sign of movement, then ankylosis should be considered and extraction of tooth performed.

In case of permanent teeth. Re eruption potential is high in young permanent teeth, hence the tooth if intruded should be left for 3 months. If it does not re-erupt, orthodontic extrusion is the choice of treatment.

44. **CAPRYLHYDROCUPRIENOTOXIN in local anaesthetic is used as a**
a) Reducing agent b) Preservative c) Fungicide d) Vasoconstrictor

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 529)
Included in xylotox in small amount

45. **Acetylcholine theory was given by**
a) Dett Barn b) Goldman c) Wei d) Lee

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 529)
- Most accepted theory—**Specific receptor** by **STRICHARTZ**
- **Surface repulsion** theory given by WEI
- **Membrane expansion** theory given by LEE
- **Calcium displacement theory** given by GOLDMAN

46. **A child Rahul aged 7 years came with a chief complaint in his lower left back region of jaw since 4 days, pain was spontaneous in origin with a draining sinus, after observation of the tooth which was found to be grossly decayed 36; the dentist decides to remove the tooth. What should be the level of insertion of needle if IAN is chosen as a mean of anaesthetizing the tooth and surrounding area**
a) Above the occlusal level b) Below the occlusal level
c) At the occlusal level d) Can be at any level

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 529-530)
It depends on the location of mandibular foramen which is:
1. Below 5 yr age 0.5 mm below occlusal plane
2. At age of 6 yr it is at the level of occlusal plane
3. Above 6 years it is above occlusal plane.

47. **In performing mandibular nerve block for a child patient, the most probable cause of failure of anaesthesia is**
a) More concentration of LA is required (AIPG 2009)
b) Because of different angulation of needle
c) Because of position of mandibular foramen
d) None of the above Ans is B

(Ref: Shobha Tandon, 1st ed, p 469)
EFFECT OF MANDIBULAR FORAMEN
Mandibular foramen is situated at a lower level than occlusal plane of primary teeth.
Therefore injection must be made slightly lower & more posteriorly than for an adult patient.

48. **The use of EMLA in paediatric age group of below 6 months is**
a) Low margin safety b) Contraindicated
c) Can be used safely d) Depends on child weight

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 536)
Its use is contraindicated in child age below 6 months because of chances of its metabolite prilocaine to cause methemoglobinaemia.

49. **Most common non-odontogenic cyst in paediatric population is**
a) Mucocele b) Compound odontome
c) Complex odontome d) Traumatic bone cyst

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 551)
- Also known as progressive hemorrhagic bone cavity or extravasation bone cyst
- Traumatic aetiology

Ans: **44–B** **45–A** **46–A** **47–B** **48–B** **49–D**

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50. **Most commonly used retrofilling material after periapical surgery is**
a) Amalgam
b) GIC
c) Zinc-free amalgam
d) Indium containing amalgam

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 558)
Gutta percha can also be used.

51. **The most protected area in paediatric population is**
a) Chin
b) Nasal
c) Zygoma
d) Midface

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 559)
Retrusive midface is the most protected area in children.

52. **Injury occurring due to penetration of commonly used objects like tooth brushes in the mouth is called as**
a) Abrasion
b) Impalement
c) Lacerations
d) Contusion

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 561)
Also remember, the most common type of facial lacerations sustained by a child in age group of 1–4 years are small and burst type.

53. **The injuries involving soft tissues with or without hard structures is quite common in paediatric patients with the commonest location being**
a) Nose
b) Chin
c) Cheeks
d) Frontal bone

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 561)
- Studies shown chin to be mostly involved in case of soft tissues injuries
- Scar on chin gives an indication of injuries in the past

54. **Maximum period of fixation for condylar fractures in 10-year-old child is** (MAHE 2011)
a) 7-10 days
b) 3 weeks
c) 4 weeks
d) 6 weeks

(Ref: Killey's Mand # 4th ed, p 281)
In case of subcondylar fracture in children below 10 years – No immobilization and no active treatment is required if the occlusion is undisturbed. If the occlusion is grossly deranged, IMF is indicated for 7–10 days with intermittent active mouth openings.

55. **A 10-year-old child named Pankaj suffered injury to his chin region and underwent surgery. During the end of surgical procedure significant oozing of blood is seen and thus surgical drain is placed. What should be the timeframe after which the drain should be removed**
a) 2 days or when 24 hour drainage is less than 25 mL
b) 4 days or when 48 hour drainage is less than 25 mL
c) 3 days or when 48 hour drainage is less than 25 mL
d) 5 days or when 24 hour drainage is less than 25 mL

(Ref:Shobha Tandon Textbook of Pedodontics 2nd ed, p 580)

56. **Most frequently fractured area in paediatric patients is**
a) Chin
b) Nasal
c) Mandible
d) Zygoma

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 585)
It is most frequent fractured area though growth retardation to midface area rarely occurs.

57. **The last facial bone to complete growth in a child is**
a) Maxillary sinus
b) Mandible
c) Maxilla
d) Nasal bone

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 586)
Mandible is the last facial bone to complete its growth and development.

Ans: 50–C 51–D 52–B 53–B 54–A 55–A 56–B 57–B

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58. **Among the following statements which is correct. In case of pulpal exposures of closed root apices**
   a) Pulp capping should be done if exposure is not more than 24 hours and pulpotomy should be done if exposure is within 72 hours
   b) Pulp capping should be done if exposure is not more than 72 hours and pulpotomy should be done if exposure is within 24 hours
   c) Pulp capping should be done if exposure is not more than 48 hours and pulpotomy should be done if exposure is within 72 hours
   d) Pulp capping should be done if exposure is not more than 24 hours and pulpotomy should be done if exposure is within 48 hours

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 593)
Pulp capping should be done if exposure is not more than 24 hours and is pin point size. pulpotomy should be done if exposure is within 72 hours
Pulpotomy is nothing but a form of apexogenesis if done on permanent tooth with open apices

59. **Which of the following is indicated in the fractures of permanent incisors with open apex. The fracture occurred 20 minutes back with pulp involvement.** (AIPG 2008)
   a) Pulp capping
   b) Formocresol pulpotomy
   c) Calcium hydroxide pulpotomy
   d) Pulpectomy

(Ref: McDonald's 8th ed, p 466 and Shobha Tondon 2nd ed, 404, 421)
In open apex cases to maintain vitality of radicular pulp, calcium hydroxide pulpotomy is indicated to continue the root end formation. This is called as apexogenesis.
However if the injury has occurred 48–72 hours before the beginning of the treatment assume pulp to be necrotic and proceed for pulpectomy and apexification.

60. **A 3rd generation bisphosphonate topical agent applied on root surface during reimplantation purposes of tooth to enhance periodontal regeneration is**
   a) Aldendroate
   b) Citric acid
   c) MTA-D
   d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 597)
- Alendroate — Topical agent with osteoclastic inhibitory activity
- Allow periodontal regeneration
- Inhibit and prevent replacement resorption

Remember: EMDOGAIN also has similar function

61. **Optimal time for tooth transplantation with respect to root development process is**
   a) Root is 2/3rd to 3/4th complete
   b) Root is half to 2/3rd complete
   c) Root is half to 3/4th complete
   d) Tooth can be transplanted with equal success rate irrespective of stage of root development

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 599)
Optimal time for tooth transplantation is when root is ½ to 3/4th formed

62. **The most commonly used mouthguards today are**
   a) Boil and bite mouthguards
   b) Stock mouthguards
   c) Shell lined mouthguards
   d) Bulky mouthguards

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 605)
- These are mouth formed mouthguards.
- Fabricated by placing mouthguard form in boiling water to soften it and then softened material is placed in athelete's mouth and adapted.

63. **The most preferred mouthguards are**
   a) Type I
   b) Type II Sub 1
   c) Type II Sub2
   d) Type III

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 608)
Type I: Stock mouthguards, they are least preferred
Type II: Mouth formed mouthguards
Type III: Custom fabricated mouthguards, they are most preferred

Ans: 58–A 59–C 60–A 61–C 62–A 63–D

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64. **Mahesh a 12-year-old child is exhibiting possibility of going into unconsciousness during an extraction procedure of his grossly decayed 36 tooth. Which position he should be kept now**
a) Semi supine b) Trendelenberg c) Semierect d) Supine

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 609)
- Here head and heart are at same levels with legs being slightly elevated.
- Position used during unconsciousness of child exhibiting possibility of unconsciousness.
- Tredelenberg position is not preferred because lower position of head may make child feel difficult to breath.

65. **During acute respiratory distress like an asthma attack which position is preferred for a paediatric patient**
a) Supine b) Semisupine c) Semierect d) Erect

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 610)

66. **Which method is followed to access the breathing pattern of a child suffering from dental or medical emergency**
a) Listen-feel-look technique b) Listen-look-feel technique
c) Look-listen-feel technique d) Feel-look-feel technique

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 610)
The doctor observes the rise and fall of chest and at the same time feels and listens to the breath sounds.

67. **The average percentage of oxygen delievered using mouth-to-mouth respiration technique in a medical emergency is**
a) 9% b) 18% c) 27% d) 35%

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 568)
- Ambu bag delivers 21% of oxygen as compared to 18% oxygen delievered by mouth-to-mouth respiration.
- Ambu bag is more hygienic and can be attached to an oxygen cylinder to deliever 100% of oxygen.

HIGH-YIELD FACTS

1. **Fracture of permanent maxillary central incisors is common in _____ type of malocclusion** [Class II. Div I]
2. **Calcium hydroxide should be retained for at least _____ weeks when used in indirect pulp capping** [6–8 weeks]
3. **Commonly used chemical for primary tooth pulpotomy is _____** [Formocresol]
4. **Failure of calcium hydroxide pulpotomies in primary teeth is due to _____** [Internal resorption]
5. **Total volume of pulp of all permanent tooth _____ cc** [0.38 cc]
6. **Average volume of pulp in lower permanent central incisor is _____** [0.006 cc, Lowest]
7. **Average volume of pulp in upper permanent maxillary first molar is _____** [0.068 cc Highest]

Ans: 64–D 65–C 66–C 67–B

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I. Match the following conditions with Ellis classification of tooth fractures

1. Fractures of crown involving exposure of pulp
2. Displacement of tooth without crown and root fracture
3. Fractures of primary teeth
4. Teeth lost due to trauma (avulsion)
5. Fractures of root without crown fractures

a) Class I
b) Class II
c) Class III
d) Class IV
e) Class V
f) Class VI
g) Class VII
h) Class VIII
i) Class IX

Ans: 1-c, 2-g, 3-i, 4-e, 5-f

II. Match the following

1. Laceration
2. Abrasion
3. Contusion
4. Fracture
5. Avulsion

a) Sudden violent breach in continuity of bone
b) Discontinuity in skin or mucosal surface
c) Injury produced by blunt injury resulting in oedema or haematoma formation
d) Injury results from friction along surface, removing or "peeling off" of superficial layer of skin
e) Loss of tissue due to trauma

Ans: 1-b, 2-d, 3-c, 4-a, 5-e

MINOR SURGICAL PROCEDURES

1. **Narcotic opium alkaloid most commonly used in children**
   a) Morphine b) Codeine c) Meperidine d) Naloxone

   (Ref: Clinical Pedodontics by Finn 4th ed, p 128)

2. **Which of the following systemic conditions contraindicate the administration of nitrous oxide to a child patient?**
   a) Asthma b) Mental retardation
   c) Sickle cell anaemia d) All of the above (Man 98)

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 295 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 161)

   Contraindications of N_2O sedation:
   - COPD
   - Asthma
   - Respiratory infections
   - Sickle cell anaemia (for general anaesthesia, all anaemias are contraindications)
   - Otitis media and epilepsy.

3. **Which of the following is a premedication of choice for a dental patient below 2 years?**
   a) Nitrous oxide b) Chloral hydrate c) Barbiturate d) Ethyl chloride

   (Ref: Clinical Pedodontics by Finn 4th ed, p 131)
   - Barbiturates and chloral hydrate are most commonly used for sedation in child patients
   - Chloral hydrate is an extremely well known and widely used drug for paediatric sedation.
   - Onset of action: 30 to 60 minutes (orally)
   - Duration of action between 4 and 8 hours and a half-life of 8 to 11 hours as a result of the formation of active metabolites.
   - Primary metabolite of choral hydrate is trichloroethanol, which is responsible for most of the CNS effects that occur.

Ans: **1–B** **2–D** **3–B**

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4. **In behaviour modification, what is the most common route for premedication?**
   a) Oral b) Intramuscular
   c) Subdermal d) Intravenous (AIPG 2009, AIIMS Nov 09)

(Ref: Dentistry for the Child and Adolescent by McDonald 4th ed, p 298)
The oral premedication of the patient with minor tranquilizers in advance of the use of inhalation or parenteral sedation methods is a common practice. This technique works especially well to calm the patient for a smoother beginning of a sedative appointment.

5(i). **Most common route for conscious sedation in pedodontic patients is**
   a) Intravenous b) Intradermal c) Submucosal d) Subdermal (AIPG 2009)

(Ref: Dentistry for the Child and Adolescent by McDonald 11th/286–296)
Eighty-five percent of paediatric dentists use nitrous oxide and oxygen for sedation of patients. This makes it the most frequently used sedative agent (in the options inhalational route is not given).

Submucosal sedation involves the deposition of the drug beneath the mucosa. **Its use is almost exclusively the province of dentistry.**

The site usually chosen for injection is the buccal vestibule, particularly in the area of the maxillary primary molar or canine teeth. The site of injection is the vessel-rich areas considered to be somewhere between those of the intramuscular and the intravenous administration of a drug. This fact makes the method suitable for the paediatric patient for whom quick administration and onset is desirable. The local anaesthetic required for pain control of the procedure should not be given in the same area after the injection of the sedative drug, because the action of the vasoconstrictor will slow the uptake of the sedative drug. The drugs most commonly administered by the submucosal technique are the narcotics meperidine and fentanyl.

Inhalation sedation is the next most frequently combined technique. Nitrous oxide and oxygen can be combined with all other methods of conscious sedation.The orally administered sedatives are the next most commonly employed in combination.

*****Remember, for general patients, inhalational route followed by the intravenous route are preferred methods of conscious sedation.

5(ii). **Preferred route of anesthesia in a child patient are all except (another form of above question according to some other students)**
   a) Oral b) IV c) Intradermal d) Submucosal

(Ref: McDonald's 8th ed, p 292)
Intradermal is not preferred in children.

6. **The drug given through inhalation to achieve conscious sedation**
   a) Diazepam b) Chloral hydrate c) Halothane d) $N_2O + O_2$

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 296 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 160)

7. **A drug which is not used to provide conscious sedation in a child is**
   a) Nitrous oxide b) Chloral hydrate
   c) Hydroxyzine d) Lincomycin (Kar 99)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 302 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 158)
- All mentioned options are used in conscious sedation except lincomycin.
- Lincomycin is a lincosamide antibiotic that comes from the actinomyces *Streptomyces lincolnensis.*

8. **A drug which creates a mild stage of central depression so that the patient, though awake, exhibits a lessened degree of cortical excitability and thus behaves in a more calm and phlegmatic manner is a**
   a) Sedative b) Anaesthetic c) Hypnotic d) Analgesic

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 157)
- Sedation is the act of calming, allays excitement without producing sleep. Sedative drugs decrease responsiveness to any level of stimulation and cause some decrease in motor activity and ideation.
- Hypnotic is a drug that produces and/or maintains sleep, similar to normal arousable sleep. This is not to be confused with 'hypnosis' meaning a trance-like state in which the subject becomes passive and highly suggestible.

Ans: 4–A 5(i)–C 5(ii)–C 6–D 7–D 8–A

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Agents used for sedation in children are

Gases	▪ $N_2O + O_2$ (Frequently utilized method)
Benzodiazepines	▪ Diazepam ▪ Midazolam
Sedative hypnotics	▪ Barbiturates ▪ Chloralhydrate
Narcotics	▪ Meperidine ▪ Fentanyl
Antihistamines	▪ Hydroxyzine ▪ Promethazine (phenergan) ▪ Chlorpromazine ▪ Diphenhydramine
Dissociative agents	▪ Ketamine

9. **Recommended oral dose of midazolam for paediatric patients is**
   a) 0.25 to 1.0 mg/kg
   b) 1.0 to 2.0 mg/kg
   c) 2 to 5 mg/kg
   d) 5 to 10 mg/kg
   (PGI 06, 09)

   (Ref: McDonald's 8th ed, p 304)
   Compared with diazepam, midazolam produces better anxiolysis and amnesia. Midazolam is three to four times more potent than diazepam and has twice the affinity for the benzodiazepam receptor.
   Dosage: Oral—0.25 to 1.0 mg/kg to a maximum single dose of 20 mg

10. **Reversal of benzodiazepine is brought about by**
    a) Naloxone
    b) Flumazenil
    c) Midazolam
    d) Lorazepam
    (MP 06)

    (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 304)
    The anaesthetic action of BZDs can be rapidly reversed by flumazenil 0.5–2 mg I.V.

11. **What is a suitable alternative antibiotic when child is sensitive to penicillin?**
    a) Tetracycline
    b) Erythromycin
    c) Sulfonilamide
    d) Ampicillin
    (MAHE 97)

    (Ref: Clinical Pedodontics by Finn 4th ed, p 446)
    In dentistry erythromycin is an excellent substitute in the treatment of dental infections in patients who are allergic to penicillin.

12. **Adult dose is 100 mg, average dose for 6-year-old normal child may be**
    a) 100 mg
    b) 75 mg
    c) 50 mg
    d) 25 mg

    If adult dose is 100%, average dose for
    12 years 75% (or) 3/4 of adult
    6 years 50% (or) 1/2 of adult
    3 years 25% (or) 1/4 of adult

13. **In four-handed dentistry, in what direction should a syringe be passed to an operator (right hand) while working on a child patient**
    a) Over the patient's right shoulder below the level of sight
    b) Behind the patient
    c) Over the patient's left shoulders below the level of sight
    d) In front of patient's sight

    (Ref: Clinical dentistry by Lura Mitchell 5th ed, p 292-293)
    Development of four-handed dentistry is credited to Ellis Paul.

14. **During administration of an inferior alveolar block, the assistant should**
    a) Stabilize the patient's head
    b) Hold the patient's feet
    c) Block the child's vision of needles
    d) Gently block the child's hands and arms

    (Ref: Pinkham 4th ed, p 450)

Ans: **9–A** **10–B** **11–B** **12–C** **13–C** **14–D**

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15. **Adequate local anaesthesia for upper primary second molar can be secured by** (AIPG 97)
    a) Tuberosity block only
    b) Buccal infiltration alone
    c) Buccal and palatal infiltration
    d) Tuberosity block and anterior palatine block

(Ref: Pinkham 3rd ed, p 414-415)

16. **Where is the point of insertion of the needle when an inferior alveolar block injection is given in a child as compared with an adult?** (AIIMS 2K, Kar 96)
    a) Lower than for an adult
    b) Higher than for an adult
    c) At the same level as an adult
    d) More anterior than for an adult

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 532)

- Compared to an adult, inferior alveolar nerve block in a child is given at a level **lower than for adults.** This is due to difference in position of lingual foramen.
- In children, the mandibular foramen lies about 0.4 cm below the occlusal plane, due to the underdeveloped ramus of the mandible.
- Therefore, during inferior alveolar nerve block, the needle is inserted in a position inferior to the occlusal plane.

17. **Adequate anaesthesia for cavity preparations on mandibular primary molar is provided by** (AIIMS 89)
    a) Mental nerve block
    b) Inferior alveolar nerve block
    c) Infiltration around the tooth
    d) None of the above

(Ref: National Boards April 1985 Question No 17)
For extraction, inferior alveolar nerve block has to combined with the long buccal nerve block.

18. **Which of the following local anaesthesia techniques is recommended for extraction of a primary mandibular molar?** (Kar 96)
    a) Labial and lingual infiltration
    b) Inferior alveolar nerve block
    c) Intraosseous injection near apices
    d) Inferior alveolar nerve block and a long buccal nerve block
    e) Inferior alveolar nerve block and mental nerve block

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 273)

19. **What routine postoperative instructions should be given to a child or his parents following a primary tooth extraction?** (Kar 96)
    a) The child's activity should be restricted for the remainder of the day
    b) The parent should contact the dentist if there is any blood on the child's pillow the next morning
    c) The child should not bite his anaesthetised lip or cheek
    d) The child should not eat or drink for the rest of the day

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed pg nu 469)

- Common problem associated after a mandibular nerve block in children is **lip biting.**
- Lip biting is common sequela in children after local anaesthesia is given for extraction of teeth.
- Parents should be warned about this and advised to watch the child until anaesthetic effect vanishes away.

20. **Wand is the name of equipment used for** (Kar 06)
    a) Jet injection
    b) Electronic dental anaesthesia
    c) Computer controlled local anaesthesia
    d) General anaesthesia

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 421 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 533)

- The wand local anaesthesia system is a computer controlled injection device, the size of a paperback book.
- It accommodates a conventional local anaesthetic cartridge that is linked by microtubing to a disposable, lightweight, pen-like handle with a Luer lock needle attached.
- The computer-controlled system is activated by a foot control that automates the delivery of local anaesthetic at a precise pressure and volume ratios, resulting in an effective and comfortable injection. Patients who have experienced an injection with this system report a virtually imperceptible needle penetration followed by a sensation of mild pressure.

Ans: 15–C 16–A 17–B 18–D 19–C 20–C

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21. **"Jet injection" was introduced by**
a) Massler b) Figge & Screrer c) Mckay d) Kruger and Thoma

(Ref: Handbook of Local Anaesthesia by Malamed 5th ed, p 89)
- B Figge and Screrer in 1947 introduced jet injection (syrijet) or painless anaesthesia.
- Jet injections are given under high pressure through small opening into the mucosa or skin without much trauma.

DENTI PATCH:These are controlled releasing devices. Topical agent is incorporated into a matrix, which will adhere to mucosa and allow slow release of anaesthetic drug. E.g.: Lidocaine transoral delivery system in 10% and 20% concentrations.

22. **A permanent tooth bud, which has been accidentally removed during extraction of a deciduous tooth, should be**
a) Discarded
b) The socket curetted and the tooth bud replanted with primary teeth (AIIMS 99, AP 04)
c) Pulpectomy of the tooth bud and placed into the socket
d) Place deep into the socket from where it was removed

(Ref: National Boards July 1977 Question No 8)
While extracting a primary molar if the tooth bud of permanent tooth is accidently removed, **replace the tooth bud and suture.**

23. **The most frequent cause of fracture of a root tip during extraction of a primary molar is**
a) Ankylosis of the tooth (AP 98, AIIMS Nov 09)
b) Improper use of cow horn forceps
c) Presence of supernumerary premolar
d) Root resorption between apex and bifurcation

(Ref: National Boards April 1979, Question No 82)

24. **Best method to extract lower primary second molar to prevent injury to permanent tooth bud**
a) Luxate the tooth buccally c) Luxate the tooth around long axis (AIPG 98)
b) Luxate the tooth lingually d) Split the tooth and remove in two pieces

25. **Most common cause for pain of dental origin in children**
a) Gingivitis b) ANUG and Herpes
c) Pulpitis and food impaction d) MPDS and aphthous ulcers

26. **Frenectomy in a child patient is a procedure performed to**
a) Remove an impacted tooth
b) Effect separation of ligament and mucosa
c) Relieve tension on ligament attachments
d) Relieve tension on teeth

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 441)
- *A frenectomy* involves complete excision of the frenum and its periosteal attachment.
- *A frenotomy* involves incision of the periosteal fiber attachment and possibly suturing of the frenum to the periosteum at the base of the vestibule. It is associated with less postoperative discomfort than a frenectomy and will usually suffice.
- A frenectomy is indicated when large, fleshy frenums are involved.

27. **The repair of cleft palate is primarily done for**
a) Correction of speech b) Correction of aesthetics (PGI 06)
c) Induce the growth of maxilla d) Induce the growth of mandible

(Ref: McDonald's 8th ed, p 702)
i. Improves speech ii. Also improves hearing and swallowing
"Effect of the cleft palate repair on mid facial growth, speech and dental occlusion greatly influences the timing of repair.

If palate repair is done after full growth of the maxilla, mid-facial growth retardation and dental malocclusion problems will be less, but speech problem will become very severe. Early repair leads to a better speech development but severe mid-facial growth retardation and dental malocclusion.

Experience of most of the surgeons shows that the repair of palate between 1–1½ years of age gives the best balanced result."

Ans: 21–B 22–D 23–D 24–D 25–C 26–B 27–A

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28. **In children with mixed dentition, fracture mandible is treated by** (COMED 06)
   a) Bone plating
   b) Transosseous wiring
   c) Eyelet intermaxillary wiring
   d) Cap splint with circumferential wiring

(Ref: Neelima malik 1st ed pg nu 356)

29. **In children below age of 8 yr, high level of craniofacial disjunction of Le Fort III classification is rarely seen because** (COMEDK 07)
   a) Children in that age group really get affected by such traumatic incidence
   b) Facial skeleton is covered with thick soft tissue
   c) There is lack of poorly developed ethmoidal & sphenoidal sinus
   d) The line of demarcation between medullary & cortical bone is less evident

(Ref: Shobha Tandon Textbook of Pedodontics 1st ed, p 492)

SPACE MAINTAINERS, INTERCEPTIVE ORTHODONTICS AND MISCELLANEOUS

1. **An 8-year-old child comes to your clinic with large front teeth having jagged margins; what is the treatment plan for the patient,** (AIPG 2011)
   a) Smoothen the jagged margins and apply fluoride varnish
   b) Build up other teteth to large size
   c) Extracting large teeth
   d) Assure him, and send him back

This is early duckling stage and mixed dentition stage before prebubertal growth spurt. The central incisors appear larger relative to face size. However, the face grows vertically during growth spurt and relatively the large front teeth now will get adjusted to the face proportion.

2. **Which of the following series acts as the best space maintainer in a child's mouth?** (AIIMS 92, PGI 96)
   a) Lingual arch
   b) Band and loop
   c) Properly restored tooth
   d) Removable functional type

NATIONAL BOARDS
A properly restored tooth is the best space maintainer (given in Cohen 8th edition).
Space maintainers come under "Specific protection". (AIPG 2012)

3. **Early loss of deciduous teeth causes** (AIPG 93)
   a) Early eruption of permanent teeth
   b) Delayed eruption of permanent teeth
   c) Missing permanent teeth
   d) Crowding of permanent teeth

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 178 and Shobha Tandon 2nd ed, p 96,448)

- Eruption of the premolar teeth is delayed in children who lose primary molars at 4 or 5 years of age and before.
- If extraction of the primary molars occurs after the age of 5 years, there is a decrease in the delay of premolar eruption.
- At 8, 9, and 10 years of age, premolar eruption resulting from premature loss of primary teeth is greatly accelerated.
- Premature extraction of deciduous molars will cause crowding of teeth due to space loss associated with tipping, rotation or bodily movement
- B option is more preferred than option D as first there will be delayed eruption and then crowding of arch.

4. **Rate of space loss following extraction of mandibular permanent fisrt molar is?**
   a) 1 mm/year
   b) 1.5 mm/year
   c) 2 mm/year
   d) 2 mm/year

(Ref: Pedodontics by Shobha Tandon 2nd ed, p 448)
According to Seward, rate of closure is 1.5 mm/yr in maxilla after extraction, while in mandible it is 1 mm/yr. Northway stated that rate of space loss is greater in the first year following an extraction than in successive years. Average loss was 2.6–3.2 mm in 7 years (aprox 0.8 mm/yr).

Ans: 28–D 29–C 1–D 2–C 3–B,D 4–A

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5. **Primary objective for not extracting primary teeth is** (PGI 95)
   a) To prevent arch length deficiency
   b) Mastication and speech
   c) To prevent development of aberrant oral habits
   d) All of the above

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 446-447)
   - Deciduous teeth provide a mould for proper growth of both of the jaws so that the permanent teeth have adequate space for alignment.
   - Premature loss of deciduous tooth or a group of teeth can have other range of implications which includes problems of speech, esthetics, psychological effects, masticatory problems, and problems associated with dentofacial growth stimulation, etc.

6. **Time period usually required for erupting premolar tooth to move through one (1) mm of bone is** (Kar 06)
   a) 1–2 months b) 4–5 months c) 6–9 months d) 10–12 months

   (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 633)
   Erupting premolars usually require 4 to 5 months to move through 1 mm of bone as measured on a bite-wing radiograph.

7. **The functions of the space maintainer**
   a) Replace the tooth
   b) Preserve the arch length
   c) Allow the permanent tooth to erupt unhindered
   d) All of the above

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 452)
   Space maintainer should meet with the following requirements:
   - Maintain intra-arch (mesio-distal) and inter arch space (should allow vertical eruption of adjacent teeth) maintenance
   - Should not affect permanent teeth eruption
   - Maintains individual tooth functional movements as well as provides mesiodistal space opening when it is desired

8. **For a 3-yr-old child a removable space maintainer is fabricated. What is the biggest disadvantage of this appliance?** (COMED 09)
   a) Irritation to supporting tissues b) Difficult to clean
   c) Child may not tolerate wearing d) Function will be compromised

   (Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 465 ans McDonald's 8th ed, p 638)

9. **Space maintainer is contraindicated in**
   a) High dental caries activity b) Replacement of primary anterior
   c) Crowded occlusion d) All of the above

   (Ref: Contempory Orthodontics by Profit 3rd ed, p 419 and 422)

10. **Band and loop space maintainer is a**
    a) Passive appliance b) Active appliance c) Both of the above d) None of the above

    (Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 635 and Shobha Tandon 2nd ed, p 456)
    - It is a type of fixed non-functional and passive space maintainer
    - It does not restore chewing function and will not prevent the continued eruption of the opposing teeth.

11. **The principal advantage of functional type of space maintainer is**
    a) It is removable
    b) Replaces the tooth/teeth
    c) Prevents mesial drift of the permanent molar
    d) Prevents supraeruption of the teeth of the opposing arch

    (Ref: Mathewson 2nd ed, p 399)

Ans: 5–A 6–B 7–D 8–C 9–C 10–A 11–D

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12. **Bilateral space maintainer is**
    a) Fixed lingual arch b) Band & loop c) Band & bar d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 635 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 457)

- It is a fixed passive mandibular arch appliance.
- The upper lingual arch (Nance appliance) or the lower lingual arch is the appliance of choice when bilateral space loss is present or when leeway space must be preserved.

13. **3-year-old girl has a central incisor removed because of trauma. What is the best appliance to use to replace the missing tooth?** (Kar 02)
    a) A removable appliance
    b) Fixed lingual wire with a tooth attached
    c) A fixed lingual wire only
    d) Hawley appliance with replacement tooth

(Ref: Clinical Pedodontics by Finn 4th ed, p 353): Pinkham chapter 25)

- If the parents do wish to replace the missing teeth, either a fixed lingual arch or a removable partial denture with attached primary teeth can serve as a prosthetic replacement (Fig. 25-1) – Pinkham Pediatrics.
- A kiddle partial denture – that is a fixed lingual arch with bands on first/second molars with acrylic teeth attached to its anterior portion is given in this patient.

14. **Following loss of upper two central incisors in a patient aged 8 years, treatment of choice**
    a) Orthodontic movement of laterals into the position of central incisors
    b) Temporary removable partial denture replacing lost tooth
    c) Place a fine bridge with laterals as abutments
    d) None of the above

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 638)

- If the anterior primary teeth were in contact before the loss or there is evidence of an arch-length inadequacy in the anterior region, a collapse in the arch after the loss of one of the primary incisors is almost certain.
- If spacing is present, it is desirable to construct a partial denture or a fixed appliance to reproduce a desirable aesthetic appearance, to reestablish function, or to prevent abnormal speech and tongue habits. Acrylic partial dentures have been used successfully to replace maxillary anterior primary teeth
- RPD is placed until canines erupt and root formation is complete. Lateral incisors alone cannot be used as abutment because of difference in periodontal root surface area.

According to official key option 'A' is given on answer.

15. **A lower lingual holding arch with 0.036 inch arch wire soldered to bands would be described as**
    a) Fixed non-functional bilateral multiple tooth loss
    b) Removable functional bilateral singular tooth loss
    c) Fixed non-functional bilateral singular tooth loss
    d) Fixed functional unilateral singular tooth loss

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 642 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 457)

Some space maintainers

Band and loop	Fixed, non-functional, passive	Both U/L arches	Unilateral single tooth loss, usually the first primary molar
Distal shoe	Fixed, intraalveolar eruption guidance appliance	Both U/L arches	Unilateral single tooth loss. Loss of second primary molar before the eruption of permanent first molar
Lingual arch	Fixed, non-functional, passive	Mandibular arch	Bilateral multiple tooth loss

contd.

Ans: 12–A 13–B 14–B 15–A

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Transpalatal	Fixed, non-functional, arch	Maxillary arch passive	Unilateral/Bilateral multiple tooth loss
Nance arch or Nance appliance	Fixed, non-functional, passive	Maxillary arch	It is equivalent to the lingual arch of the mandible
Removable partial denture	Removable, functional; sometimes it can be made non-functional		Multiple anterior upper tooth loss

16. **The intra-alveolar appliance is the**
    a) Transpalatal arch
    b) Nancy palatal arch
    c) Space regained
    d) Distal shoe appliance

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 636 and Shobha Tandon Textbook of Pedodontics 2nd ed, p 459)

- Distal shoe appliance was developed by Willets (1932). It was made of cast gold. It is also called as **Willets** appliance.
- Popularly used distal shoe appliance is crown or band bar appliance made of stainless steel described by Roche (1942).

17. **Distal shoe was first advocated by whom in 1929?**
    a) Wilson
    b) Willets
    c) Wilhem
    d) Rocfae

(AIPG 06, Kar 10)

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 459)

Distal shoe space maintainer (Intra-alveolar, Eruption guidance appliance)

- The fixed distal shoe space maintainer, was first reported by Willets in 1932.
- The appliance is constructed when there is a premature loss of the second primary molar, prior to the eruption of the first permanent molar.
- The commonly used one is that described by Roche, a crown or band and bar appliance.
- The major difference between the two appliances is the gingival extension.
- The Roche variety had a 'V'-shaped gingival extension while the Willets one had a bar type.

18. **A distal shoe space manintainer is indicated when a primary**
    a) Canine is in crossbite
    b) First molar is prematurely lost
    c) Second molar is lost after eruption of permanent first molar
    d) Second molar is lost prior to eruption of permanent first molar

(AIPG 90, 92, ABS 2013)

(Ref: McDonalds Dentistry for Child and Adolescent 8th ed, p 636 and Shobha Tandon 2nd ed, p 459)

Distal shoe space maintainer is mainly indicated to _____ (AIIMS 94) (*Guide eruption of mandibular permanent first molar*) (***It is also called as guiding appliance***).

Contraindications to distal shoe appliances

- Poor oral hygiene
- Blood dyscrasias
- Rheumatic fever
- Congenital heart diseases
- Loss of multiple tooth

19. **Distal shoe space maintainer extends intragingivally**
    a) 0.0–0.5 mm
    b) 0.5–1.0 mm
    c) 1.0–1.5 mm
    d) 1.5–2.0 mm

(BHU 09)

The guide plane of the appliance should be placed 1 mm below the mesial marginal ridge of the unerupted permanent first molar in the alveolar bone—**Pinkham**

The depth of the intragingival extension should be about 1.0 to 1.5 mm below the mesial marginal ridge of the molar, or just sufficient to "capture" its mesial surface as the tooth erupts and moves forward—**Mc Donald**

20. **In a 5-yr-old, tooth number 85 lost, which is indicated?**
    a) Distal shoe
    b) Bar and bar
    c) Removable appliance
    d) Band and loop

(MAHE 06)

(Ref: Shobha Tondon 2nd ed, p 459-463)

Ans: 16–D 17–B 18–D 19–C 20–A

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21. **An 8-year-old child with normal tooth calcification and eruption has primary mandibular second molar extracted. The resulting space should** (AIPG 2008)
   a) Maintained until the premolar root is 2/3rd developed
   b) Closed slightly to accommodate the smaller premolar
   c) Ignored, because the 2nd premolar will erupt in a short time
   d) Left untreated, because the difference in size between the primary molar and the premolar will compensate for any drifting that might occur

Answering this type of questions requires the knowledge of chronology of eruption and exfoliation of teeth and indications and contraindications of space maintainer.

Loss of primary second molar at eight years of age is definitely premature loss. The expected exfoliation time is around 10 years. There will be loss of space in arch if some preventive measures are not intervened.

Again the need of space maintainance is dependent on the level to which the premolar has erupted.

The space needs to be maintained till the permanent tooth occupies the alveolar housing. When the posterior permanent tooth reach the crest of the alveolar ridge 2/3rd of root will be formed and is readying for cutting into the oral cavity..

However if radiographs show that the premolar has already reached the crest of alveolus no space maintainer is required. But that is not mentioned in the question.

22. **In an 8-year-old child, the first permanent molar erupts ectopically in mesial direction in an intact arch without excessive resorption of the primary molar roots and does not retract itself. The treatment of choice is to** (AIPG 2008)
   a) Extract the primary second molar
   b) Disking the distal surface of the primary second molar
   c) Use brass clip to distalize the molar
   d) No need of treatment, only observation

23. **There is premature exfoliation of lower primary second molar on right side. First molar has drifted mesially as well as canines and first premolar have drifted distally. Which of the following appliances you would like to suggest for regaining of space**
   a) Gerber space maintainer (regainer)
   b) Hotz lingual arch
   c) Lip bumper
   d) Sling shot space regainer

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 470-471)

Gerber space maintainer (regainer)	Moves posterior teeth distally and anterior teeth mesially
Hotz lingual arch	Used only when lower first molar alone drifted mesially but canines and premolars have not shifted distally
Lip bumper	Used when bilateral distal movement of permanent first molar is desired

Space maintaining is preventive and space regaining is interceptive procedure.

24. **Patient-friendly functional appliance**
   a) Bionator b) Activator c) Twin block d) Frankel (Kar 06)

(Ref: Orthodontic and dentofacial orthopedic treatment by Rakosi, Graber and R G Alexander 1st ed, p 104 and Proffit's Contemporary orthodontics 4th ed, p 398-399)

- These are the patient friendly appliances used to remove obstacles to increase the compliance as well as to motivate the patient for the treatment.
- The appliance has the advantage of allowing nearly a full range of mandibular movement, easy acclimatization and reasonable speech, so that it can be worn most of the time.
- The greatest disadvantage is that displacement of incisors can occur freely despite the absence of active springs or screws.

25. **The most commonly retained deciduous teeth in the adults** (MAHE 96)
   a) Mandibular second molars b) Maxillary canine
   c) Mandibular central incisor d) Maxillary lateral incisor

(Ref: Shafer's textbook of oral pathology 5th ed, p 86-87)
Submerged teeth are primary teeth and the most commonly involved are mandibular second molars.

Ans: 21–A 22–C 23–A 24–C 25–A

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26. **The only form of DNA which is left handed is**
a) A form b) B form c) E form d) Z form

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 726)
REMEMBER: Double helical model given by WATSON & CRICK was **"Right handed B type".**

27. **Genes which are transcribed in abundance in particular cell type are known as**
a) Leaky genes b) Luxury genes c) Mimic genes d) Silent genes

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 727)
Leaky genes: Switch in sequence of bases resulting in production of mutant protein which has partial enzymatic property
Mimic genes: Different genes producing same effect
Silent genes: Mutant forms of genes having no detectable phenotypic effect
Luxury genes: Genes which are transcribed in abundance in particular cell type, e.g., ovalbumin gene in eggs

28. **Most common facial injuries in cases of physical child abuse are**
a) Contusions and ecchymosis b) Abrasions and lacerations
c) Burns and bone fractures d) Bite marks

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 858)

29. **Most common type of child abuse in India is**
a) Child labour b) Sexual harassment
c) Sodomy d) Child marriages

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 859)
Remember: Child Labour (prohibition and regulation) Act was enacted by Indian government in the year 1986.

30. **Which among them is not a way to classify bite marks etiology**
a) Causative agent b) Material bitten c) Degree of biting d) Frequency

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 860-861)

31. **Which is a pattern of human bite form**
a) Horizontal b) Vertical c) Elliptical d) Triangular

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 863)
Elliptical or ovoid pattern is a characteristic human bite form.

32. **Widely used DNA testing method is**
a) Amplitype-beta test b) Polymarker test
c) Stephan Herald's method d) Polymarker alpha test

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 864)
- Amplitype-beta HLA-DQ-alpha Forensic kit is widely used method
- Poly Marker (PM) test is having maximum precision of 99.7%

33. **Which among them is a distinguishing feature in sex identification of a female**
a) Large and broad U-shaped palate b) Large frontal angle
c) Small frontal angle d) Large mandibular angle

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 866)
Others are male features

34. **How much is the normal inter-canthal distance**
a) Equal to alar nasal base width b) Equal to distance from right to left medial limbus
c) 3/4th of alar nasal basal width d) 3/4th of distance from right to left medial limbus

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 437)
Also note: mouth is as wide as distance from right to left medial limbus

Ans: **26–D 27–B 28–A 29–A 30–D 31–C 32–A 33–C 34–A**

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35. **Which mirror is used to detect the type of breathing pattern**
   a) Concave mirror
   b) Convex mirror
   c) Plain mirror
   d) Double sided mirror

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 438)
- Mirror is held between mouth and nose
- Fogging on nasal side indicates nasal breathing while on oral side indicates mouth breathing

36. **Unilateral nasal blocking can be detected by**
   a) Water test
   b) Butterfly test
   c) Mirror test
   d) All of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 438)
Also known as cotton test

37. **Which is the most common occlusion pattern seen in primary dentition**
   a) Mesial step
   b) Distal step
   c) Flush terminal
   d) None of the above

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 442)
- 49% cases seen are mesial step
- 37% cases seen are flush terminal
- 14% cases seen are distal step

38. **The likelihood of going to a class I relation in permanent dentition is greatest when the primary dentition is having**
   a) Flush terminal
   b) Mesial step
   c) Distal step
   d) All have equal chances

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 443)
Also note – There is 40% chances of crowding in permanent dentition if there is no spacing in primary dentition

39. **The greatest loss of space occurs after premature tooth loss is in**
   a) Maxilla
   b) Mandible
   c) Both maxilla and mandible have equal rate of space loss
   d) There is no space loss

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 448)
- STEWARD shown rate of space closure is 1.5 mm per year in maxilla and 1.0 mm per year in mandible
- The greatest space loss is seen in the first four to six months after premature extraction
- Many studies shown space loss is maximum in maxillary region due to premature loss of primary 2nd molars

40. **The most commonly used mixed dentition analysis is**
   a) Hixon and Oldfather
   b) Stanley analysis
   c) Radiographic measurements
   d) Arch perimeter analysis

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 452)
- Also known as MOYER'S ANALYSIS.
- Perimeter of arch is measured from mesial surface of one permanent molar to mesial surface of opposite molar

41. **Which is the commonly used distal shoe space maintainer**
   a) ROCHE'S distal shoe appliance with a bar type gingival extension
   b) WILLET'S distal shoe appliance with a 'V' shaped gingival extension
   c) ROACHE'S distal shoe appliance with a 'V' shaped gingival extension
   d) WILLET'S distal shoe appliance with a bar type extension

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 459)
- Commonly used is **ROACHE** distal shoe appliance as described by him in 1942
  It has a **'V' shaped** gingival extension
- **WILLET** in 1932 has described first the distal shoe appliance
  It has a **bar type** extension
- In lower arch it has a slight lingual position over crest of alveolar ridge while it's slightly facial in maxillary arch
- Gingival extension of it should be 1 mm below the marginal ridge of the unerupted tooth

Ans: 35–D 36–B 37–A 38–B 39–A 40–D 41–C

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42. **Concept of serial extraction was given by**
a) Kjellgren b) Hotz c) Nance d) Bunon

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 474)
- BUNON initiated the concept
- Term coined by KJELLGREN
- NANCE been called father of serial extraction
- Guidance to eruption was termed by HOTZ in 1970

43. **All types of functional appliances are constructed in a**
a) Construction bite b) Simulator bite
c) Adaptive bite d) Non-working bite

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 485)
Functional appliances are constructed in a construction or working bite

44. **The first functional appliance described by**
a) Robin b) Andresan c) Bunon d) Frankels

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 485)
- **ROBIN** in 1902 reported "monobloc"
- Modified by **ANDRESAN** in 1936 and termed activator in 1957

45. **Horse shoe appliance is used to correct what type of malocclusion**
a) Class I b) Class II Div 1 c) Class II Div 2 d) Class III

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 487)
- Developed by SCHWARTZ in 1997
- Used for class III Malocclusion correction
- Its advantage lies in that it does not allow for teeth eruption due to acrylic present over upper and lower teeth

46. **Clark's twin block appliance is trimmed at an angle of**
a) 30 degrees b) 45 degrees c) 70 degrees d) 90 degrees

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 487)
It is trimmed at an angle of 70 degrees

47. **The ideal age to introduce a pre-orthodontic trainer in a patient is**
a) 4-8 years b) 6-10 years c) 8-12 years d) 12-16 years

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 489)
- Tooth positioned pre-fabricated appliance
- Incorporates myofunctional and tooth positioning features
- Mainly given in mixed dentition phase to intercept developing malocclusion
- Ideal for age group between 6–10 years age

48. **Which among the following is a first coordinated muscular activity of an infant**
a) Suckling reflex b) Tongue thrusting
c) Finger sucking d) None

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 494)
- Can be seen at the earliest age of 29 weeks of intrauterine life
- Disappear normally by age of 1.5 to 3 years.

49. **Pacifier sucking is an example of**
a) Digit sucking b) Not-nutritive sucking (COMED 2009)
c) Implicative sucking d) Nutritive sucking

(Ref: Shobha Tandon pedodontics — 1st/429)
There are two forms of sucking.
Sucking habits can be classified into:
1. Nutritive sucking habits: (a) Breast feeding (b) Bottle feeding
2. Non-nutritive sucking habits (NNS habits): (a) Thumb or finger sucking (b) Pacifier sucking

Ans: 42–D 43–A 44–A 45–D 46–C 47–B 48–A 49–B

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Nutritive sucking: This is the sucking mechanism involved in breast feeding and bottle feeding
Non-nutritive sucking (NNS) is the earliest form of sucking adapted by child in response to frustration or anxiety. Children who are not breast fed properly and the children who are deprived affection try to satisfy their needs with habits like thumb sucking. Other forms are dummy sucking (pacifier sucking)

50. **The learning theory which states that non-nutritive sucking originates from adaptive response was given by**
a) Davidson b) Sears c) McDonalds d) Pinkham

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 495)

51. **Blue grass appliance is designed to treat**
a) Tongue thrusting b) Mouth breathing c) Nail biting d) Thumb sucking

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 504)
Introduced by **Haskell** in 1991. Digit sucking is seen to stop with immediate effect with this appliance.

52. **The only way to check quantitatively the extent of mouth breathing is by**
a) Inductive plethysmography b) Inductive manometry
c) Manometry d) Butterfly test

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 513)
Also known as rhinomanometry.

53. **One of the interceptive methods to correct mouth breathing is maxillothorax myotherapy given by**
a) Bunon b) Button c) Macaray d) McDonalds

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 515)
Used along with Macaray activator.

54. **Which syndrome along with Lesch–Nyhan syndrome shows features like repetitive finger, lip, tongue, knee and shoulder biting**
a) De Georges syndrome b) De Lange's syndrome
c) De Matthews syndrome d) Parkinsonism

(Ref: Shobha Tandon Textbook of Pedodontics 2nd ed, p 521)

55. **The normal color of primary teeth is**
a) Ivory white b) Creamy white c) Milky white d) China white

(Ref: Forensic medicine: clinical and pathological aspects. By Jason Payne-James, Anthony Busuttil, William S. Smock 1st ed, p 398)
Deciduous teeth are china-white in colour, while permanent teeth are ivory-white in colour (remember 'c' for both children and china white).

56. **Compared to permanent dentition, primary dentition**
a) Enamel and dentin are more mineralized (MAHE 06)
b) Dentinoenamel junction is scalloped
c) Dentine is uniformly calcified
d) Enamel and dentin thickness is more

(Ref: Kronfield Histopatho of teeth, 4th ed, p 63)
Dentin formed before birth is uniformly calcified.
The mineral content of primary teeth is less. The thickness of enamel and dentin (tooth structure) is less compared to permanent tooth. The dentin is uniformly calcicifed and there is absence of interglobular dentine. DE junction is relatively less scalloped than permanent dentition.

57. **The main difference between primary and permanent tooth is?**
a) Enamel prism arrangement
b) Mineral content (AIPG 2004)
c) Only dentine is different
d) None of the above

(Ref: James K Avery Oral Histology, 3rd ed p 216 and Shobha Tandon, Pedodontics, 1st ed p 275-276)
Here the question is talking about a general thing for the whole tooth and not the difference between enamel of primary vs permanent.

Ans: 50–A 51–D 52–A 53–C 54–B 55–D 56–C 57–B

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1. The mineral content of primary teeth is less than permanent teeth.
2. Option A is also right but its secondary, its just a histological criteria.
3. Clinically we decide mineralization/remineralization etc. by the mineral content and not the enamel prism arrangement. Also mineral content influences prism arrangement and not vice versa.

According to Dental Histology Textbook by James Avery - The enamel of primary and permanent teeth have the same prismatic structure...expect the surface of primary enamel has more of prismless enamel. Hence the best answer is B.

58. **Snap fit of stainless steel crown is obtained by which plier?**
a) Gordans plier b) Crimper b) Ball and socket c) Johnsons

(Ref: Stephan Wei, 1st ed., p 229)
It is crimping plier no 417
Crimping plier - snap fit
Johnson no 114 - Tight fit
Gordon - General contouring and shaping
Ball and socket - for producing contact points

SUBJECT REVIEW QUESTIONS

59. **Father of pedodontist in India**
a) Dr BR Vacher
b) Dr Rafiuddin Ahmed
c) Robert Bunon
d) Bowen
(WB 2014)

60. **Pedodontic triangle is given by**
a) Mischer
b) Mc Donald
c) Finn
d) Wright
(PGI 2012)

(Ref: Wright Mc Donald's Dentistry for Child and Adolescent, 8th ed., p 35; Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 5)
- Pedodontic triangle was given by GZ Wright.
- Apex of the pedodontic triangle is formed by _____ child.

61. **Pedodontic treatment triangle depicts**
a) One to two relationship among dentist, paediatric patient and parents
b) One to one relationship among dentist, paediatric patient and parents
c) One to three relationship among dentist, paediatric patient and parents
d) None of the above
(JKCET 2015)

Treating adults generally involves a **one-to-one** relationship, that is, a dentist-patient relationship. Treatment of a child, however, usually relies on a **one-to-two** relationship, dentist-child, patient and family.

62. **Parameter added to paediatric treatment triangle?**
a) Sympathy
b) Empathy
c) Society
d) Child response
(MHCET 2012)

(Ref: Shobha Tandon, 2nd ed., p 5; Dentistry for the Child and Adolescent by McDonald, 8th ed., p 35)
Dentist–patient relationship and parent–dentist relationship has been explained earlier by the pedodontic treatment triangle by **Wright in 1975**. Recently, society has been added to this treatment triangle as it also has strong influence on the overall development of the child. Society has been centred in the triangle.

63. **First dental visit of child is**
a) One month after birth
b) Within 6 months of eruption of first primary teeth
c) Within 3 years
d) Within 2 years
(Rajasthan 2013)

(Ref: Dentistry for the Child and Adolescent by McDonald, 8th ed., p 252; A Manual of Paediatric Dentistry by R. J. Andlaw, 4th ed., p 3)

The American Academy of Pediatric Dentistry recommends that children have their first dental visit at approximately the time of eruption of the first tooth or, at the latest, by the age of 12 months.

Ans: **58–B** **59–A** **60–D** **61–A** **62–C** **63–B**

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64. **Ephebodontics refers to** (JKCET 2015)
   a) Dentistry for elderly patients
   b) Dentistry for special need adults
   c) Dentistry for adolescents
   d) Dentistry for special need infants

(Ref: Pediatric Dentistry/Copyright © 1979 by The American Academy of Pedodontics, vol 1, No. 2/Printed in USA, p 130)
A monograph on adolescent dentistry, coined "Ephebodontics" in the April, 1969, issue of Dental Clinics of North America, is perhaps the most comprehensive text available.

65. **Imprinting in pedodontics** (Manipal 2012)
   a) Learning
   b) Playing
   c) Impression taking
   d) Printing

(Ref: Essentials of Pedodontics by Tilakaraj, 1st ed., p 252)
- Imprinting is a rigid form of learning, occurs even before the onset of fear and is of lasting duration.
- Painful experiences increase its effectiveness.
- The role of mothers in overcoming early fears is well documented.

66. **Scheduling the paediatric patients in the morning is** (BHU 2012)
   a) Undesirable
   b) Desirable
   c) Depends on the dentist
   d) Depends on the child

(Ref: Dentistry for the Child and Adolescent by Ralph E. McDonald, 8th ed., p 46)
Scheduling
- Children are bundles of energy. Lacking the patience of adults, many children become restless and tired when faced with long delays in a reception area.
- This should be taken into account when designing an office schedule. A good general rule is that a child should not be kept waiting in the reception area and that every effort should be made to be on time.
- ***Morning appointments have been suggested for children. It is a practice that has guided scheduling in many dental offices.***
- *The suggestion was based on the facts that children are more alert and the dental team is fresher in the morning.* Many dentists also believe that when age groups are kept together (preschoolers in the morning and older children in the afternoon), the peer group has a positive influence, with children serving as models for each other.
- Another advantage is that the dental office may run more smoothly with less psychologic change of pace.

67. **True about knee-to-knee method for examination of infant patient is all except?** (AIPG 2012)
   a) Parent supports head of infant, operator holds hands
   b) Can be used at home for brushing teeth of infant
   c) Gloved finger and lighting pen can be used
   d) Done in 18-month old baby

(Ref: McDonalds, 8th ed., p 15–16)
- The dentist and the parent are seated face to face with their knees touching. Their upper legs form the examination table for the child.
- The ***child's legs straddle the parent's body, which allows the parent to restrain the child legs and hands.*** So legs are towards parent and head is on dentist lap. This makes **option A** wrong and hence correct answer.
- The parent and the dental assistant restrain the child arms and legs.
- The dentist establishes a chair side position so that not only the dentist's hands but also the lower arms and abdomen may be available for support of the child's head, if necessary.
- The dentist may require only ***lightening*** for visibility and gauge for debriding tissue (option C).

68. **Down's syndrome is characterized by** (Manipal 2013)
   a) Low incidence of periodontal disease and low incidence of caries
   b) High incidence of caries and high incidence of periodontal disease
   c) Low incidence of caries and high incidence of periodontal disease
   d) High incidence of caries and low incidence of periodontal disease

(Ref: Mcdonald's Pedodontics, 8th ed., p 194)

Ans: 64–C 65–A 66–B 67–A 68–C

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69. **Simian crease is a characteristic feature of child with**
a) Cerebral palsy
b) Down's syndrome
c) Mental retardation
d) Epilepsy
(Yenopoya 2014)

(Ref: Shobha Tandon, 2nd ed., p 633)
Simian crease is a feature seen in hands with a person suffering from Downs syndrome. The hands are broad and short with a single transverse palmar crease, which is called simian crease.

70. **IQ range - 25-50 can be grouped as**
a) Average
b) Imbecile
c) Moron
d) Intelligence
(PGI 2013)

(Ref: Park's Textbook of Social and Preventive Medicine, 18th ed., p 498; McDonald's Dentistry for Child and Adolescent, 8th ed, p 37; Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 631)

$$\text{Intelligence quotient (IQ)} = \frac{\text{Mental age}}{\text{Chronological age}} \times 100$$

71. **Learning disability is otherwise called as**
a) Infantile psychosis
b) Minimal brain dysfunction
c) Childhood schizophrenia
d) Attention deficit disorder
(COMED 2013)

(Ref: McDonald's Dentistry for the Child and Adolescent, 8th ed., p 542)
- Learning disability may be manifested in disorders of listening, thinking, reading, talking, writing or spelling.
- It includes dyslexia, developmental aphasia, brain injury and minimal brain dysfunction.

72. **According to the intelligence quotient classification, a score of 120-139 is**
a) Very superior
b) Superior
c) High average
d) Average
(KCET 2013)

(Ref: McDonald's Dentistry for the Child and Adolescent, 8th ed., p 37)
IQ Range Grade
- >140 - Very superior
- 120–139 - Superior
- 110–119 - High average
- 90–109 - Average
- 80–89 - Low average
- 70–79 - Borderline impaired
- <69 - Mentally retarded

73. **According to Stanford Binet test, mentally retarded children can be trained to perform self-help skills with an IQ of together**
a) Below 20
b) Between 30–35
c) Between 36–51
d) Between 52–68
(JKCET 2014)

(Ref: McDonald's Dentistry for Child and Adolescent, 8th ed., p 37)
Intelligence quotient was measured by Alfred Binet by examining the memory, spatial relations and reasoning.

74. **All of the following represent a potential obstacles for daily oral hygiene for a child with special needs EXCEPT**
a) Perioral sensitivity
b) Limited manual dexterity
c) High gag reflex
d) Low pain threshold
(KCET 2012)

(Ref: Journal of Annals and Essences of Dentistry; www.aedj.in/images/7/7b/1.2.1-11.pdf)
The oral and dental features that may be seen in children with cerebral palsy (child with special needs) are
- Poor oral hygiene, increased periodontal disease, and drug-induced gingival enlargement.
- Malocclusion (increased prevalence of skeletal class II with anterior open bite).
- A tendency to bruxism.
- Tongue thrust and mouth breathing.
- **An increase in caries prevalence due to limited manual dexterity and other factors.**

Ans: 69–B 70–B 71–B 72–B 73–C 74–D

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- Increased prevalence of anterior trauma.
- Enamel hypoplasia.
- **Heightened gag reflex and peri-oral sensitivity.**
- Drooling.
- Decreased parotid flow rate.

75. **All are true for bruxism EXCEPT** (Rajasthan 2013)
   a) It is forceful grinding of teeth
   b) Child is aware of it
   c) Flattened molars & lingual wear of max anteriors
   d) Also called as night grinding

(Ref: Shafer's Textbook of Oral Pathology, 5th ed., p 734)
Burxism is the habitual grinding of teeth either during sleep or as an unconscious habit during waking hours.

76. **By what age does startle and grasp reflex disappear?** (AB Shetty 2013)
   a) 1 year
   b) 1½ year
   c) 2 years
   d) 3 years

(Ref: Textbook of Pedodontics by Shobha Tandon, 2001, 1st ed., p 57)
It is very unfortunate that this is one of the questions that is given as 2 years or 24 months as answer in many entrances including the release of official keys. This is based on Shoba Tandon's book where the author has given wrong answer.

We referred many books on pediatrics. I wonder why it was stamped 2 years as the answer by all the authors and students all most all. Probably this is due to the lines given in Shoba Tandon's book. None of the pediatric books are supporting this. All the medical books are showing that palmar grasp disappears by 3-4 months and plantar by 6-8 months. startle may persist in the life. So best answer is below 1 year.

77. **Which of the following milestones of a child coincides with the eruption of the 1st primary molars?** (AIPG 2015)
   a) Speak in sentences
   b) Walks with support
   c) Bowel control
   d) Peer group identity

A primary first molar erupts between 12 and 16 months.

10–12th month	Stands and walks with support. Repeats consonant sounds. Responds to sounds of name.
12–15th month	Walks without support, vocabulary increased.

78. **A child starts to hold his head at what age?** (AIPG 2015)
   a) 4 months
   b) 6 months
   c) 12 months
   d) 18 months

The child starts holding is head at 7–9 months and early control of the head movements occurs around 12 months. so best answer will be 6 months.

79. **Growth of children of different age group is evaluated on different parameter at same point of time?** (AIIMS 2013)
   a) A longitudinal studies
   b) Cross sectional
   c) Coss longitudinal
   d) Interventional

(Ref: Textbook of Preventive and Community Dentistry by Hiremath, 1st ed., p 172)
- All longitudinal studies measure the similar measurement on the same units at different point of time.
- Cross sectional studies provide snap shot at one point of time.

80. **A 5-year-old girl having delayed milestones, playing with herself, unable to make friends difficulty in learning is likely to have** (AIIMS 2014)
   a) Autism
   b) Mental retardation
   c) ADHD
   d) Specific leaning disorder

(Ref: http://www.ninds.nih.gov/disorders/autism/detail_autism.htm)
- Autism spectrum disorder (ASD) is a range of complex neurodevelopment disorders, characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behaviour.

Ans: 75–B 76–A 77–B 78–B 79–B 80–A

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- Autistic disorder, sometimes called autism or classical ASD, is the most severe form of ASD, while other conditions along the spectrum include a milder form known as **Asperger syndrome**, and childhood disintegrative disorder and pervasive developmental disorder not otherwise specified (usually referred to as PDD-NOS).
- Males are four times more likely to have an ASD than female. Effects all age groups.
- The hallmark feature of ASD is impaired social interaction.
- Many children with an ASD engage in repetitive movements such as rocking and twirling, or in self-abusive behaviour such as biting or head-banging.
- They also tend to start speaking later than other children and may refer to themselves by name instead of "I" or "me."
- Children with an ASD do not know how to play interactively with other children.
- Some speak in a singsong voice about a narrow range of favourite topics, with little regard for the interests of the person to whom they are speaking.

About 20–30% of children with an ASD develop epilepsy by the time they reach adulthood.

81. **The incidence of natal and neonatal teeth**
    a) 1 in 500
    b) 1 in 1000
    c) 1 in 2000
    d) 1 in 5000
    (MP 2012)

(Ref: Pediatric Dentistry: Principles and Practice by Muthu, 1st ed., p 103)
Natal teeth are defined as any teeth present at birth. Neonatal teeth are those erupting in the first month of life. Natal and neonatal teeth present almost exclusively in the mandibular incisor region. These teeth commonly occur in pairs, mostly in the lower anterior region. The natal to neonatal teeth ratio is 3:1 with the incidence 1: 2000 to 3500.

82. **Rigafede disease is associated with**
    a) Natal teeth
    b) Multiple impacted teeth
    c) Permanent incisor
    d) Primary incisor
    (AIIMS 2014)

(Ref: Pediatric Dentistry 23:2, 2001 American Academy of Pediatric Dentistry, p 161)
- Thus, traumatic injury would occur only to the baby's tongue. This condition was first described by **Caldarelli in 1857** in association general organ failure in a child, followed by death.
- **Riga and Fede histologically described the lesion, which then started to be called Riga-Fede disease.**

83. **Tooth erupting by the time of 1st birthday of infancy**
    a) Early infancy teeth
    b) Dentinal precox
    c) Natal teeth
    d) Neonatal teeth
    (PGI 2011)

(Ref: Natal Tooth: A Case Report and Review by Peedikayil, Journal of Nepal Paediatric Society, *www.nepjol.info)*
- Teeth present at the time of birth are called natal teeth. The presence of teeth in newborns is uncommon, varying from 1:6000 to 1:800 cases. Terms such as congenital teeth, fetal teeth, pre-deciduous teeth, premature teeth, precociously erupted teeth, or dentitia precox have been used to refer this condition.
- Teeth, which erupt in the neonatal period, that is, within 30 days of birth are neonatal teeth.
- Teeth erupting beyond the natal period of 30 days (i.e., erupting within 1–3.5 months) are usually referred to as **early infancy teeth**.
- So the closest answer is early infancy teeth, as first day is the period between birth and 12 months.

84. **Tooth at level of alveolar gingiva, in a 2-month child, without any radiographic evidence of roots. T/t is**
    a) Surgically remove it under LA
    b) Let it remain as it is future tooth and root formation occurs at 6 months
    c) Preserve it and reassure the parents
    d) Extract it if mobile under GA
    (AIIMS 2014)

(Ref: Profitt, 4th ed., p 86; Pediatric Dentistry 23:2, 2001 American Academy of Pediatric Dentistry, p 160, 161)
- At birth, neither the maxillary nor the mandibular alveolar process is well developed. Occasionally, a "natal tooth" is present, although the first primary teeth normally do not erupt until approximately 6 months of age.
- The natal tooth may be a supernumerary one, formed by an aberration in the development of the dental lamina, but usually is merely a very early but otherwise normal central incisor.
- **Because of the possibility that it is perfectly normal, such a natal tooth should not be extracted casually.**

Ans: 81–C 82–A 83–A 84–C

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- **It should be pointed out that most natal and neonatal teeth are primary teeth of the normal dentition and not supernumerary teeth.**
- According to Bodenhoff and Gorlin (1963), 85% of the teeth involved are lower incisors, 11% are upper incisors, 3% are lower canines and molars, and only 1% are upper canines and molars.

85. **Hypoplasia of primary enamel that forms before birth is**
   a) Common
   b) Rare
   c) Very common
   d) None of the above

(Ref: Dentistry for the Child and Adolescent by Ralph E McDonald, 8th ed., p 115)

- **Hypoplasia of the primary enamel that forms before birth is rare**; however, in its mildest form, a prenatal disturbance is reflected as an accentuated neonatal ring in the primary tooth.
- In the severe type of neonatal disturbance, enamel formation is sometimes arrested at birth or during the neonatal period.
- Postnatal amelogenesis is confined to the portion of the crown located cervically from the enamel area present at birth.

86. **In most children, the eruption of primary teeth is preceded by** (BHU 2012)
   a) Increased salivation
   b) Intermittent salivation
   c) Decreased salivation
   d) Incipient salivation

(Ref: Dentistry for the Child and Adolescent by Ralph E McDonald, 8th ed., p 181)

Teething and Difficult Eruption

- ***In most children, the eruption of primary teeth is preceded by increased salivation, and the child will want to put the hand and fingers into the mouth.***

87. **When one primary canine is lost prematurely, it is imperative to maintain the** (COMED 2012)
   a) Midline
   b) Opposing canine
   c) Vertical dimension
   d) Canine guidance

(Ref: Contemporary Orthodontics by Profitt, 4th ed., p 482)

It is a direct pick from the book.

When one primary canine is lost prematurely, treatment is needed to prevent or correct a midline shift.

88. **Which of the has a little significance?** (AIIMS 2013, AIPG 2012)
   a) Mandibular incisor erupting before mandibular molar
   b) Mandibular canine erupting before mandibular premolar
   c) Mandibular 2 premolar erupting before mandibular 2 molar
   d) Maxillary premolar and canine erupting before maxillary 2nd molar

(Ref: McDonald and Avery's Dentistry for the Child and Adolescent, 9th ed., p 178)

- Exactly picked from the book.
- The mandibular first permanent molars are often the first permanent teeth to erupt. They are quickly followed by the mandibular central.
- Lo and Moyers found little or no clinical significance to the eruption of the incisors before the molars.

89. **A more accurate method of determining delayed or accelerated eruption of permanent teeth is by** (JKCET2014)
   a) Arch length analysis
   b) Measuring mesial-distal width and cervico-occlusal height of primary teeth
   c) Measuring amount of root development and alveolar bone overlying the unerupted permanent tooth
   d) Chronologic age of the patient

A more accurate method of determining delayed or accelerated eruption of permanent teeth is to examine the amount of root development and alveolar bone overlying the unerupted permanent tooth from panoramic or periapical films. The succedaneous tooth begins to actively erupt when root development is approximately one half to two thirds completed. In terms of alveolar bone coverage, roughly 6 months should be anticipated for every millimeter of bone that covers the permanent tooth. If it is apparent that the tooth will be delayed in erupting and the space is adequate, space maintenance is absolutely indicated. Because space loss usually occurs within the first 6 months after the premature loss of a primary molar, space maintenance should be undertaken unless the tooth is expected to erupt within 6 months or unless there is enough space in the arch that a 1-mm or 2-mm space reduction will not compromise eruption of the permanent tooth.

Ans: 85–B 86–A 87–A 88–a 89–C

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90. **Which is the most common occlusion pattern seen in primary dentition?**
a) Mesial step
b) Distal step
c) Flush terminal
d) None of the above
(Manipal 2014)

(Ref: Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 442)
49% cases seen are mesial step, 37% cases seen are flush terminal, 14% cases seen are distal step. The likelihood of going to a class I relation in permanent dentition is greatest when the primary dentition is having mesial step.
##In mixed dentition, flush terminal plane is the common relationship.

91. **The suckling reflex and infantile swallow normally disappear by the**
a) First year
b) Second year
c) Sixth year
d) Eight year
(Manipal 2013)

(Ref: Textbook of Orthodontics by Gowri Sankar, 1st ed., p 95)
The Suckling Reflex: According to many authors, thumb sucking is a consequence of suckling reflex. The process of suckling is a reflex occurring in the oral stage of development and is seen even at 29 weeks of IU and may disappear during normal growth between the ages of 1 and 3½ years.

92. **The infantile swallow is changed to a mature swallow usually by**
a) 12 months
b) 15 months
c) 18 months
d) 24 months
(AP 2012)

(Ref: Textbook of Orthodontics by Singh, 2nd ed., p 75)
The transition from infantile swallow to mature swallow generally occurs by **18 months**.
Mature Swallowing (Somatic Swallow)
The infantile slowly transforms into a mature swallow concomitant with the development of dentition. This transition starts from the end of the first year. Mandible is stabilized by the muscles of mastication (mandibular branch of Vth nerve). The infantile swallow gradually disappears with the eruption of the buccal teeth in the primary dentition. Most children achieve most features of the mature swallow at 12–15 months of age.

93. **The positioning of tongue in infantile swallowing is**
a) Posterior
b) Medial
c) Lateral
d) Anterior
(AP 2012)

(Ref: Textbook of Orthodontics by Singh, 2nd ed., p 75)
INFANTILE SWALLOW
- In infant, mostly the facial nerve stabilizes the mandible in contrast to the mature swallow where the mandible is stabilized by trigeminal nerve.
- **The tongue thrusts between the anterior gum pads, hence the answer is Option D.**
- The transition from infantile swallow to mature swallow generally occurs by 18 months.

94. **The first sign of root resorption see in deciduous central incisor and 1st primary molar is by the age of**
a) 2–3 years
b) 1–2 years
c) 4–5 years
d) 6 years
(AB Shetty 2013)

(Ref: Textbook of Pedodontics by Shobha Tandon, 2001, 1st ed., p 94)
- The resorption of deciduous incisors (lasting 1.5–2 years average) than that of the canine and molars (2.5—5.7 years).
- The permanent successor may be visible immediately after exfoliation of a deciduous tooth or there may be latent period of 0.1–0.5 years.

95. **In patients with surgically corrected cleft lip and palate, what is the most common anomaly seen?**
a) Anterior open bite
b) Rotated maxillary central incisor
c) Anterior deep bite
d) Unilateral/ bilateral posterior cross bite
(AIPG 2014)

In patients with surgically corrected cleft lip and palate, the most common anomaly seen is unilateral/bilateral posterior cross bite.

Ans: 90–A 91–A 92–C 93–D 94–C 95–D

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96. **Yellowish discolourations due to trauma to primary teeth indicates** (JKCET 14)
   a) Degeneration of pulp
   b) Calcific reaction of pulp
   c) Necrotic pulp
   d) Infected pulp

(Ref: Textbook and Color Atlas of Traumatic Injuries to the Teeth by Andresen, 4th ed., p 385)
Usually the yellow discolouration is associated with pulp obliteration.
- A pink primary tooth indicates internal resorption.
- A late yellow discolouration, on the other hand, represents pulp obliteration.
- Different shades observed in traumatized primary incisors have been interpreted as the expression of different pulpal conditions.
- Both pink and yellow discolourations do not reflect devitalization of the pulp, and no treatment is indicated according to most authors. However, follow-up is necessary as developing pulp necrosis might occur later.
- The most conflicting type of discolouration is the dark-gray (also defined as grayish-blue, grayish-black, or dark-brown) with wide disagreement concerning the diagnostic meaning and suitable treatment of teeth with this type of discolouration. Many authors feel that gray or bluish colour is a diagnostic sign of pulp degeneration.

97. **The sensitive period for tetracycline-induced discolouration in the permanent maxillary and mandibular incisors and canines is** (KCET 2012)
   a) 3 months postpartum to seventh year of life
   b) 4 months in utero to 3 months postpartum
   c) 5 months in utero to 9 months postpartum
   d) Birth to seventh year

(Ref: Dentistry for the Child and Adolescent by McDonalds, 8th ed., p 135)
- The crowns of the primary teeth may also show noticeable discolouration if tetracyclines are administered during pregnancy.
- It has been observed that the critical period for tetracycline-related discolouration in the primary dentition is 4 months *in utero* to 3 months postpartum for maxillary and mandibular incisors and 5 months *inutero* to 9 months postpartum for maxillary and mandibular canines.
- **The sensitive period for tetracycline-induced discolouration in the permanent maxillary and mandibular incisors and canines is 3–5 months postpartum to about the seventh year of the child's life.**
- The maxillary lateral incisors are an exception because they begin to calcify at 10–12 months postpartum.

98. **The term applied when it is doubtful, according to mixed dentition analysis whether there will be space for all the teeth** (KCET 2012)
   a) Space maintenance
   b) Space regaining
   c) Space supervision
   d) None of the above

(Ref: Handbook of Orthodontics for the Student and General Practitioner by Moyers, 3rd ed., p 496)
That's the exact line from the book which defines it as **space supervision.**

99. **Which among the following about removable space maintainers are wrong?** (KCET 2012)
   a) Being tissue born, they impose less stress on the remaining teeth
   b) By virtue of tissue stimulation they often accelerate the eruption of teeth beneath them
   c) They can be functional in the truest sense, hence better patient cooperation is to be expected
   d) Easier to fabricate, requiring less chair-side time

(Ref: Orthodontics by S Prem Kumar, p 452; Textbook of Pedodontics by Shobha Tondon, 2nd ed)
Major disadvantage is possibility of patient not wearing the appliance.

100. **Space regaining is indicated in all of the following EXCEPT** (KCET 2012)
   a) One or more permanent teeth have been lost
   b) Some space in the arch has been lost due to mesial drift of permanent molar
   c) Mixed dentition analysis shows that, once the lost space is gained back, there will not be any arch length tooth material discrepancy
   d) 1st molars are in end to end relation due to class II skeletal base and prognathic maxilla

(Ref: Handbook of Orthodontics for the Student and General Practitioner by Moyers, 3rd ed., p 493)

Ans: 96–B 97–A 98–C 99–C 100–D

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101. **During the fabrication of band for band and loop space maintainer, where should be the band biter be placed for final positioning of the band?** (COMED 2012)
a) Distolingual aspect of the maxillary teeth and distofacial aspect of the mandibular teeth
b) Distofacial aspect of the maxillary teeth and mesiofacial aspect of the mandibular teeth
c) Mesiolingual aspect of the maxillary teeth and distolingual aspect of the mandibular teeth
d) Distofacial aspect of the maxillary teeth and distolingual aspect of the mandibular teeth

(Ref: Pediatric Dentistry: Infancy through Adolescence by Pinkham, 4th ed., p 427)
- The initial step in fabricating a bandand loop device is to fit a bandon the abutment tooth.
- **Band biter should be placed for final positioning of the band in the maxillary arch at distolingual** aspect and distofacial aspect for mandibular teeth.

102. **What is the chief disadvantage of a nonfunctional fixed space maintainer?** (COMED 2012)
a) Prevent lateral jaw growth
b) Difficult to fabricate
c) Difficulty in maintaining proper oral hygiene
d) Continued eruption of opposing tooth

(Ref: Textbook of Orthodontics by Singh, 2nd ed., p 552)
- Fixed space maintainer can be functional or non-functional.
- Non-functional space maintainer can not prevent the **overeuption of opposite tooth and also do not restore mastication**.

103. **Which of the following is NOT a space maintainer?** (KCET 2013)
a) Distal shoe
b) Lingual holding arch
c) Transpalatal arch
d) E-arch

(Ref: Textbook of Orthodontics by Singh, 2nd ed., p 6; E-arch appliance is for fixed orthodontics)

104. **All of the following are seen on attached gingiva of children EXCEPT** (KCET 2012)
a) Retrocuspid papilla
b) Fordyce's granules
c) Interdental clefts
d) Stippling

(Ref: Shafer's Textbook of Oral Pathology, 6th ed., p 23)
Fordyce granule begins to appear only after 10 years of age and increases in size and number during puberty.

105. **Most commonly used drugs in dentistry is** (Rajasthan 2013)
a) Analgesics
b) Antibiotics
c) Local anesthetics
d) Sedatives

(Ref: Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy by Armen H, 3rd ed., p 137)
Local anaesthetics are the most commonly used drugs in dentistry. Often, both an injected and a topical anaesthetic agent are used in dental procedures.

106. **Which of the following is an intraligamentary injection in which no vasoconstrictor is warranted?** (Manipal 2014)
a) Peripress
b) EDA
c) Jet injection
d) Wand

(Ref: Handbook of Local Anaesthesia by Malamed, 5th ed., p 89, 353; McDonald's Dentistry for Child and Adolescent, 8th ed., p 421; Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 533)
Peripress is an intraligamentary injection method for which vasoconstrictor is not warranted.
Painless anaesthesia, Jet injections are given under high pressure through small opening into the mucosa or skin without much trauma.
- **EDA** is electronic dental anaesthesia, also needleless anaesthesia indicated in children with needle phobia.
- **DENTI PATCH**: These are controlled releasing devices. Topical agent is incorporated into a matrix, which will adhere to mucosa and allow slow release of anaesthetic drug, e.g., lidocaine transoral delivery system in 10% and 20% concentrations.
- **The wand local anaesthesia** system is a computer controlled injection device, the size of a paperback book.

Ans: 101–A 102–D 103–D 104–B 105–C 106–A

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107. **The most common post anaesthetic complication seen in children together** (JKCET 2014)
a) Pain
b) Extra oral swelling
c) Haematoma
d) Lip biting

(Ref: McDonald's Dentistry for Child and Adolescent, 8th ed., p 382; Shobha Tandon's Textbook of Pedodontics, 1st ed., p 469)
Children who receive an inferior alveolar injection for routine operative procedures may bite the lip, tongue, or inner surface of the cheek.

108. **Supraperiosteal anaesthesia** (AIPG 2012)
a) Most effective in areas of infection
b) Generally used for pulpal anaesthesia of maxillary teeth
c) Not effective for primary teeth in mandibular arch
d) Effective in areas of dence cortical bone

(Ref: Cohen's 6th ed., p 571)
- Supraperiosteal injection is the technique in which anaesthetic is deposited into the area of treatment.
- Local infiltration is employed **commonly in maxillary teeth**.
- Because of the ability of anaesthetic solutions to diffuse through periosteum and the relatively thin cancellous bone of the maxilla, this method of pain control will prove effective in endodontic procedures when infection is not present.

109. **Nitrous oxide is** (APPG 2014)
a) Muscle relaxant
b) Analgesic
c) Anaesthetic and analgesic
d) Sedative

(Ref: Shobha Tandon's 2nd ed., p 160)
- Nitrous oxide is a potent analgesic but weak or poor anaesthetic.
- Nitrous oxide has low potency (MAC = 104), but its impressive record of safety allows use of sub-MAC concentrations that are ideal in allaying apprehension and anxiety regarding injections of local anaesthetics and treatment in general.

Concentration of N_2O Effect
- 5–25% – Moderate sedation and analgesia
- 25–45% – Dissociation sedation and analgesia
- 45–65% – Total analgesia

110. **Nitrous oxide is contraindicated in**
a) Rheumatic heart disease
b) Pneumonia
c) Bronchitis
c) Sickle cell anaemia

(Ref: Mc Donald's 8th ed., p 296)
EXPLANATION
Contraindications of N_2O: 1. COPD, 2. Asthma, 3. Respiratory infections, 4. Sickle cell anaemia, 5. Otitis media, 6. Epilepsy for general anaesthesia, all anaemais are contraindicated.
Severe emotional disturbances.

111. **N_2O/O_2 sedation can be effectively used in all EXCEPT** (Rajasthan 2013)
a) Mild to moderately anxious patient
b) Patients not having medical contraindications
c) Patients with gag reflex
d) Patients with severe emotional disturbance

(Ref: Fundamentals of Dentistry for Children, p 305)

112. **The following is not a communicative management technique according to American Academy of Pediatric Dentistry standards?** (COMED 2012)
a) Voice control
b) Positive reinforcement
c) Physical restraint
d) Distraction

(Ref: Pediatric Dentistry: Principles and Practice by Muthu, 1st ed., p 65)
American Academy of Pediatric Dentistry Guidelines, 2002–2003

Ans: 107–D 108–B 109–C 110–D 111–D 112–C

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Basic Behaviour Management	Advanced Behaviour Management
▪ Communicative management ▪ Voice control ▪ Non-verbal communication ▪ Tell-show-do ▪ Positive reinforcement ▪ Distraction ▪ Parental presence or absence ▪ Nitrous oxide - oxygen inhalation sedation	▪ Hand over mouth exercise ▪ Medical immobilization ▪ Sedation ▪ General anaesthesia

113. **The procedure which slowly develop behaviour by reinforcing successive approximations of the desired behaviour until the desired behavior comes to be is termed as?**
a) Behaviour management
b) Behaviour modification
c) Behaviour shaping
d) Behaviour control
(COMED 2012)

(Ref: Pediatric Dentistry: Principles and Practice by Muthu, 1st ed., p 54)

- **Behaviour**
  - It is an observable act or any change in the functioning of an organism.

Behaviour management	- It is defined as a means by which the dental health team effectively and efficiently performs dental treatment and thereby instills a positive dental attitude.
Behaviour shaping	It is the procedure, which develops behaviour by reinforcing a successive approximation of the desired behaviour until the desired behaviour comes into being. - It is otherwise defined as a procedure of reinforcing behaviours that are increasingly similar to the desired behaviour until finally the desired behaviour occurs.
Behaviour modification	It is defined as an attempt to alter human behaviour and emotion in a beneficial way and in accordance with the laws of learning.
Behavioural guidance	It is a continuum of interaction involving the dentist, the dental team, the patient, and the parent directed toward communication and education.

114. **Stimulus response theory is also known as**
a) Physical restraint
b) Aversive conditioning
c) Behaviour shaping
d) Tender love and care
(AB Shetty 2013)

(Ref: Dentistry for the Child and Adolescent by McDonald, 2005, 8th ed., p 45)
Behaviour shaping involves the use of selected reinforces that will change child's behaviour from inappropriate to appropriate form. It is based on the ***stimulus-response theory. Behaviour shaping*** is a step by step procedure (as the child cannot grasp the overall procedure with a single explanation, it is necessary to divide the explanation into 3 steps). It involves *3 techniques* – ***desensitization, modeling and contingency management***.

115. **Projection and introjection are explained by which theory?**
a) Freud
b) Maslow
c) Erikkson
d) Frankel
(Manipal 2014)

(Ref: General Psychology by Anna Frued, 1st ed., p 425)
Description
Projection and introjection describe some interactions between the inner and outer worlds.

Ans: 113–C 114–C 115–A

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Projection	Introjection
▪ Projection takes aspects of one's internal world and projects them onto external subjects. ▪ This can be a defense mechanism where it is used to expel and externalize uncomfortable inner thoughts and feelings. ▪ It is thus 'output' from the internal world into the outer world.	▪ Introjection occurs where a subject takes into itself the behaviours, attributes or other external objects, especially of other people. ▪ A common pattern is where a child introjects aspects of parents into its own persona.

- According to Freud, the ego and the superego are constructed by introjecting external behaviour into the subject's own persona.

116. **Egocentricism and animism are seen in which stage?** (PGI 2013)
a) Sensorimotor
b) Preoperational
c) Concrete operations
d) Formal operational stage

(Ref: Pedodontic by Muthu; Pedodontics by Shoba Tandon, 1st ed., p 130)
In the early stages of conceptual intelligence (2–7 years), in the preoperational stage the child's world is ego centered or has limited ability to share another person's viewpoint — egocentrism. His world is animistic and artificial and he cannot distinguish what is real and unreal.

Jean Piaget (1952) Cognitive Theory
Stages of sequence of development - major stages
There are four stages under two broad categories:
I. Sensorimotor stage (0–2 years)
II. Period of conceptual intelligence (>2 years)
   a. Pre-operational stage (2–7 years) - two sub stages
      i. Preconceptional or Symbolic functional substage (2–4 years)
      ii. Intuitive thought stage (4–7 years)
   b. Concrete operation stage (7–11 years)
   c. Formal operation stage (12–15 years)

Sensorimotor stage (0–2 years)	Pre-operational stage (2–6 years)	Concrete operation stage (6–12 years)	Formal operation stage (11–15 years)
The child begins to interact with the environment	The child begins to represent the world symbolically	The child learns rules such as conservation	The adolescent can transcend the concerete situation and think about the future.
Dental Applications			
Child begins to interact with the environment and can be given toys while sitting on the dental chair in his/her hand. Animism – He imparts life to inmate objects. Child correlates things with other objects to which they are more used to or accustomed, e.g., explaining about radiograph as tooth picture. Child uses symbols in language and play. Symbolic thought develops that is mentally giving a picture to an object.	Centering - allowed to hold the mirror to see what is being done on his teeth. Ego-centerism - child has achieved the level of understanding and gets involved in the treatment, e.g., holds the suction tip by himself. Concrete instruction like this is a retainer brush. Abstract instruction like wear the retainer every night and keep clean.	Constructivism - the child likes to explore things and make own observations, e.g., child surveys the dental chair, airway syringe. Cognitive equilibrium - child is explained about the equipment or instrument and allowed to deal with it, e.g., airway syringe like this, etc.	Peer influence and abstract thinking increase. This can play an important role in orthodontic appliances and braces. Acceptance from peers can be used for motivation for dental treatment.

Ans: 116–B

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117. **According to Piaget, period of concrete operations is**
a) Birth – 18 months
b) 12 years and onward
c) 18 months - 7 years
d) 6–12 years
(Manipal 2013)

(Ref: Profitt's 5th ed., p 61)

118. **Animism corresponds to**
a) Sensorimotor stage
b) Formal operation stage
c) Concrete operation stage
d) Pre operational phase
(Manipal 2014)

(Ref: Pedodontic by Muthu; Pedodontics by Shoba Tandon, 1st ed., p 130)
Animism starts in sensorimotor phase but established in preoperational phase.

119. **Sensorimotor stage of cognitive development is characterized by**
a) Egocentricism
b) Symbolic play
c) Animism
d) Conservation
(KCET 2012)

(Ref: Pediatric Dentistry: Infancy through Adolescence by Pinkham, 4th ed., p 167)
Officially key has given symbolism – option B as answer.
Symbolic play refers to symbolic, or dramatic, play which occurs when children begin to substitute one object for another. For example, using a hairbrush to represent a microphone, which **characterizes the** sensorimotor stage of cognitive development from 18 months to 2 years.

120. **The non-pharmacologic technique that has remained a corner stone of behaviour management is**
a) Tell-show-do
b) Averse conditioning
c) Hand over mouth exercise
d) Voice control
(APPG 2014)

(Ref: Shobha Tandon's 2nd ed., p 150)
- Corner stone of behaviour management is tell-show-do technique.
- Tell-show-do technique emcompasses several concepts from learning theory and it is synonymously used to behaviour shaping.
- Most commonly used nowadays for modifying the behavior by desensitizing the children.
- Introduced by ***Addleston (1959)***.
- Effective in children more than ***3 years*** of age.

121. **The model in which dental care is seen as privilege with the professional dominant in practitioner–patient relations is**
a) Commercial model
b) Guild model
c) Interactive model
d) None of the above
(APPG 2014)

(Ref: Dental Ethics at Chair Side by David Ozar, 1st ed., p 46)
4 models of dentist–patient relationship are given below. Interactive model - best describes the ideal relationship between dentist and capable patient.

Interactive model	Best describes the ideal relationship between dentist and capable patient.
Guild model	Relationship between dentist and patient is dentists expertise (professional dominance).
Agent model	Just opposite to that of guild model (where the whole decision making is assigned to patient).
Commercial model	Here, both dentist and patient are decision makers, but in commercial model, patients need for care is not a direct determinant of dentists action.

122. **The theory of "hierarchy of need" is given by**
a) Frued
b) Maslow
c) Pavlov
d) Skinner
(Manipal 2014)

(Ref: Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 122)
It is a behavioural theory.
- Hierarchy of needs by Maslow (1954)

Ans: 117–D 118–D 119–B>C 120–A 121–B 122–B

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123. **Stoic behaviour is seen in** (Rajasthan 2013)
a) Abused children
b) Preschool children
c) Overprotective child
d) Emotionally immature child

(Ref: Textbook of Pedodontics by Shobha Tandon, 2nd ed., p 143-145)

124. **When the cry of the child is characterized by a siren like vocabulary, it is called** (Ab Shetty 2013)
a) Compensatory
b) Hurt
c) Frightened
d) Obstinate

(Ref: Shobha Tandon)
Classification of Cry Given by Elsbach
- Obstinate cry loud, high pitched and siren like vocabulary
- Lot of temper, tantrum, kicking and biting
- Represents childs external response to anxiety

125. **Suspicious, aggressive, revengeful, nacious, and disobedient nature of child is seen in ..... type of parental behaviour** (MP 2012)
a) Overprotection
b) Rejection
c) Overanxiety
d) Domination

(Ref: Shobha Tandon's 2nd ed., p 147)

126. **Which of the following is NOT a psychodynamic theory of child psychology?** (MP 2012)
a) Psychoanalytical theory
b) Psychological theory
c) Cognitive theory
d) Hierarchy of needs

(Ref: Shobha Tandon's 2nd ed., p 122)
Hierarchy of needs – Maslow (1954) is a theory of learning and development of behaviour.

127. **When dentist says, "I cannot fix your teeth if you do not open your mouth wide", he is employing** (COMED 2013, MHCET 2015)
A) Voice control
B) Behaviour shaping
C) Negative reinforcement
D) Problem ownership

(Ref: Mc Donald's Dentistry for the Child and Adolescent, 8th ed., p 44)
PROBLEM OWNERSHIP
- In difficult situations, dentists sometimes forget that they are dealing with children.
- They begin by sending "you" messages. For example, "You must sit still!" These are negative messages and only undermine the rapport between a pediatric patient and dentist. As "You" messages carry the implication that the child is wrong.
- An alternative is to send "I" messages as "I can't fix your teeth if you don't open your mouthwide."

128. **Wright's clinical classification of children's cooperative behaviour has_____categories**
a) 3
b) 4
c) 5
d) 2

(Ref: Mc Donald's Dentistry for the Child and Adolescent, 8th ed., p 38)
Wright's clinical classification places children in three categories
- Cooperative
- Lacking in cooperative ability
- Potentially cooperative

129. **Which of the following is NOT a behavioural theory?** (KCET 2013)
a) Cognitive
b) Hierarchy of needs
c) Social learning
d) Classical conditioning

(Ref: Principles and Practice of Pedodontics by Arathi Rao, 2nd ed., p 80)

130. **EGO is related to** (Manipal 2014)
a) Reality
b) Instinct
c) Moral value
d) Conscience

(Ref: Shoba Tandon's Pedodonitics, 2nd ed., p 122)

Ans: 123–A 124–D 125–B 126–D 127–D 128–A 129–A 130–A

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Personality of child depends on id, ego and super ego (The three components of the theory).

- According to Freud, the basic instinct or personality is known as Id (pleasure principle).
- Ego modifies and controls id impulses on a realistic level (reality principle).
- Super ego: It is the prohibition learned from environment (more from parents and authorities). It acts as a censor of acceptability of thoughts, feelings and behaviour. It is determined by regulations imposed upon the child by parents, society, and culture (ethics & morals). It is the internalized control, which produces the feelings of shame and guilt.
- The expression of discomfort as a result of conflict between the three components of the psychic structure is defined as anxiety.

131. **Anxiety** (Manipal 2014)
   a) Fear of unknown
   b) Fear to stranger
   c) Fear to pain
   d) Fear to object

(Ref: Shoba Tandon's Pedodontics, 2nd ed., p 138)
Fear is a primary reaction due to a known danger, while anxiety is a reaction to unknown danger.

132. **Wechsler test is for all of the following except** (Manipal 2014)
   a) Adoptive social behaviour
   b) Intelligence
   c) Memory
   d) IQ

(Ref: Mc Donald's 8th ed., p 37)
Best known and standardized test of intellectual development is **Wechsler–Bellevue test**. It is used to test intelligence by both verbal and non verbal skills. It also assess mental ability memory and IQ. Adoptive social behaviour is not assessed by it.

133. **Frankel's rating 2 indicate** (MHCET 2012)
   a) Definitely positive
   b) Positive
   c) Negative
   d) Definitely negative

(Ref: Dentistry for the Child and Adolescent by McDonald, 8th ed., p 38–39)
Rating 2 Negative. Reluctance to accept treatment, uncooperativeness, some evidence of negative attitude but not pronounced (sullen, withdrawn).

134. **Classical conditioning occurs** (JKCET 2014)
   a) When child's action are reinforced or rewarded
   b) When two stimuli are paired together
   c) When multiple stimuli are paired together
   d) When child's actions are bribed and praised

- When two stimuli are paired together, classical conditioning (also Pavlovian conditioning or respondent conditioning) is a kind of learning that occurs when a conditioned stimulus (CS) is paired with an unconditioned stimulus (US).
- Usually, the CS is a neutral stimulus and the unconditioned response (UR) to the US is an unlearned reflex response.
- Classical conditioning occurs because two stimuli (neutral stimulus and unconditioned stimulus) are paired close together in time.
- Some therapies associated with classical conditioning are aversion therapy, systematic desensitization and flooding.
- Aversion therapy is a type of behaviour therapy designed to make patients give up an undesirable habit by causing them to associate it with an unpleasant effect.

135. **Procedural sedation be used advantage in which of the following situations?** (AIPG 2015)
   a) For management of anxious and cooperative patients
   b) For improved quality of dental procedure
   c) Can be used for in-patients
   d) In medically compromised patients

Sedation is given in uncooperative patients and not in cooperative patients.

Ans: **131–A 132–A 133–C 134–B 135–B**

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136. **Fear to strangers is known as** (PGI 2012)
a) Xenophobia
b) Clostrophobia
c) Arthrophobia
d) Claustrophobia

(Ref: Shobha Tondon's Textbook of Pedodontics, 2nd ed., p 140)
Phobia is isolated fear of a single object or situation.
Fear of strangers is called as Xenophobia.
Fear of closed spaces like "dental clinics" is called as Claustrophobia.

137. **Fear of closed spaces like "dental clinics" is called as** (PGI 2013)
a) Nyclophobia
b) Zoophobia
c) Xenophobia
d) Claustrophobia

(Ref: Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 140)

138. **Universally used method of behaviour management in paediatric dentistry for both cooperative and uncooperative children is** (COMED 2013)
a) Voice control
b) Behaviour shaping
c) Implosion therapy
d) Communication

(Ref: American Academy of Pediatric Dentistry Reference Manual, p 42)
Communicative management is universally used in pasediatric dentistry with both the cooperative and uncooperative child.

139. **Which of the following is commonly used for immobilization of the head in a non-compliant patient?** (KCET 2013)
a) Papoose board
b) Pedi-wrap
c) Forearm-body support
d) All of the above

(Ref: Fundamentals of Pediatric Dentistry by Richard J. Mathewson, 2nd ed., p 178)

Body Part Restraints

Body	Extremities	Head
▪ Papoose board	▪ Posey straps	▪ Forearm body support
▪ Triangular sheet	▪ Velcro straps	▪ Head positioner
▪ Pediwrap	▪ Towel and tape	▪ Plastic bowl
▪ Beanbag dental chair insert	▪ Extra assistant	▪ Extra assistant
▪ Safety belt		
▪ Extra assistant		

140. **Pedi-wrap are** (Manipal 2012)
a) Restrainer
b) Not used for paediatric patients
c) Are similar to posey straps
d) Used to control the head

(Ref: Fundamentals of Pediatric Dentistry by Richard J. Mathewson, 2nd ed., p 178)
- Pedi-wrap, using a mesh material and self-adhering straps, is one type of restraining device for the body of small children who are premedicated for long, extensive restorative appointments.
- Posey straps is used to control the extremities.

141. **In restraining of child everything involved except** (AIPG 2012)
a) Avoidance
b) Discrimination
c) Pedi-wrap and papoose board
d) Aversive conditioning

(Ref: Shoba Tandon's 2nd ed., p 153, 154)
Avoidance is the logical answer.
Discrimination should be done between a non-handicapped unco-operative (for HOME) and handicapped cooperative/unco-operative patient (for physical restraining).

Aversive conditioning involves both **HOME (Hand Over Mouth Exercise)** and **physical restraints.** **HOME** should be used in patients without any handicaped conditions above 4–6 years of age. This should be used in patients who are able to understand the procedures but are unco-operative.

Physical restraints should be used in patients below 3 years and in handicapped patients who are not able to understand the procedures.

Ans: 136–A 137–D 138–D 139–C 140–A 141–A

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- **Papoose board and pedi wrap is used for restraining body (option C).**
- **Aversive conditioning can be safe and effective method of managing extremely negative behaviour (option D).**

142. **Visual Analog Scale is used to measure**
a) Degree of pain
b) Degree of anaesthesia
c) Degree of consciousness
d) Degree of motor activity
(Manipal 2014)

Visual Analog Scale is used to measure pain intensity.

143. **With all the factors present in the mouth, caries progression is**
a) Slow
b) Intermittent
c) Continuous
d) Rapid
(AIPG 2013)

Caries progression is intermittent in nature with alternate remineralization and demineralizations.

144. **Proximal carious lesions in pre-school child indicates excess**
a) Calculus growth
b) Caries activity
c) Salivary flow
d) None of the above

(Ref: Dentistry for the Child and Adolescent, 8th ed., p 371)
Class II Cavity
Proximal lesions in a preschool child indicate excessive caries activity; a preventive and restorative program should be undertaken immediately.

145. **Dye used for detection of dentin caries is**
a) Calcien
b) Acid red system
c) Zyglo-22
d) Bromocresol
(MP 2012)

(Ref: Shobha Tandon's 2nd ed., p 212)
Various dyes used in the detection for enamel and dentinal caries: Dyes for enamel caries, Dyes for dentin caries, Calcein Fuschin, ZygloZL-22, Acid red system, 9-Aminoacridine.

146. **In a 9-year-old child, permanent tooth surface with highest prevalence of caries is together**
a) Labial surface of the canines
b) Mesial surface of the central incisors
c) Occlusal surface of the first molars
d) Lingual surface of the lateral incisors
(AIIMS 2012, JKCET 2014)

It seems that this question is directly picked from Matthewson's Pedodontics and previous AGD exam. Mesial surface of the central incisors in the answer.

147. **The most susceptible area of caries in primary teeth is**
a) Mesial surface of 2nd primary molar
b) Distal surface of 1st primary molar
c) Distal surface of 2nd primary molar
d) Mesial surface of 1st primary molar
(Manipal 2014)

(Ref: Finn's 4th ed., p 463, Fig 20-10)
Relative susceptibility is as: Mesial surface of primary 2nd molar > Distal surface of primary 2nd molar (until permanent 1st molar erupts).
Distal surface is always more susceptible as compared to mesial of any tooth, exception being mentioned above.
Also note: Caries susceptibility of distal surface of a primary tooth is equal to the mesial surface of the tooth distal to it. For example, distal surface of primary canine is equally susceptible as mesial surface of primary 1st molar.

148. **A simple method of motivating a child patient to control dental caries is**
a) Snyder's test
b) Enamel solubility test
c) The use of a disclosing agent
d) Using the phase contrast microscope to examine plaque
(HPSC 2014)

(Ref: Textbook of Pedodontics by Shobha Tandon, 2nd ed., p 254)

Ans: 142–A 143–B 144–B 145–B 146–B 147–A 148–C

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- In order to increase the plaque control by the patient, it is very important to increase the visualization of plaque by the patients so as to educate the patient and facilitate removal.
- The plaque disclosing agents are the most commonly used dye based products, which can contain iodine, erythrosine, gentian violet, basic fuschin, fast green, fluorescien, or a two tone dye.

149. Which of the following is a caries susceptibility test? (PGI 2003)

a) Lactobacillus count test
b) Albans test
c) Snyder's test
d) Diazercesonl test

(Ref: Essentials of Preventive and Community Dentistry by Soben Peter, 4th ed., p 436)
Diazercesonl test (salivary reductase test) is a dental office test for caries activity and measures enamel dissolving capacity of saliva. It is a caries susceptibility test
Diazerescenol test measures enamel dissolving capacity of saliva. It is a caries susceptibility test.
Diazercesonl test is a dental office test for caries activity.

- **Caries Activity** refers to the increment of activelesions (new and recurrent lesions) over a stated period of time. Caries activity is a measure of the speed of progression of a carious lesion.
- **Caries Susceptibility** refers to the inherent tendency of the host and target tissue, the tooth to be afflicted by the caries process. This is the susceptibility (or resistance) of a tooth to a caries-producing environment.
- **Caries Activity Tests** measure the degrees to which the local environment challenge (e.g., dietary effect on microbial growth and metabolism) favours the probability of carious lesions. Caries susceptibility measures the ability of tooth to resist or susceptible for caries.

150. The incidence of dental caries in individuals with cerebral palsy, compared to the general population is

a) Contraversial
b) No difference
c) Always decreased
d) Always increased

(Ref: McDonald's Dentistry Child Adolescent, 9th ed., p 477)
The data are conflicting regarding the incidence of dental caries in patients with cerebral palsy compared with the incidence in the general population. Except among institutionalized patients, the incidence of caries does not seem to be significantly greater among persons with cerebral palsy.

151. In CAT, according to AAPD, which of the following does not fall into high-risk category? (AIPG 2012, AIIMS 2013)

a) White opalacent area on 1 tooth
b) General hypoplasia
c) Visible plaque on anterior tooth
d) Child with special problems/needs

(Ref: Principles and Practice of Pedodontics by Arti Rao, 3rd ed., p 192)
Option A is moderate risk

Caries Risk Indicator	Low Risk	Moderate Risk	High Risk
Clinical condition	▪ No caries teeth in past 24 hrs ▪ No enamel hypoplasia ▪ No visible plaque ▪ No gingivitis	▪ Caries teeth in past 4 months ▪ 1 area of enamel demineralization (OPTION A) ▪ Gingivitis	▪ Carious teeth in past 12 months ▪ More than one area enamel demineralization (enamel caries, white spot lesion) ▪ Visible plaque in front tooth ▪ High titers of mutants ▪ Radiographic enamel caries ▪ Wearing dental or orthodontic appliance ▪ Enamel hypoplasia

contd.

Ans: 149–D 150–A 151–A

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Environmental characteristics	▪ Optimal systemic and topical fluoride exposure ▪ Consumption of simple sugar or foods strongly associated with caries initiation primarily at meal times ▪ High care giver socioeconomic status ▪ Regular use of dental care in established dental home	▪ Suboptimal systemic and with optimal topical fluoride exposure ▪ Occasional (1–2) between meal exposure to simple sugars of foods strongly associated with caries ▪ Midlevel care giver socioeconomic status ▪ Irregular use of dental services	▪ Suboptimal topical fluoride exposure ▪ Frequent (3 or more) between meal exposure to simple sugars of foods strongly associated with caries ▪ Low level care giver socioeconomic status ▪ No usual use of dental care services ▪ Active caries present in the mother
General health conditions			▪ Children with special health care needs ▪ Conditionsimpairing saliva flow and composition

152. **To predict the occurrence of caries in a 10-year-old child, which of the following gives best result?** (AIIMS 2013)
a) Sibling caries
b) Mother's caries
c) Previous caries experience
d) Snyder's test

(Ref: Fundamentals of Operative Dentistry – A Contemporary Approach by Summitt, 3rd ed., p 81)
- *Caries risk* may be defined as the probability of an individual developing a certain number of cries lesions reaching a given stage of disease progression during a specified period.
- It is useful for the dentist to be able: to assess caries risk so that preventive treatments, which are time-consuming and therefore expensive, can be targeted appropriately.
- Because caries is a multifactorial disease, it is probably not surprising that it is difficult to predict accurately.
- Clinical and radiographic examination and dental history are the most important sources of information.
- Thus, a person with no active lesions, few or no restorations, and no history of needing restorations replaced may safely be designated as currently at low risk.
- On the other hand, a person with multiple active lesions, a heavily restored mouth, and a history of repeated replacement of restorations may be designated as being at high risk.
- So friends...its clear that the best indicator caries risk is the past caries experience.

153. **SnF was advocated by** (Manipal 2014)
a) Knutson
b) Bibby
c) Muhler
d) Dean

Muhler (1968) reported that when stannous fluoride reacts with hydroxyapatite in addition to fluoride, the tin of stannous fluoride that is different from fluorapatite and this new compound that is stannous-tri-fluorophosphate is more resistant to decay than enamel also reacts with enamel and a new crystalline product gets formed.

154. **Sodium fluoride as an active agent in a mouth rinse is at a concentration of** (APPG 2014)
a) 0.05%
b) 0.12%
c) 0.44%
d) 1.23%

(Ref: Soben Peter, 4th ed., p 263)
- *For weekly use: 0.2% (900 ppm of flouride)*
- *For daily use: 0.05% (255 ppm of flouride)*
- *For fortnightly: 0.0025%*
- *Mouth rinses reduce the caries activity by 30%* usage: gargle 10 mL of liquid for 60 sec (about 30 min after tooth brushing)

Acts by inhibiting bacterial metabolism and plaque formation.

Ans: 152–C 153–C 154–A

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155. **0.2% NaF rinse is used** (MP 2012)
a) Once daily
b) Once weekly
c) Twice daily
d) Twice weekly

(Ref: Shobha Tandon, 2nd ed., p 286)

156. **1 gram fluoride (full head size) in 1000 ppm of fluoride contains how much fluoride?** (PGI 2014)
a) 0.13 mg
b) 0.25 mg
c) 0.50 mg
d) 1 mg

(Ref: Yearbook of Pediatrics, 1987, p 464; Fluorides by Amit Tiwari, p 57)
With a full ribbon on a toothbrush head provides about 1 gm of toothpaste and exposes an individual to approximately 1 mg of fluoride.

157. **Dental fluorosis takes place when** (WB 2014)
a) >1 mg/L
b) >1.5 mg/L
c) >2.5 mg/L
d) >3 mg/L

(Ref: Essentials of Preventive and Community Dentistry by Soben Peter, 4th ed., p 280)
FLUORIDE LEVEL EFFECTS
0.7–1.2 ppm: Prevents dental caries; 1.5–3.0 ppm: Dental fluorosis is seen.

158. **The fluoride concentration of water in school water fluoridation should be** (AP 2015)
a) 1.5–2.5 ppm
b) 3.5–4.5 ppm
c) 4.5–5.5 ppm
d) 2.5–3.5 ppm

159. **Halo effect of fluorides is due to** (MP 2012)
a) Fluoride in water bottles
b) Fluoride in food and beverages
c) Fluoride in alcohol
d) Fluoride in milk

(Ref: Marya's Community Dentistry, 1st ed., p 335)
Reduction of caries occurs due to fluoride consumption other taken by water fluoridation, e.g., by tooth pastes and other supplements. Indirect exposure to fluoride from food and beverages processed in fluoridated areas is called as 'Halo effect.'

This Halo effect described by Newbrun occurs when residents of non fluoridated communities are exposed to the benefits of fluoridation by consuming the foods and beverages prepared, produced, and processed in the fluoridated areas.

160. **Metallic taste after application of stannous fluoride varnish is due to** (AIIMS 2015)
a) Calcium trifluorostannate
b) Stannous trifluorophosphate
c) Calcium hydroxide
d) Tin hydroxyl phosphate

(Ref: Soben Peter, 2nd ed., p 313)
EXPLANATION
Mechanism of action of stannous fluoride
- One of the end product, tin hydroxyl phosphate gets dissolved in oral fluids and is responsible for the metallic taste after topical application of stannous fluoride.
- The main end product tin trifluorophosphate is responsible for making the tooth structure more stable and less susceptible to decay.

161. **The use of pit and fissure sealant is contraindicated in** (BHU 2012)
a) Arrested caries
b) Recalcitran caries
c) Remedial caries
d) Rampant caries

(Ref: Dentistry for the Child and Adolescent, 8th ed., p 357)
Selection of teeth for sealing
The use of pit and fissure sealants is contraindicated when rampant caries or interproximal lesions are present.

Ans: 155–B 156–D 157–B 158–C 159–B 160–D 161–D

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162. **Preventive resin restoration (PRR) are used in** (AIPG 2014)
a) Non cavitated pit and fissures
b) Cavitated pit and fissures, which require restoration
c) Deep caries to prevent progress of lesion
d) Wide cavity to prevent cusp fracture

(Ref: Basic Guide to Oral Health Education and Promotion by Ann Felton, Alison Chapman, Simon Felton, p 130; Arathi Rao, 3rd ed., p 205, 206)
- Preventive resin restorations (PRR) should be used where pits and fissures are decayed. The carious area should be cleaned and filled with glass ionomer and then non carious area should be fissure sealed.
- This was introduced by **Simonsen in** 1978.Presently referred to as **conservative adhesive restoration.**

Type A	Comprises of suspicious pits and fissures where caries is limited to enamel. A slow speed round bur is used to remove any decalcified enamel.
Type B	Comprises of incipient lesion extending into dentin that is small and confined.
Type C	Characterized by presence of deep caries and need for greater exploratory preparation in dentin.

163. **Preventive resin restoration is placed on all except** (AIPG 2012)
a) Noncavitated pits and fissure
b) Cavitated pits and fissure
c) Deep caries
d) In non accessible proximal areas

164. **UVA seal was the first commercially introduced pit and fissure sealant which was** (MP 2012)
a) Self-cured
b) UV light activated
c) Visible light activated
d) Fluoride releasing

(Ref: Tilakraj's Pedodontics, p 187)
- **Bunocore** modified the **BISGMA** system by incorporating a light-activated catalyst **'benzomethyl ether' diketones)** and introduced the first commercially available pit and fissure sealant. The polymerization was activated by using UV light. The material was available - **Nuva-seal**.
- **Wilson (1895)** reported the use and placement of cements in pits and fissures to prevent occlusal caries.
- **Hyatt's gave prophylactic odontomy** in 1923. This technique involves filling the fissures with silver or copper oxy-phosphate cement as soon as the teeth erupted in oral cavity.
- **Bodecker** in 1929 proposed the technique called fissure eradication.

165. **Common cause of failure of dental sealant is** (HPSC 2014)
a) Failure to apply fluorides post retention
b) Exceeding etching time
c) Contamination of field by saliva
d) Washing off acid after etching

(Ref: Textbook of Pedodontics by Shobha Tandon, 2nd ed., p 259, 260; Soben Peter, 3rd ed., p 370)
- After etching the tooth should be rinsed and dried, until it has a **chalky, frosted appearance.**
- If it does not, the tooth should be re-etched for 15 seconds.
- Remember that it is imperative to avoid salivary contamination.
- The moisture contamination at this stage of process is the most common cause of sealant failure.

166. **Fissure eradication in tooth was advocated by** (Manipal 2014)
a) Hyatt
b) Bunocore
c) Bodecker
d) Bowen

(Ref: Principles and Practice of Pedodontics edited by Arathi Rao, 1st ed., p 201)
Fissure eradication in tooth was advocated by **Bodecker in 1929**. It is mechanical widening of fissures to prevent food entrapment in the fissures. **Hyatt advocated** prophylactic odontotomy in 1924.

Ans: 162–B 163–D 164–B 165–C 166–C

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167. Mechanical retention of sealants is the direct result of resin penetration into the porous etched enamel forming tags of together (JKCET 2014)

a) 8 microns
b) 40 microns
c) 1000 microns
d) 30 microns

- Different authors give different ranges. This question is line to line from Mathewson's Pedodontics book.
- Mechanical retention of sealants is the direct result of resin penetration into this porous etched enamel forming tags 40 microns.
- Microporous layer (micro tags) created by etching the enamel extend 5–50 (20) in micrometers. The microtags formed are 2–5 microns in length *(Operative Dentistry by Sturdevants, 4th ed., p 298)*.
- The surface energy of the etched enamel increases and allows the resins to readily wet and penetrate into the microporosities. Once the resin is polymerized, it forms 'resin tags' that penetrate 10–20 microns into the enamel. The depth of penetration depends on the duration of etching (Craig).
- The recent studies show that it 5–10 microns in length.

168. Reattachment of fractured tooth fragment using resin bonding technique is called together (JKCET 2014)

a) Fragment restoration
b) Composite resin restoration
c) Temporary restoration
d) Therapeutic restoration

(Ref: McDonald and Avery's Dentistry for the Child and Adolescent by McDonald, 9th ed., ebook, p 47)
FRAGMENT RESTORATION (REATTACHMENT OF TOOTH FRAGMENT): Occasionally, the dentist may have the opportunity to reattach the fragment of a fractured tooth using resin and bonding techniques.

169. The ideal method for restoring a fractured tooth is (MHCET 2015)

a) Open faced stainless steel crown
b) Reattachment of fractured tooth segment
c) Stripcrown
d) Composite resin restoration

170. Discontinuation of nursing bottle should be done at (Rajasthan 2013)

a) 6 months
b) 9 months
c) 12 months
d) 18 months

(Ref: Principles and Practice of Pedodontics by Artiroa, 34th ed., p 189)
Parents should start brushing the child's teeth as soon as they erupt and *discontinue nursing bottles* as soon as the child can drink from a cup, i.e., at approximately 12–15 months of age.

171. According to Ellis and Davey classification, a fracture of 51 involving dentin and associated loss of vitality is classified as (KCET 2012)

a) Class 2
b) Class 4
c) Class 8
d) Class 9

(Ref: Textbook of Oral Medicine, 1st ed., p 613)
Class 9 fracture of deciduous teeth.

172. Which type of injury is least common in children? (PGI 2011)

a) Intrusion
b) Avulsion
c) Subluxation
d) Complicated crown fracture

(Ref: McDonald's Pedodontics, 8th ed., p 479–780/485–486)
Complicated crown fractures are least.

- The intrusion by forceful impaction of maxillary anterior primary teeth is a common occurrence in children during the first 3 years of life.
- Camp reports that the tooth most commonly avulsed in both the primary and the permanent dentition is maxillary central incisors.
- Most often, an avulsion injury involves only a single tooth.
- Avulsion injuries are three times more frequent in boys than in girls and occur most commonly in children of 7–9 years of age when permanent incisors are erupting.
- Andreasen suggest that the loosely structured periodontal ligament surrounding the erupting teeth favours complete avulsion.

Ans: 167–B 168–A 169–B 170–C 171–D 172–D

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173. **Avulsed teeth should ideally be implanted within**
a) 60 min of injury
b) 120 min of injury
c) 600 min of injury
d) 1200 min of injury
(BHU 2012)

(Ref: Bailey and Love's Short Practice of Surgery, 25th ed., p 337)
Avulsed teeth should ideally be implanted within 60 min of the injury.

174. **Best medium to transport an avulsed tooth, which is not to be reimplanted immediately?**
a) Milk
b) Coconut water
c) HBSS
d) Viaspan
(AIIMS 2014, 2015)

(Ref: Pediatric Dentistry, Infancy through Adoloscence, 5th ed., p 514)
It is sometimes not possible to reimplant a tooth immediately. Research has shown that the best transport medium for avulsed teeth is cell culture media such as ViaSpan or HBSS. Viaspan is not readily available for clinical use, but HBSS is available as EMT Tooth Saver.

175. **An avulsed immature tooth with open apex with extra oral dry time less than 60 minutes should be**
a) Replanted after the root is rinsed off debris with water or saline
b) Replanted after soaking the tooth in doxycycline for 5 minutes
c) Discarded because the success is poor after replantation
d) Replanted after root canal treatment and apical scaling
(Yenopoya 2014)

(Ref: Principles and Practice of Pedodontics by Arathi Rao; p 325)
EXPLANATION
- **Extraoral time of 30–60 min with either open or closed apex.**
- Chances of revascularization is extremely poor, even in a tooth with open apex. Apexification procedure is initiated at the second visit if not done in the first.
- Root canal treatment is initiated at the second visit at 7–10 days in a tooth with closed apex.
- The tooth can be soaked in doxycycline mixed with 20 mL of physiologic saline for 5 min before replantation for improving the revascularization significantly. Doxycycline inhibits bacteria, thus removing the major obstacle.

176. **An avulsed tooth is conditioned with 3% citric acid in order to**
a) Remove the periodontal ligament
b) To increase the surface reactivity
c) Disinfect the tooth
d) Etch the surface
(AIIMS 2015)

(Ref: Ingle's 5th ed., p 838; Cohen's 6th ed., p 508; Michael G. Stewart's Head, Face, and Neck Trauma: Comprehensive Management, 1st ed., p 125; Petersen's Oral Surgery, 2nd ed., p 394)
EXPLANATION
- The main purpose of acid treatment with mild acid (e.g., citric) is to partially demineralize (and not to increase surface area) the cementum and dentin, thereby exposing the collagen fibres of PDL ligament.
- The teeth should be soaked in citric acid for 5 min to expose dentinal tubules and cementum. This opens and debrides dentinal tubules thus allowing unimpeded growth of connective tissue to the root surface.
- If extraoral time is more than 60 min, the teeth in citric acid to remove the remaining PDL (necrotic PDL) and make it resistant to resorption (attempt to slow the process of osseous replacement) followed by application of stannous fluoride. The tooth should be coated with emdogain (enmale matrix protein) or alendronate followed by replantation).

177. **A 10-year-old child with avulsed incisor 20 min back come to your office, it is a sound tooth with no fracture, covered with dirt, u will**
a) Clean the dirt with saline and replant
b) Sterilize the tooth and replant
c) Scrub and curette the root surface and replant
d) Clean with hypotonic solution and replant
(PGI 2011)

Ans: 173–A 174–D 175–B 176–A 177–A

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178. **A 3 years and 7 months old child with history of traumatic intrusion of primary maxillary central incisor (51). IOPA reveals foreshortening, t/t is** (AIPG 2014)
   a) Immediately surgical repositioning of 51
   b) Wait & watch
   c) Orthodontic extrusion
   d) Immediate extraction

(Ref: Endodontics Principles and Practice by Mahmoud Torabinejad, 4th ed., p 175, 181, 183)

Luxation Injuries

- Concussion and subluxation injuries require no treatment, other than promoting good oral hygiene to prevent healing complications.
- Discoloured primary teeth may return to normal colour, probably indicating recovery of the pulp.
- Pulp canal obliteration is common after luxation injuries. This changes the primary crown to a darker yellow colour, which is not pathologic and requires no treatment.
- Teeth with lateral and extrusive luxations may be left untreated, may be repositioned if there is occlusal interference, or may be extracted, depending on the severity of injury.
- Teeth with intrusive luxation should be carefully evaluated to determine the direction of intrusion. Radiographs provide valuable information to confirm the intruded position of the tooth and its proximity to the permanent successor.

If the intruded tooth appears foreshortened on the film	Indicates that the apex is oriented toward the X-ray cone	Therefore, these teeth should present no danger to the permanent successor and may be left to reerupt
If the tooth appears elongated	Indicates that the apex is oriented toward the permanent successor and may pose a risk to the permanent tooth bud	The tooth should be carefully extracted if it impinges on the permanent successor. The permanent tooth buds should also be evaluated for symmetry.

179. **Period of immobilization for reimplanted mature tooth** (AP 2015)
   a) 7–10 days
   b) 3 weeks
   c) Need not be immobilizsed
   d) 23 weeks

180. **A child suffers from trauma, which causes intrusion of primary central incisor. The incisor is not in occlusion and does not cause interference. What should be done?** (AIIMS 2014, AIPG 2015, AIPG 2012)
   a) The tooth should be allowed for passive & spontaneous repositioning itself
   b) Be positioned & splinted
   c) Be extracted
   d) Reduce the opposing tooth

(Ref: Endodontics Principles and Practice by Mahmoud Torabinejad, 4th ed., p 22, 28)

181. **A patient comes with history of trauma to anterior teeth. There is metallic sound on percussion of the affected tooth. The diagnosis based on clinical examination is** (AIPG 2013)
   a) Lateral luxation
   b) Subluxation
   c) Concussion
   d) Extrusive luxation

(Ref: Essentials of Traumatic Injuries to the Teeth: A Step-by-Step Treatment Guide by Jens O. Andreasen, Frances M—different pages).

A percussion test gives two results:

1. Whether the periodontal ligament is tender or not.
2. Whether the tooth is locked into surrounding bone (this is by sound).

If the tooth is displaced, usually in a palatal/lingual or labial direction. It will be immobile and percussion usually gives a high, metallic (ankylotic) sound.

Ans: 178–B 179–A 180–A 181–A

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Sounds produced on percussion for the following

1. Apical periodontitis	-	Sharp
2. Periapical abscess	-	Dull
3. Ankylosis	-	Dull muffled sound/solid sound or solid metallic sound that persists during recovery as well
4. Lateral luxation	-	Solid metallic sound
5. Intrusive luxation	-	Solid metallic sound
6. Extrusive luxation	-	Dull

Only in intrusion and lateral luxation you have a high pathognomic metallic sound. In intrusion and lateral luxation and ankylosis, percussion cannot be felt in the tooth being tested as there is damage to normal PDL.

182. **The best alternative storage medium for avulsed tooth in case culture media is not available** (Rajasthan 2013)
a) Milk
b) Water
c) Saline
d) Blood

(Ref: Shoba Tandon's 2nd ed., p 597)

EXPLANATION

If tooth is not reimplanted immediately in dental office, HBSS is the best storage medium. Among the given options, milk will be the best one. Cold low fat milk is the best answer.

183. **Treatment for crown fracture with dentin primarily require** (AIPG 2013)
a) Pin retained composite restoration
b) Permanent restoration immediately or within 4 weeks
c) Protection of pulp
d) Splinting of teeth

(Refer APAD guidelines on Trauma)

This is Ellis class II fracture when it involves only enamel and dentin without pulpal exposure.
Crown fracture–uncomplicated.
Definition: An enamel fracture or an enamel-dentin fracture that does not involve the pulp.
Treatment objectives: To maintain pulp vitality and restore normal esthetics and function.

184. **Maintenance of pulp vitality in pulp exposure fracture will** (AIPG 2013)
a) Improves prognosis when done before treatment
b) Improves prognosis in immature teeth
c) Improves prognosis in mature teeth
d) Does not affect prognosis

No reference is found. Probably this is referred to pulpal treatments.

185. **Which of the following type of matrices is frequently used on pediatric patients?** (HPSC 2014)
a) Tofflemire
b) Graimferential
c) Custom-F band
d) Ivory

Custom-F band is frequently used on paediatric patients.
(Ref: Pedodontics by Stephen wei, p 193)
We think it should be custom T-band instead of F-band (it is a spelling mistake).
Those that are more suitable for use on primary molars: the junior size of the Tofflemire **band**, the **T band**, and the **custom** welded **band**.

Ans: **182–A 183–C 184–B 185–C**

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186. **A child aged 5 years suffers unilateral ankylosis, occlusion is normal. There is only pain on movement. What is the recommended treatment?** (MP 2012)
a) 2-4 weeks immobilization
b) 4-8 weeks immobilization
c) IMF
d) Active movement

(Ref: Killey's Mandibular, 4th ed., p 100)
Active mobilization has to be induced.

187. **Suffix A for rubber dam stands for** (PGI 2012)
a) Unerupted teeth
b) Wingless clamp
c) Winged clamp
d) Primary dentition

(Ref: Shobha Tandon, 2nd ed., p 318)
We didn't get the answer but following explanation may help you A-stands for partially erupted teeth.

Common Rubber Dam Clamps for Paediatric Use

1. Partially erupted permanent molar	154A, 8A ivory
2. Fully erupted permanent molar	14, 8 ivory
3. Second primary molar	26, 27, SS white, 3 ivory
4. First primary molar, bicuspid, permanent canine	2, 2A ivory
5. Primary incisor, and canine	0 ivory

Commonly Used Rubber Dam Clamps and their Area of Use

Clamp	Area of use in the mouth
0	Primary teeth
2	Small bicuspids
W3	Bicuspids and small molars
7	Mandibular molars
W8A	Partially erupted molars
9	Anterior teeth
212	Anterior teeth

Clamps commonly used in paediatric dentistry include the 2, 4, 8A, and 14A. Clamps with 'W' prefixes, such as the W8A or W3, indicate that the clamps are without wings on the outer portions opposite the hole.

188. **K.R.I. paste used for obturation in case of pulpectomy is primarily a mixture of** (MP 2012)
a) Zinc oxide and calcium hydroxide
b) Calcium hydroxide and iodoform
c) Iodoform and zinc oxide
d) Iodoform and CMCP

(Ref: Shobha Tandon's 2nd ed., p 417)

Ans: 186–D 187–A 188–D

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Walkhoff paste	KRI paste	Maisto paste	Vitapex	Endoflas	Colla cote	Guedes-Pinto paste
Parachloro-phenol Camphor Menthol	Iodoform 80.8% Camphor 4.86% Parachlorophenol 2.025% Menthol 1.215%	Zinc oxide 14 g Iodoform 42 g Thymol 2 g Chlorphenol Camphor 3 cc Lanolin 0.5 g	Calcium hydroxide Iodoform Oily additives	Zinc oxide 56.5% Barium sulphate 1.63% Iodoform 406% Calcium hydroxide 1.07% Eugenol Pentachloro-phenol	Synthetic collagen	0.30 g iodoform 0.25 g calcium hydroxide 0.1 mL camphorated paramonochlo-rophenol

189. **The following material with a haemostatic effect can be used as a substitute for formocresol pulpotomy**
   a) Gluteraldehyde
   b) Ferric sulphate
   c) Mineral trioxide aggregate (MTA)
   d) Freeze-dried bone
   (AP 2012)

(Ref: Pediatric Dentistry: Infancy through Adolescence by Pincham, 4th ed., p 386)
- There is a concern over the safety and success of formocresol pulpotomy.
- Hence the materials like gluteraldehyde, iodine, ferric sulphate have been used as alternatives.
- **But only ferric sulphate has the haemostatic effect and hence the answer.**

190. **First sign after formocresol pulpotomy failure is?**
   a) Internal resorption
   b) Pain
   c) Discolouration of tooth
   d) Bleeding
   (AIIMS 2012)

(Ref: Cohen's 8th ed., p 815, 9th ed., p 844)
- Failure of a formocresol pulpotomy is usually detected radiographically.
- The first signs of failure are often internal resorption of the root adjacent to the area where the formocresol was applied.
- This may be accompanied by external resorption, especially as the failure progresses.
- In primary molars, radiolucency develops in the bifurcation or trifurcation area.
- In anterior teeth, radiolucency may develops at the apexes or lateral to the roots.
- With more destruction, the tooth becomes excessively mobile; a fistula usually develops.
- It is rare for pain to occur with the failure of formocresol pulpotomy.

191. **High rate of failure after direct pulp capping in primary teeth is due to**
   a) Low vascularity of pulp
   b) High cellular content of pulp
   c) Large number of unmyelinated nerves
   d) Narrow ribbon-shaped root canals
   (KCET 2012)

(Ref: Pediatric Dentistry: Infancy through Adolescence by Pinkham, 4th ed., p 383)
- A straight pick from the book.
- The *high cellular content* of the primary pulp tissue is responsible for the increased *failure* rate of direct *pulp capping* in primary teeth.

192. **Internal resorption of tooth is destructive process generally believed to be caused by**
   a) Odontogenic action
   b) Odontocentric action
   c) Odontoblastic action
   d) Odontoclastic action

(Ref: Dentistry for the Child and Adolescent, 8th ed., p 471)

Internal Resorption
- ***Internal resorption is a destructive process generally believed to be caused by odontoclastic action.***

Ans: 189–B 190–A 191–B 192–D

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193. In pedo patient after trauma, the pulp regains its electric response in (AIPG 2012)

a) 10–12 days
b) 1 month
c) 4–6 weeks
d) 2 months

(Ref: Cohen's 9th ed., p 612)
The failure of a pulp to respond immediately after the trauma is not an indication for the endodontic therapy. Instead, vitality test should be repeated in a ***week to 10 days*** after the emergency treatment.

194. Pulp therapy in a patient with leukemia is (AB Shetty 2014)

a) Strongly recommended in primary teeth
b) Contraindicated in primary teeth
c) Indicated in all permanent teeth
d) Both (a) and (c)

(Ref: McDonald's Dentistry Child Adolescent, 9th ed., p 503)
Pulp therapy on primary teeth is contraindicated in any patient with a history of leukemia. Endodontic treatment for permanent teeth is not recommended for any patient with leukemia who may have a chronic, intermittent suppression of granulocytes. Even with the most exacting technique, an area of chronic inflammatory tissue may remain in the periapical region of endodontically treated teeth.

195. In glutaraldehyde pulpotomy procedure, cotton pellet is kept on pulp stumps for (AIIMS 2014)

a) 2 min
b) 30 seconds
c) 4 min
d) 5 seconds

(Ref: Ingle's 5th ed., p 885, 886)
After several investigations, Ranly et al concluded that buffering glutaraldehyde, increasing its concentration, and applying it for longer time periods all enhanced the degree of fixation.

They suggested that clinical treatment might involve **buffered glutaraldehyde at either 4% for 4 min or 8% for 2 min**. Lloyd et al felt that the tissue becomes more stable with longer application times of 2% glutaraldehyde.

196. Who pioneered clinical usage of formocresol in primary teeth pulp therapy? (AB Shetty 2014)

a) Sweet
b) Berger
c) Spamer
d) Zander

(Ref: Textbook of Endodontics by Nisha Garg; p 485)
Formocresol pulpotomy: **Sweet** popularized this technique in 1930.

197. Which of the following is false about apexogenesis? (KCET 2013)

a) Done in a non-vital tooth
b) More physiologic process
c) Pulp tissue with mild inflammation
d) Root development continues

(Ref: Grossman's Endodontic Practice, 11th ed., p 111)
APEXOGENESIS APEXIFICATION

- It is the physiologic process of root development in **vital** infected tooth.
- It is the method of inducing the development of root apex in immature pulp less tooth by the formation of osteocementum or bone.
- Indicated in normal pulp or pulp with minimal inflammation.
- Indicated in cases where pulp has undergone irreversible pulpal necrosis.
- Normal root end development occurs.
- Calcific barrier is formed near apex.

198. In regenerative endodontic therapy of young permanent teeth, metronidazole is replaced by (MHCET 2015)

a) Ornidazole
b) Doxycycline
c) Chloramphenicol
d) Cloxacillin

(Ref: Pedodontics by Arthi Rao, 3rd ed., p 364)
Regenerative endodontic procedures are biologically based procedures designed to replace damaged structures, including dentin and root structures, as well as cells of the dentin-pulp complex. Usually it is done in immature roots with open apex. Regenerative stem cells should be present. Canal should not be instrumented. Calcium hydroxide should not be used as intracanal medicament.

Ans: 193–A 194–B 195–C 196–A 197–A 198–A

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199. **Concentration of sodium hypochlorite in Cari solv is?** (AIIMS 2012)
a) 2% w/v
b) 0.5% w/v
c) 1.5% w/v
d) 5% w/v

[Ref: British Dental Journal 2000;188(18)]

200. **The rate of root resorption in pulpless primary teeth compared to vital teeth is** (HPSC 2014)
a) Similar
b) Slow
c) Rapid
d) Variable

(Ref: Dentest Clinical Sciences, vol 2, 5th ed., p 1294)
The rate of root resorption in pulpless primary teeth compared to vital teeth is similar. There are controversial questions and even in literature studies are controversial.

201. **In preparing a primary molar for a stainless steel crown, the surface requiring the least amount of reduction is** (PGI 2013, 2014, Kar 01)
a) Occlusal
b) Lingual
c) Mesial
d) Facial

(Ref: Shobha Tandon's Textbook of Pedodontics, 2nd ed., p 365-366)
- Buccal and lingual surfaces should be reduced to a minimum.
- The buccal and lingual surface are reduced at least 0.5 mm with the reduction ending in a feather edge, extending 0.5-1 mm into the gingival sulcus.

202. **In a stainless steel crown on a deciduous molar with overhanging margin (according to some students improper marginal seal), gingival pain and inflammation occurs due to** (AIIMS 2014, AIPG 2014)
a) Entrapment of plaque beneath it
b) Due to leaching of metal corrosive
c) Due to excessive cement leaching
d) Due to cervical caries

(Ref: Clinical Textbook of Dental Hygiene and Therapy edited by Suzanne Noble, p 163)
- A crown is chosen to provide the best fit, particularly at the cervical margin.
- A crown which is too small will not seat into position while an oversized crown will give rise to overhanging margins, resulting in plaque retention and ultimately poor gingival health.

203. **A man working under conditions of high temperature should increase his intake of** (APPG 2014)
a) NaCl
b) Iron
c) Vitamin D
d) Phosphates

(Ref: Park's 22nd ed., p 694)
Water with extra salt (NaCl) is needed by unacclimatized person during first 10 days of their exposure to heat.

204. **In humans, preterm birth refers to the birth of a baby of less** (PGI 2012)
a) Than 37 weeks gestational age
b) Than 41 weeks gestational age
c) Than 30 weeks gestational age
d) Than 38 weeks gestational age

- In humans, **preterm birth (Latin**: *partus praetemporaneus* or *partus praematurus*) is the **birth** of a **baby** of less than 37 weeks **gestational age**.
- **Premature birth** is defined either as the same as preterm birth or the birth of a baby before the developing organs are mature enough to allow normal postnatal survival.
- In the normal human fetus, several organ systems mature between 34 and 37 weeks, and the fetus reaches adequate maturity by the end of this period.
- One of the main organs greatly affected by premature birth is the lungs. The lungs are one of the last organs to develop because of this; premature babies typically spend the first days/weeks of their life on a ventilator.

205. **In tobacco product, nicotine is a** (BHU 2012)
a) Psychoactive substance
b) Psychosomatic substance
c) Psychotopic substance
d) Psychoceptive substance

(Ref: Dentistry for the Child and Adolescent by Ralph E. McDonald, 8th ed., p 268)

Ans: 199–B 200–A 201–B 202–A 203–A 204–A 205–A

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Nicotine is the psychoactive substance in tobacco products. Based on the fact that 90% of tobacco users become addicted to the use of tobacco, nicotine may be considered one of the most addictive substances known.

206. **Malnutrition includes** (BHU 2012)
   a) Undernutrition only
   b) Over nutrition only
   c) Undernutrition and over nutrition
   d) Poisoning

(Ref: Dentistry for the Child and Adolescent by Ralph E McDonald, 8th ed., p 260)

Malnutrition Among US Children

- Malnutrition may take the form of either undernutrition (inadequate intake of nutrients that potentially leads to deficiency diseases) or overnutrition (excessive dietary intake of energy, fat, or cholesterol that predisposes individuals to chronic diseases later in life).
- Certainly, all poor children are at risk for the long-term consequences of malnutrition.

207. **Which of the following is not involved in cleft palate surgery?** (Manipal 2012)
   a) Pedodontist
   b) Orthodontist
   c) Speech therapist
   d) Physiotherapist

(Ref: Contemporary Oral and Maxillofacial Surgery by Peterson, 4th ed., p 559)
The care of patients with cleft lips and palates involves all of the **dental specialists**, as well as **paediatricians, plastic surgeons, otolaryngologists, speech therapist, psychiatrist, social worker**.

208. **Ontology means** (AB Shetty 2014)
   a) Our way of being
   b) Study of ear
   c) Both (a), (b)
   d) None of these

(Ref: Pediatric Dentistry: Infancy through Adolescence by Pinkham; p 398)
Ontology is the philosophical study of the nature of being, becoming, existence, or reality, as well as the basic categories of being and their relations.

209. **"The silent epidemic" is** (AB Shetty 2014)
   a) Dental disease
   b) Swine flu
   c) Cholera
   d) None of these

(Ref: Nutrition for the Older Adult by Melissa Bernstein, 1st ed., p 312)
Oral (and **dental**) **disease** has been **called** the "**silent epidemic**" and even the "neglected epidemic" due to the fact dentition that it effects everyone.

210. **Calcium hydroxide is supplied in** (AB Shetty 2014)
   a) Catalyst paste
   b) Base paste
   c) Both (a), (b)
   d) Gel form

(Ref: Materials in Dentistry by Jack L Ferracane; p 64)
Calcium hydroxide is supplied as two paste system in tubes marked "catalyst" and "base."
Calcium hydroxide promotes reparative dentin bridges over any area of frank pulpal exposure. Such repair usually occurs in 6–8 weeks and may be evident radiographically in 10–12 weeks.

211. **Which one of the following is contraindicated in children under the age of 11 years?** (AB Shetty 2014)
   a) Tracheostomy
   b) Cricothyrotomy
   c) Percutaneous tracheostomy
   d) Intubation

(Ref: Pediatric Emergency Medicine by Steven G Rothrock; p 38)
Cricothyrotomy is contraindicated in children under 11 years old, in whom it is technically difficult. In this age group, needle cricothyrotomy is preferable, when access from above the glottis is not possible.

Other contraindications are:
1. Crushed larynx – may result in tracheal separation because of direct trauma.
2. Pre-existing laryngeal or tracheal pathology.

Ans: **206–C 207–D 208–A 209–A 210–C 211–B**

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212. **Secretion of the bulk of dentin is done during ––– dentinogenesis**
a) Secondary
b) Primary
c) Tertiary
d) None of these

(Ref: Pediatric Dentistry - Pageburst Book on Vital Source, Infancy by Paul S Casamassimo; p 334)
Bulk of the dentin is formed by secondary dentin.
After secretion of bulk of the dentin during primary dentinogenesis, physiologic secondary dentin is secreted at a much slower rate throughout the life of the tooth, leading to a slow reduction of the size of the pulp chamber.
The original postmitotic odontoblasts, responsible for primary dentinogenesis survive till the life of the tooth, unless it is subjected to injury.

213. **The maximum allowable dosage of 2% lidocaine for a 20-pound child is**
a) 4 mg/lb body weight
b) 3 mg/lb body weight
c) 2 mg/lb body weight
d) 1 mg/lb body weight

(Ref: Dentofacial Orthopedics with Functional Appliance by Pinkham; p 449)
1 pound is 0.45 kg so 20 pounds is 9 kg. Maximum allowable dose of 2% lidocaine with 1;80,000 adrenaline is 4.4 mg/kg body weight (so it will come around 2 mg/lb body weight).

214. **The window of infectivity during which most children acquire the cariogenic organisms is between the ages of**
a) 15 and 16 months
b) 17 and 18 months
c) 19 and 33 months
d) 36 and 40 months
(Manipal 2014, MHCET 2015)

(Ref: Ralph E McDonald, 8th ed., p 206)
Caufield, cutter and Dasanayake suggested the possibility of window of infectivity between 19 and 33 months of age during which most children acquire the cariogenic organisms.
Windows of infectivity of *S. mutans*:
1. First window of infectivity—Birth to 5 years
2. Second window of infectivity—6–12 years

215. **'Chicken-wire' appearance of enlarged bone marrow spaces is seen in**
a) Fetal alcohol syndrome
b) Sickle cell anaemia
c) Haemophilia A
d) B thalassemia major
(Manipal 2014)

(Ref: Integrated Clinical Orthodontics by Vinod Krishnan, 1st ed., p 48). Thalasemia:-
Radiograph show typically widened diploic sacs of skull bones, trabecular rarefaction, loss of bone density, maxillary excess and obliteration of maxillary sinus due to erythroid medullary hyperplasia. The classic appearance is often described as **hair on end** or **chicken wire appearance**.

216. **Average daily iron requirement in child**
a) 0.5–1 mg/kg body wt
b) 2–5 mg/kg body wt
c) 20–25 mg/kg body wt
d) 50 mg/kg body wt
(PGI 2011)

(Ref: KD Tripathi's 5th ed., p 546)

Average Daily Dose of Iron

- Adult male— 13 mg/kg body wt
- Adult female— 21 mg/kg body wt
- Infant— 60 mg/kg body wt
- Child— 25 mg/kg body wt
- Pregnancy— 80 mg/kg body wt

217. **APGAR scale in infant measures**
a) Respiratory, neurological and circulatory index
b) Respiratory, neurological and renal system
c) Circulatory, renal and neurological index
d) Circulatory, renal and respiratory
(AIPG 2012)

(Ref: Nelson's Pediatrics, 4th ed., p 197; http://pediatrics. aappublications.org/content/117/4/1444.full)
- The Apgar score provides a convenient shorthand for reporting the status of the newborn infant and the response to resuscitation.

Ans: 212–A 213–C 214–C 215–D 216–C 217–A

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- In 1952, Dr **Virginia Apgar** devised a scoring system that was a rapid method of assessing the clinical status of the newborn infant at 1 min and 5 min after birth.
- The Apgar score comprises 5 components: ***Heart rate, respiratory effort, muscle tone, reflex irritability and colour,*** each of which is given a score of 0, 1, or 2.

218. The diagnostic procedure of applying pressure to a suspected lesion to visualize the evacuation of colouration of the lesion is (AP 2015)

a) Endoscopy
b) Diascopy
c) Arthroscopy
d) Fluoroscopy

(Ref: Burkitt's 12th ed., p 157)
Diascopy is used in the diagnosis of melanomas.

219. Indications for use of stainless steel crowns in primary teeth are all EXCEPT (MHCET 2015)

a) Restoration of hypoplastic teeth
b) Following pulpotomy or pulpectomy procedure
c) Teeth which are not restorable
d) As an abutment for space maintainer

I. CHRONOLOGY OF DENTITION

PRIMARY DENTITION

Tooth	First evidence of calcification	Amt of enamel formed at birth	Enamel completed	Eruption	Root completed
Maxillary					
Central incisor	4 mo in utero	Five sixths	1½ mo	7½ mo	1½ yr
Lateral incisor	4½ mo in utero	Two thirds	2½ mo	9 mo	2 yr
Cuspid	5 mo in utero	One third	9 mo	18 mo	3¼ yr
First molar	5 mo in utero	Cusps united	6 mo	14 mo	2½ yr
Second molar	6 mo in utero still isolated	Cusp tips	11 mo	24 mo	3 yr
Mandibular					
Central incisor	4½ mo in utero	Three fifths	2½ mo	6 mo	1½ yr
Lateral incisor	4½ mo in utero	Three fifths	3 mo	7 mo	1½ yr
Cuspid	5 mo in utero	One third	9 mo	16 mo	3¼ yr
First molar	5 mo in utero	Cusps united	5½ mo	12 mo	3 yr
Second molar	6 mo in utero still isolated	Cusp tips	10 mo	20 mo	3 yr

PERMANENT DENTITION

Maxillary					
Central incisor	3–4 mo	-	4–5 yr	7–8 yr	10 yr
Lateral incisor	10–12 mo	-	4–5 yr	8–9 yr	11 yr
Cuspid	4–5 mo	-	6–7 yr	11–12 yr	13–15 yr
First bicuspid	1½–1¾ yr	-	5–6 yr	10–11 yr	12–13 yr
Second bicuspid	2–2¼ yr	-	6–7 yr	10–12 yr	12–14 yr
First molar	at birth	Sometimes	2½–3 yr	6–7 yr	9–10 yr
Second molar	2½–3 yr	-	7–8 yr	12–13 yr	14–16 yr
Mandibular					
Central incisor	3–4 mo	-	4–5 yr	6–7 yr	9 yr
Lateral incisor	3–4 mo	-	4–5 yr	7–8 yr	10 yr
Cuspid	4–5 mo	-	6–7 yr	9–10 yr	12–14 yr
First bicuspid	1¾–2 yr	-	5–6 yr	10–12 yr	12–13 yr
Second bicuspid	2¼–2 yr	-	6–7 yr	11–12 yr	13–14 yr
First molar	at birth	Sometimes	2½–3 yr	6–7 yr	9–10 yr
Second molar	2½–3 yr	-	7–8 yr	11–13 yr	14–15 yr

Ans: 218–B 219–C

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II. Match the Following

1. A patient aged 5.5 years has pulpal exposures of four maxillary incisors
2. A 4-year child patient has a pulp exposure of maxillary primary molar teeth on X-ray. The patient is asymptomatic. The recommended treatment is
3. A 4-year child patient complains of caries in relation to mesial and distal surfaces of primary mandibular first molar without any pulpal exposure on X-ray. The recommended treatment is
4. A 3-year child patient has incipient caries lesion on the primary central incisor not involving the incisal angle. The recommended restoration is
5. A 5-year child patient comes to your clinic with recurrent caries under amalgam restoration on the primary mandibular left second molar with pulpal exposure on X-ray. There is no pain. There is extraction of primary first molar. The recommended treatment is
6. A 2-year child patient encounters intrusion trauma of maxillary central incisors by 2 mm. The immediate recommended treatment is
7. A 4.5-year child patient attends clinic with history of trauma 2 hours back. On examination there is severe mobility of the central incisors. The treatment recommended is
8. Which is the recommended treatment for a 4-year-old child who attends the clinic with black discolouration of the central incisors with a small periapical radiolucency.
9. Which is the recommended treatment for a 7-year-old child who attends the clinic with fractured central incisor 6 hours back with a large pulp exposure without any root fracture on the X-ray, without any mobility but little laceration and bruising on the soft tissue

a) Calcium hydroxide pulpotomy (Apexogenesis)
b) Formocresol pulpotomy
c) Pulp capping with calcium hydroxide
d) Extraction
e) Pulpectomy and apexification
f) Pulpectomy with ZoE
g) Observe radiographs for root fractures and splint them and observe periodically
h) No treatment. Make the patient comfortable. Let them erupt on own
i) Formocresol pulpotomy of primary second molar and fixed space maintainer with stainless crown on second molar
j) Class III resin restoration with labial access
k) Stainless steel crown
l) Formocresol pulpotomy and stainless crown

Key—1-d, 2-l, 3-k, 4-j, 5-i, 6-h, 7-g, 8-f, 9-a.

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III. Treatment for loss of individual tooth

Permanent teeth

- **Central Incisor** – Cause is due to trauma. Space is maintained by a RPD until an age where permanent restoration can be placed.
- **Lateral incisor** – Same as above
- **Maxillary cuspids** – Following its loss there is distal tipping of incisors and mesial movement of bicuspids. Treatment is to move incisors mesially and bicuspids distally to place a bridge.
- **First bicuspid** – Incisors and canines tip distally. Posterior teeth tip mesially. Anterior spacings appear. Multibanded mechanotherapy is required.
- **Second bicuspid** – Same as above
- **First molars** – Common cause is caries. If it is lost before eruption of second bicuspids, there is closure of bite. Usually treatment is to drift second molars into the space created by loss of first molar.

Premature loss of primary teeth

- **Incisors** – Cause is trauma. Space maintainers are rarely needed if loss occured after 4 years. An acrylic plate carrying teeth helps in phonetics and aesthetics.
- **Cuspids** – Premature loss of primary canine which is otherwise healthy indicates arch length discrepancy. The eruptive force from the permanent lateral incisors causes its resorption. If loss is unilateral, extract contralateral canine, place a lingual arch to prevent arch collapse. This prevents the lingual tipping of incisors from tongue pressure and shifting of midlines.
- **First primary molar** – Anterior teeth may move more distally and posteriorly than posterior teeth moving mesially. This leads to midline shifts. Space is usually maintained by band and loop appliance. The loss of primary first molar has more effect on anterior teeth compared to second molar.
- **Primary second molar** – The space closes more rapidly following mesial movement of first permanent molar particularly in maxillary arch. If loss is unilateral and occurs before eruption of permanent first molar, distal shoe appliance is indicated. If loss is after eruption of permanent first molar, space is maintained by band and loop, band and bar, crown and loop appliances.
- **Gerber space maintainer** is used to regain as well as maintain the space. If the loss is bilateral, Nancy holding arch in upper and lingual arch in lower is indicated.

IV. Do's of child management

a) Have a positive, firm and consistent approach.
b) Be truthful to the child.
c) Try to explain to the child in easy understandable language.
d) Before starting the treatment, let the child be familiar with the environment.
e) Talk at the level of eyes.
f) Talk about child's hobbies etc. on first appointment.
g) Let the child talk to you. Answer his questions patiently.

Dont's of child management

a) Don't talk about child's siblings on first appointment.
b) Expect a child to be troublesome.
c) Postpone treatment if child is not co-operative. It may have negative reinforcement.
d) Don't be submissive or oversympathetic.
e) Don't use fear provoking words.
f) Don't go below the level of child, such as baby talk.
   - Step child of dentition—Third molar
   - Cornerstone of dentition—permanent first molar
   - Corner teeth—canine
   - Servant of tooth—alveolar process
   - Bed of orthodontic tooth movement—periodontium.
     - Mandibular first primary molar does not resemble any tooth in permanent dentition.
     - Maxillary first primary molar resembles premolars.
     - Max. and mandibular second primary molars resemble first permanent molar of respective arches.
     - Enamel cap in primary teeth is ½, that of permanent teeth is 1 mm.
     - Common cause of dental pain in children is pulpitis and food impaction.
     - First oral pain is teething.
     - Most susceptible teeth to caries in primary dentition is second molar.
     - 2-Chloroprocaine is advisable in children because of short duration of action.

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V. Dosage calculation in children

a) **Young's rule**

$$\text{Child dose} = \frac{\text{Child age}}{\text{Age} + 12} \times \text{Adult dose}$$

b) **Clark's rule**

$$\text{Child dose} = \frac{\text{Child's weight (pounds)}}{150} \times \text{Adult dose}$$

c) **Percentage of adult dose** = 0.7 x Weight of child in pounds

- SABE is caused by **α-haemolytic streptococci,** whereas acute bacterial endocarditis is caused by group A **β-haemolytic streptococci.**
- Clindamycin is indicated in prophylaxis against SABE, if patient is sensitive to both penicillin and erythromycin.

Tooth discolouration

1. Erythroblastosis foetalis—blue-green colour
2. Porphyria—purplish
3. Cystic firbosis—yellow

VI.

1. Camp (1984) introduced endodontic pressure syringe to overcome underfilling. Lentulo spiral is commonly used to coat the walls of canal with filling material.
2. Frank (1966) first time used calcium hydroxide and camphorated monochlorophenol (CMCP) in apexification.
3. Mack and Dean (1993) introduced electrosurgical pulpotomy.
4. Chin is the commonly involved site for soft tissue injuiries followed by lip in children.
5. Common age group of primary teeth injuries is 2 to 2½ years of age.
6. Common age group of permanent teeth injuries is 8 to 11 years.
7. Boys are more susceptible than girls by ratio of 3:2.
8. Commonly involved teeth in fractures is upper central incisor.
9. Nancy is known as (1949) "Father of serial extraction".
10. Kjellgrenn (1929) coined the term "serial extraction".

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VII. Windows of infectivity of *S mutans*

1. First window of infectivity—birth to 5 years
2. Second window of infectivity—6 to 12 years

VIII. Milestones in the development of Pit and Fissure Sealants

1923	**Hyatt**	Prophylactic odontomy
1929	**Bodecker**	Fissure eradication
1955	**Buonocore**	Acid etch technique
1965	**Bowen**	Composites and Bis-GMA as pit and fissure sealants

1. Fine particles of powder are used instead of burs in kinetic cavity preparation.
2. BRAX-I gene has been isolated is thought to be responsible for enamel growth. These kinds of material are called biomimetic in nature.
3. Stainless steel crown was introduced by Humphrey in 1950.
4. **Blue grass appliance or Haskell appliance** (1991) was introduced by Haskell for correction of thumb sucking.

220. **Who advocated that a change in facial expression during "Voice control" as a technique in child management?**

a) David Chamber
b) J C Brauer
c) Pinkham
d) Sullikham and Harris

(Ref: Roberst et al. Review: Behaviour Management Techniques in Paediatric Dentistry. European Archives of Paediatric Dentistry 2010;11(4).

Brauer (1964) was of the opinion that a sharp, loud, surprise comment of"Open your mouth and stop crying" will frequently be effective.

Pinkham, 1985: It has been suggested that besides the change in voice quality, the associated facial expression may be important in effecting a behaviour change.

Chambers, 1976: Suggested that it is how something is said rather than what is said, that matters; it would be just as effective in a foreign language.

Greenbaum et al, 1990 described voice control as a therapeutic punishment procedure, and found that when used contingent upon a child's disruptive behaviour it suppressed that behaviour very effectively, within two seconds, and the effect lasted throughout the two-minute period of observation.

Szasz and Hollender, 1956: Voice control can quickly re-establish a relationship between dentist and child to the desired one of guidance-cooperation, if the disruptive behaviour is altering that relationship.

Although the technique is usually described in terms of a punishment, with the intention of weakening or eliminating behaviour, it should be recognised that a modulation of tone can be equally effective in encouraging a particular behaviour, reinforcing it.

Ans: 220–C

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