BOOK 1 MCQS

UNIT NO. (01)

1. **The branch of biology, which deals with the life process, and function of processes is known as:**
   A. Physiology
   B. Pathology
   C. Histology
   D. Evolution

2. **Discovered the microscopic creature under microscope in the red blood cells of malarial patient:**
   A. Ronald Ross
   B. Laveran
   C. Grassy
   D. A.F.A king

3. **Physical basis of life is:**
   A. Nucleotide and proteins
   B. Nucleus
   C. Cell
   D. Protoplasm

4. **The life was evolved first:**
   A. On earth
   B. In water
   C. In sky
   D. On the hill

5. **The _____ structure was first proposed by Robertson:**
   A. Cellulo-protein
   B. Star protein
   C. Cylo protein
   D. Lipo protein

6. **Opening and closing of stomata is controlled by which of the following taking place in the guard cells?**
   A. Turbidity
   B. Turgidity
   C. C. Flaccidity
   D. Turgor Force

7. **If the eyepiece of a microscope is marked 10X and the high power objective is marked 44X, the total magnification is:**
   A. 100
   B. 144
   C. 440
   D. 1044

8. **Which one of the following areas of biological study could produce evidence to prove conclusively that two organisms belong to the same species?**
   A. Anatomy
   B. Embryology
   C. Genetics
   D. Physiology

9. **_____ is a science of exception:**
   A. Biology
   B. Zoology
   C. Botany
   D. Pathology

10. **The branch of biology, which deals with the continuous adaptation of living organisms to their environment, is known as:**
    A. Adaptation
    B. Evolution
    C. Similarity
    D. Genetics

11. **Palaeobotany is study of:**
    A. Living plants
    B. Dead plants
    C. Fossil plants
    D. Fossil animas

12. **The word Biology has been derived from _____ language.**
    A. English
    B. Latin
    C. Greek
    D. French

13. The name malaria is a combination of two _____ words.

A. Italian
B. Latin
C. English
D. French

14. It is currently estimated that the age of the earth is about:

A. 1 billion years
B. 4 billion years
C. 1 light year
D. 100 billion years

15. An educated guess is known as _____.

A. Hypothesis
B. Theory
C. Statement
D. Problem

UNIT NO. (02)

1. If one ribose molecule were bonded to one adenine molecule and one Phosphate molecule, we would have a

A. Ribosome
B. Nucleotide
C. Nucleic acid
D. ATP
E. ADP

2. An organic compound in which hydrogen and oxygen are present in the same ratio as in water is

A. Fat
B. Carbohydrate
C. Protein
D. Nucleic acid
E. All of the above

3. Deficiency of vitamin A causes

A. Rickets
B. Osteomalacia
C. Delay in coagulation of blood
D. Night blindness
E. Anemia

4. Steroids consist of _____ 6-membred carbon rings and one 5-membred carbon ring.

A. Four
B. Three
C. Two
D. Five
E. Six

5. What occurs when sucrose is broken down to monosaccharides?

A. reducing sugars and releasing water
B. condensation of reducing sugars using water
C. hydrolysis, releasing reducing sugars and releasing water
D. hydrolysis, releasing reducing sugars and using water

6. The structure of a lipid contains all of the following EXCEPT:

A. A carboxyl group
B. A CH_2O basic structure
C. A glycerol molecule
D. A fatty acid molecule
E. An OH group

7. Stearin (C_{57} H_{10} O_6) is an important example of:

A. Carbohydrates
B. Proteins
C. Waxes
D. Acylglycerol
E. Nucleic Acids

8. The above diagram represents the process of:

A. Hydrolysis
B. Condensation
C. Neutralization
D. Metabolism

9. Sugar in stored in the liver as:

A. Starch
B. Glycogen
C. Maltose
D. Cellulose

10. Which of the following is correct:

A. Glucose + fructose = maltose
B. Glucose + galactose = sucrose
C. Glucose + glucose = maltose
D. Glucose + glucose = sucrose

11. Polysaccharides are synthesized in plants by the process of

A. Hydrolysis
B. Oxidation
C. Condensation
D. Glycolysis

12. Which one of the following is not immediately essential for protein synthesis?

A. ATF
B. Enzyme
C. Glucose
D. mRNA

13. The bond present between carbohydrate units

A. Peptide bond
B. Covalent bond
C. Glycosidic bond
D. Electrostatic bond

14. A lipid molecule is composed of glycerol fatty acid in a ratio of:

A. 1:1
B. 1:3
C. 1:4
D. 1:2

15. The formula of glyceraldehyde is:

A. $C_3H_6O_4$
B. $C_3H_6O_3$
C. $C_6H_{12}O_6$
D. $C_6H_{14}O_7$

16. In AMYLOPECTIN the linkage is:

A. 1.3
B. 1.6
C. 2.6
D. 6.6

17. Which of the following organic compounds represents a protein?

A. $C_{12}H_{35}COOH$
B. $(C_6H_{10}O_5)$ n
C. $C_{708}H_{1130}O_{224}N_{180}S_4P_4$
D. $C_{12}H_{22}O_{11}$

18. Assuming that only 20 commonest amino acids are present in a given organism, how many different dipeptides might theoretically be found in it?

A. 20
B. 40
C. 100
D. 400

19. Why do proteins have a buffering effect in cells?

A. They are non - polar
B. They are amphoteric
C. They contain basic amino acids
D. They are a major component of cell surface membranes

20. The most abundant component of a living cell is

A. Carbohydrates
B. Proteins
C. Lipids
D. Water

21. Which of the following are true:

A. glucose + fructose = maltose
B. glucose + galactose = sucrose
C. glucose + glucose = maltose
D. glucose + glucose = sucrose

22. Which of the following molecules contain amino acids?

A. Ascorbic acid
B. Cellulose
C. Collagen
D. Glycogen

23. The _____ structure was first proposed by Robertson:

A. Cellulo-protein
B. Star protein
C. Cyto protein
D. Lipoprotein

24. The distinctive characteristic and functional group of fats is:
A. Ketone
B. Alcohol
C. Peptide
D. Ester

25. Lipids are different types simple lipids include, natural fats, and oils and:
A. Waxes
B. Sterols
C. Lipids
D. Cholesterols

26. Cellulose is:
A. Disaccharide
B. Pentose Polysaccharide
C. Hexane Polysaccharide
D. Mucopolysaccharide

27. Which of the following is not made up of hexose sugar subunits:
A. Sucrose
B. Starch
C. Glycogen
D. Insulin

28. How many carbon atoms are found in monosaccharide compound?
A. 1 to 5 Carbon atoms
B. 3 to 6 Carbon atoms
C. 5 to 10 Carbon atoms
D. 5 to 15 Carbon atoms

29. What is general formula of Carbohydrates?
A. $C_n H_{2n} O_n$
B. $C_{2n} H_n O_n$
C. $C_n H_{2n} O_{2n}$
D. None of these

30. Polysaccharides of two types, storage polysaccharides and:
A. Structural polysaccharides
B. Amino polysaccharides
C. Functional polysaccharides
D. Cellulosic polysaccharides

31. The test of reducing sugars can be done by using:
A. Cu^{+2} ions
B. Cu^{+} ions
C. Hg^{+} ions
D. None of the above

32. Regarding starch molecule which statement is correct?
A. Amylase chain of starch is branched, amylopectin is not branched
B. Amylopectin chain is branched, amylose is not branched
C. Both chains are branched
D. Both chains are unbranched

33. Assuming that only 20 commonest amino acids are present in a given organism, how many different dipeptides might theoretically be found in it?
A. 20
B. 40
C. 100
D. 400
E. 10

34. Which of the following has quaternary structure;
A. Myoglobin
B. Actin
C. Tropomyosin
D. Hemoglobin

35. In a typical nucleotide the nitrogenous base is attached to _____ carbon of pentose sugar:
A. 6^{th}
B. 5^{th}
C. 4^{th}
D. 3^{rd}
E. 1^{st}

36. Lysosomes function in:
A. Protein synthesis
B. Processing
C. Intracellular digestion
D. Lipid synthesis
E. Carbohydrate synthesis

37. Steroids consist of _____ 6-membred carbon rings and one 5-membred carbon ring.

A. Four
B. Three
C. Two
D. Five
E. Six

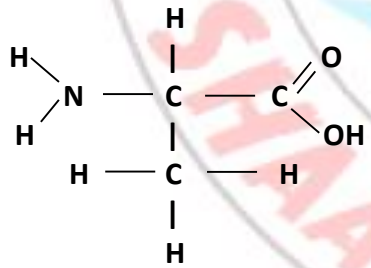
38. Which type of protein structure contains the three dimensional structure?

A. primary
B. secondary
C. tertiary
D. quaternary

39. Which one of the following combinations of statements is true of saccharides in living organisms?

	They provide energy	They form storage compounds	They form supporting structures
A.	No	No	Yes
B.	No	No	No
C.	Yes	No	No
D.	Yes	Yes	No
E.	Yes	Yes	Yes

40. The diagram shows a molecule.



Which substance might include the above molecule?

A. Cellulose
B. Serine
C. Glucose
D. Alanine

41. Listed below are some amino acids and their corresponding mRNA triplets.

amino acid	mRNA triplet
phenylalanine	UUU
lysine	AAG
arginine	CGA
alanine	GCA

Which DNA sequence would be needed to produce the polypeptide sequence alanine - arginine - lysine - phenylalanine?

A.	CGT	GCT	TTC	AAA
B.	CGT	GCT	TTC	TTT
C.	CGU	GCU	UUC	AAA
D.	CGU	GCU	UUC	TTT
E.	GCT	CGT	TTC	AAA

42. Which of the following process is reverse of condensation?

A. Hydrolysis
B. Dehydration synthesis
C. Polymerization
D. Vaporization

43. The disease night blindness is caused by deficiency of vitamin:

A. A
B. B
C. C
D. D

44. Micronutrient in abiotic components is

A. Carbon
B. Hydrogen
C. Potassium
D. Iron
E. All of the above

45. Ribose and ribulose are the example of _____ class.

A. Triose
B. Tetrose
C. Pentose
D. Hexose

UNIT NO. (03)

1. Which level of protein structure maintains the helix shape of enzymes?

A. primary
B. secondary
C. tertiary
D. quaternary
E. both A & B

2. An enzyme increases the speed of a reaction:

A. by adding activation energy requirements
B. By lowering activation energy requirements
C. by decreasing the concentration of products
D. by increasing the concentration of products
E. all of the above

3. Holo enzymes consist of:
A. Apoenzymes and prosthetic group
B. Proenzymes and prosthetic group
C. Coenzymes and prosthetic group
D. Proenzymes and apoenzymes
E. Apoenzymes and co enzymes

4. The biological catalysts are called:
A. Proteins
B. Carbohydrates
C. Vitamins
D. Minerals
E. Enzymes

5. Hydrogen peroxide is highly toxic substance. In the liver it is broken down to hydrogen & oxygen by an enzyme:
A. Amylase
B. Transferase
C. Catalase
D. Lipases
E. Trypsin

6. Which of the following statements about enzyme kinetics is false?
A. An increase in the substrate concentration (at constant enzyme concentration) leads to proportional increase in the rate of the reaction.
B. Most enzymes operating in the human body work best at a temperature of 37 °C.
C. An enzyme is generally inactivated rapidly by exposure to ultraviolet light.
D. Competitive inhibitors reduce the productivity of enzymes by blocking the substrate from entering active site
E. None of the above

7. At 0°C, the enzymatic activity is:
A. Completely stopped
B. S. Maximum
C. Decreased to 50%
D. Reduced to minimum
E. None of the above

8. In Acetyl Coenzyme (Acetyl CoA) the Coenzyme A, a Sulphur containing compound is derived from:
A. Vitamin A
B. Vitamin D
C. Vitamin B
D. Minerals
E. Proteins

9. The location on an enzyme where a substrate binds is called the
A. Binding site
B. Reaction center
C. Allosteric site
D. Lock-and-key model
E. Active site

10. The function of enzyme is to
A. cause chemical reactions that would not otherwise take place
B. change the rate of chemical reactions
C. change the direction of reactions
D. raise the activation energy
E. None of the above

11. The specificity of enzymes is due to their:
A. High M.wt
B. Hydrogen bonding
C. pH sensitivity
D. Surface configuration

12. If temperature is reduced to near or below freezing point enzymes become:
A. Denatured
B. Dormant
C. Renatured
D. All of these

13. Which of the following is not an enzyme:
A. Polymerase
B. Hydroserae
C. Isomerise
D. Enzymate

14. When a prosthetic group join with enzymes it forms:

A. Co-Factor
B. Co-Enzyme
C. Holoenzyme
D. App enzyme

15. Optimum pH for enzyme pepsin of stomach is:

A. 7
B. 3
C. 1.4
D. 4.5

16. The specificity of enzymes is due to their

A. High M.wt
B. Hydrogen bonding
C. pH sensitivity
D. Surface configuration
E. All of the above

17. Which of the following factor affect enzyme activity?

A. Temperature
B. pH
C. Concentration of substrate
D. Radiation
E. all of the above

18. At above _____ temperature certain heat shock proteins are produced in plant body.

A. 40°C
B. 50°C
C. 30°C
D. 35°C

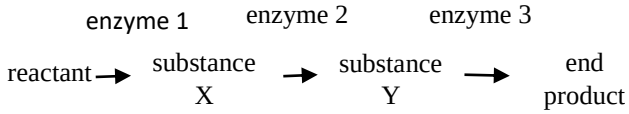
19. An enzyme increases the speed of a reaction:

A. by adding activation energy requirements
B. by lowering activation energy requirements
C. by decreasing the concentration of products
D. by increasing the concentration of products
E. all of the above

20. Some enzymes require the presence of a no protein molecule to behave catalytically. An enzyme devoid of this molecule is called a (n)

A. holoenzyme
B. apoenzyme
C. coenzyme
D. zymoenzyme

21. The diagram shows s metabolic pathway.



What would be the effect of adding a small amount of a non-competitive inhibitor of enzyme 2?

A. Enzyme 2 would be partially denatured.
B. Substance X would increase in concentration.
C. Substance Y would no longer be formed.
D. The initial reactant would no longer be metabolized.
E. The effect would be negligible.

22. The gland known as the "gland of emergency" is the:

A. Pituitary
B. Adrenal
C. Thyroid
D. Parathyroid
E. Pancreas

23. The autonomic nervous system controls all of the following activities except:

A. Digestion of food
B. Heart beat
C. Contraction of pupil of eye
D. Thought
E. Breathing rate

24. The following statements are about enzymes:

1. They are globular proteins.
2. They can be inhibited by competitive inhibitors
3. They are formed in the smooth endoplasmic reticulum.
4. They are only found attached to plasma membranes in the cell.
Which statements are correct for all enzymes?

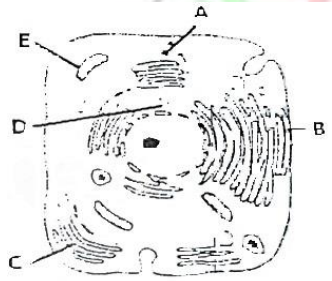
A. 1 and 4 only

B. 2 and 4 only
C. 1 and 2 only
D. 1, 2, 3 and 4

25. Enzyme carbonic anhydrase in RBCs help in _____ transportation
A. Oxygen
B. Iron
C. Calcium
D. Carbon dioxide

UNIT NO. (04)

1. The diagram shows a generalized animal cell. Which structure would be involved in the final secretion of digestive enzymes from this cell?



A. A
B. B
C. C
D. D
E. E

2. Which of the following is NOT an organelle?
A. Nucleus
B. Golgi apparatus
C. Lysosome
D. Chlorophyll
E. Chloroplast

3. Which of the following is a correct association?
A. Mitochondria transports materials from the nucleus to the cytoplasm
B. Lysosome: digestive enzymes for intracellular use
C. Endoplasmic reticulum: selective barrier for the cell
D. Ribosome: electron transport chain

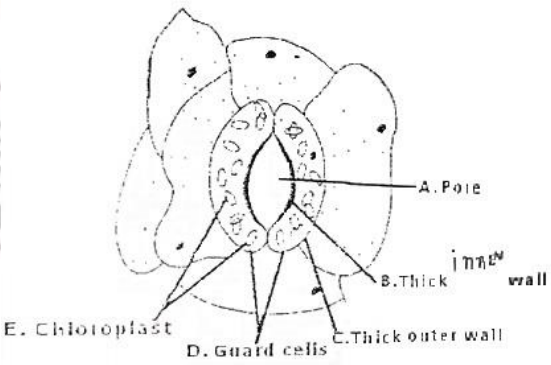
4. Membrane bound organelles include all of the following, EXCEPT:
A. Mitochondria
B. Lysosomes
C. Peroxisomes
D. Centriole
E. Plastids

5. The rough endoplasmic reticulum differs from the smooth endoplasmic reticulum due to the presence of
A. Lysosomes
B. Ribosomes
C. Mitochondria
D. Golgi apparatus
E. Histones

6. Red blood cells are:
A. Biconcave cells
B. Non-nucleated circular plate-like cells
C. Irregular cells
D. Nucleated cells
E. Both A and B

7. The cell membrane is made up of:
A. Peptidoglycan
B. Lipids & proteins
C. Carbohydrates
D. Proteins & sugar
E. Cellulose

8. The diagram shows a student's drawing of stomata.



Which label is not correct?
A. A
B. B
C. C
D. D
E. E

9. Lymphocytes function as to:

A. engulf bacteria
B. produce histamine and heparin
C. produce antibodies
D. initiate blood clotting

10. Which of the following is mismatched?

A. Nervous system ... reception, conduction, integration, effect
B. Skeletal system ... posture, protection, locomotion, blood cell production
C. Epidermis ... support, integration, exchange, filtration
D. Gastrointestinal system ... absorption, secretion, digestion, egestion

11. Which of the following is not a function of the endoplasmic reticulum?

A. Lipid synthesis
B. Poison detoxification
C. Protein synthesis
D. Aerobic respiration
E. Storage and release of Ca^{+2} ions

12. Mitochondria are passed to an animal only by:

A. Father
B. Sister
C. Mother
D. Both A and C
E. None of the above

13. The inherited impairment of heamoglobin production is called:

A. Leukemia
B. Thrombus formation
C. Thalassemia
D. Myocardial infraction
E. Hypertension

14. Which of the following is correctly matched?

A	**Ribosomes**	**f**	**Detoxification of alcohol**
B	**Lysosomes**	**g**	**Formation of astral ray**
C	**Centriole**	**h**	**Protein synthesis**
D	**Peroxisomes**	**i**	**Destroyers of foreign particles**
E	**Smooth ER**	**j**	**Converts cholesterol into vitamin D in skin**

A. Af, Bg, Cj, Di, Eh
B. Ah, Bi, Df, Cg, Ej
C. Aj, Bi, Ch, Dg, Ef
D. Ah, Bf, Dg, Ci, Ej

15. Which of the following statement(s) is/are correct regarding a nucleus?

I. Stores wastes and other Substances
II. Contains genetic material
III. Helps in cellular transport system
IV. Control center of the cell

A. I only
B. I & II
C. II & III
D. II & IV
E. III & IV

16. Which features do animal cells share with plant cells?

	Chloroplast	Cytoplasm	Nucleus	Mitochondria
A	√	√	√	√
B	√	x	√	x
C	x	√	√	√
D	x	x	x	√

17. The approx. width of a cell membrane is:

A. 0.001nm
B. 0.10nm
C. 1.0 nm
D. 10nm

18. Which of the following is a characteristic of mitochondria?

A. They store proteolytic enzymes
B. They provide sites for anaerobic respiration
C. They produce cellular secretions
D. They release energy via Kreb's cycle

19. Which one of the following possesses the most prominent Golgi apparatus?

A. An islet of Langerhans
B. A retinal rod cell
C. A striated muscle
D. A xylem tracheid

20. _____ said that protoplasm is the physical basis of life.

A. Robert Brown
B. Robert Hook
C. Purkinje
D. Huxley

21. In folding's in the Mitochondrial inner membrane is called:

A. Cristae
B. Thylakoid
C. Glyoxysome
D. Chromatic network

22. The nonliving part of protoplasm is:

A. Golgi bodies
B. Inclusion
C. Organelles
D. ER

23. The movement of cytoplasm is called:

A. Exocytosis
B. Endocytosis
C. Pinocytosis
D. Cyclosis

24. Protein synthesis takes place in _____.

A. Ribosomes
B. Mitochondria
C. Mesosomes
D. Golgi bodies

25. Shrinkage of protoplasm from cell wall under hypertonic solution is called _____.

A. Plasmolysis
B. Endosmosis
C. Protolysis
D. Torsion

26. When solid particles are ingested by cell through plasma membrane:

A. Pinocytosis
B. Phagocytosis
C. Endosmosis
D. Exomosis

27. Chloroplast contain substational amount of _____ and are capable of programming synthesis of some of their new structural components:

A. Chlorophyll
B. DNA
C. RNA
D. Chlorophyll a

28. The % of lipids in protoplasm is about:

A. 2 to 3%
B. 2 to 4%
C. 2 to 5%
D. 10%

29. Leucoplast are:

A. Found in underground parts of the plant
B. Found in aerial parts of plants
C. They have chloroplast
D. They are found exogenously

30. Ribosomes are attached to

A. One another
B. ER
C. Golgi bodies
D. Centromeres

31. Rough Endoplasmic Reticulum are involved in:

A. Protein synthesis
B. DNA synthesis
C. RNA synthesis
D. Protein Modification

32. Many ribosomes attached to Endoplasmic reticulum form?

A. Abnormal Function
B. Polyribosomes
C. Intense protein synthesis
D. Cell becomes malignant

33. Mitochondria can be found in:

A. Virus
B. Bacteria
C. Protozoan
D. Nostos
E. None of the above

34. Outer membrane of mitochondrion and endoplasmic reticulum are similar in having:

A. Similar structure and constituents' substance
B. The enzyme monoamine oxidase
C. The enzyme NADH cytochrome reductase
D. Identical metabolic function

35. The food reserved CO_2 and H_2 are stored in:

A. Plastids
B. Mitochondria
C. Ribosomes
D. Nucleus

36. In plant cell, cell wall and cell plate is the product of:

A. Golgi bodies
B. Mitochondria
C. Endoplasmic reticulum
D. Plastids

37. Some fresh rat's liver homogenized and the suspension subjected to differential centrifugation. The procedure is shown in the table overleaf.

Treatment	Sediment
800g for 10 mins	Fraction 1
↓ Supernatant	
2000g for 15 mins	Fraction 2
↓ Supernatant	
25000g for 15 mins	Fraction 3
↓ Supernatant	
105000g for 60 mins	Fraction 4

(g = gravitational force)
Which one of the following represents the order in which the organelles were removed from the suspension?

	Fraction 1	Fraction 2	Fraction 3	Fraction 4
A.	Mitochondria	Lysosomes	Nuclei	Ribosomes
B.	Lysosome	Nuclei	Ribosomes	Mitochondria
C.	Mitochondria	Nuclei	Lysosomes	Ribosomes
D.	Nuclei	Mitochondria	Lysosomes	Ribosomes

38. Regarding cell ultra-structure:

A. Golgi bodies gives rise to lysosomes
B. Rough E.R gives rise to lysosomes
C. Microfilaments are responsible for intracellular support
D. The cell wall is impermeable

39. Smooth endoplasmic reticulum

A. is studded with ribosomes h
B. Is responsible for transport of metabolites
C. is the site of respiration
D. Is not found in eukaryotes

40. Outer membrane of mitochondrion and endoplasmic reticulum are similar in having

A. Similar structure and constituent's substance
B. The enzyme monoamine oxidase
C. The enzyme NADH cytochrome reductase
D. Identical metabolic function

41. The delimiting outer membrane is absent is:

A. Mitochondria
B. Nucleol
C. Lysosomes
D. Plastids

42. The chief role of nucleolus in nucleus concerns:

A. Organization of chromosome
B. Ribosome synthesis
C. Chromatid separation
D. DNA replication

43. _____ were discovered by Slautter Back.

A. Mitochondria
B. Golgi bodies
C. Microtubules
D. Glyoxysomes

44. Peroxisomes were discovered by Tolbert, it plays important role in:

A. Photosynthesis
B. Respiration
C. Photorespiration
D. Reduction

45. Protoplasm was first observed by:
A. Purkinje
B. Dujardin
C. Robert Hook
D. Von Mohl

46. Synonyms for Golgi bodies are dictyosome and:
A. Dactylosome
B. Chondriosome
C. Lypochondria
D. None

47. The term mitochondria was given by:
A. Altman
B. Banda
C. Robert Brown
D. Huxley

48. Cell Theory is not followed by:
A. Bacteria
B. Virus
C. Cyano Bacteria
D. All prokaryotes

49. Outer nuclear membrane is continuous with which cytoplasmic organelle:
A. Ribosome
B. Golgi apparatus
C. Endoplasmic reticulum
D. Mitochondria

50. Which of the following organelles always contains DNA?
A. Centriole
B. Golgı apparatus
C. Lysosome
D. Mitochondrion
E. Endoplasmic reticulum

51. Which one of the following is a characteristic of mitochondria?
A. They store proteolytic enzymes
B. They provide sites for anaerobic respiration
C. They produce cellular secretions
D. They release energy via Krebs cycle
E. They produce glucose

52. Which one of the following possesses the most prominent Golgi apparatus?
A. An islet of Langerhans
B. A retinal rod cell
C. A striated muscle
D. A xylem tracheid
E. An erythrocyte

53. If centrioles are absent from an animal cell, which process would be inhibited?
A. Cell division
B. Respiration
C. Excretion
D. Locomotion

54. Change in which one of the following would have the most prominent effect on protein?
A. m-RNA
B. Nucleus
C. Golgi apparatus
D. Smooth endoplasmic reticulum

55. According to _____, protein layers are not confined to the surface of the membrane but embedded in lipid layers.
A. Lock and key mode
B. induce fit model
C. Fluid mosaic model
D. Lotka Volterra model
E. All of the above

56. Proteins float in membrane like ice burg in sea:
A. Lock and key model
B. Induce fit model
C. Fluid mosaic model
D. Lokta voltera model
E. All of the above

57. _____ constitute more than 50% of dry weight of cell.
A. Proteins
B. Vitamins

C. Water
D. Salts

58. Primary wall contains _____ of hemicelluloses.
A. 50%
B. 30%

	P	Q	R
A.	Carbohydrate storage	carbohydrate synthesis	Light absorption
B.	carbohydrate synthesis	Carbohydrate storage	Light absorption
C.	carbohydrate synthesis	Light absorption	Carbohydrate storage
D.	Light absorption	Carbohydrate storage	carbohydrate synthesis
E.	Light absorption	carbohydrate synthesis	Carbohydrate storage

C. 40%
D. 80%

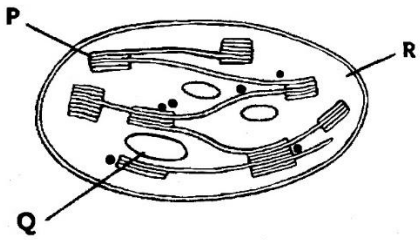
59. Capsid is made up of protein subunits called _____.
A. Lipids
B. Proteinomeres
C. Capsomeres
D. None

60. Lysosomes are also called:
A. Suicide sacs
B. Chondriosome
C. Storage organelle
D. Dictyosome
E. Power house of a cell

61. Of the following, which is the incorrectly paired one?
A. Robert Hooke ... cell wall
B. Schleiden and Schwann … cell theory
C. Robert Brown … nucleus
D. Watson and Crick DNA model
E. Virchow... mosaic model of plasma membrane

62. Which of the following is NOT a difference that would allow one to distinguish between a prokaryotic and a eukaryotic cell?
I. Presence or absence of the nucleus
II. Presence or absence of the cell wall
III. Membrane-bound versus no membrane-bound organelles
A. I only
B. II only
C. III only
D. I and II only
E. I, II and III

63. The diagram shows the ultra-structure of a chloroplast as seen in section. What are the functions of P, Q and R?



64. The following are all features of eukaryotic cells:
I. chloroplast
II. Peroxisome
III. Lysosome
IV. Mitochondrion
V. nucleus
Which of these have a double membrane?
A. I, II and IV
B. I, III and v
C. I, IV and V
D. II, III and V
E. II, III and IV

65. When a red stain is added to a culture containing both living and dead cells, only the dead cells take up the stain.
Which structure (s) prevent (s) the stain entering the living cells?
A. cell membrane
B. cell wall
C. cytoplasm
D. vacuole
E. all of the above

66. The statements are all descriptions of cell structures.

1. Surrounded by a single membrane and enclosing a large fluid-filled space

2. Surrounded by a single membrane and enclosing digestive enzymes

3. Formed by two membranes enclosing a matrix, the inner membrane is folded

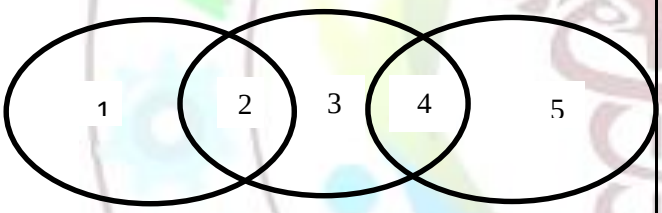
4. Formed by a membrane that has flattened sacs and tubular structures inter-connected throughout the cell

5. Formed of nucleic acid and protein

Which row shows the typical cell in which these cell structures are found?

	Plant cell	Animal cell
A.	1, 3, 4 and 5	2, 3, 4 and 5
B.	1, 2, 3 and 4	1, 2, 3 and 5
C.	2, 4, and 5	1, 4 and 5
D.	3, 4 and 5 only	2, 3 and 5 only

67. The diagram shows some similarities between Golgi apparatus mitochondria and suicide sacs.



	1	2	3	4	5
A.	golgi apparatus	enzymes	mitochondria	membrane bound	suicide sacs
B.	golgi apparatus	enzymes	mitochondria	Non membrane bound	suicide sacs
C.	suicide sacs	Non membrane bound	golgi apparatus	enzymes	mitochondria
D.	suicide sacs	membrane bound	mitochondria	membrane bound	golgi apparatus

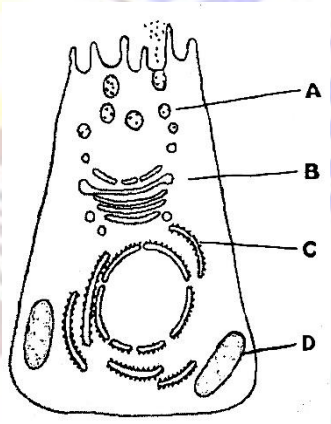
68. It is the non-living component of cell, it is secreted and maintained by the living portion of cell, and is found only in plants. What is this structure?

A. Golgi apparatus
B. lysosome
C. mitochondrion
D. cell wall
E. ribosome

69. The process of membrane fusion and the movement of material out of the cell, is called:

A. Phagocytosis
B. Endocytosis
C. Pinocytosis
D. Exocytosis

70. The diagram is taken from an electron micro graph of a cell, name the organelle labeled B:



A. Nucleus
B. Golgi complex
C. Lysosome
D. Mitochondrion
E. Vacuole

71. Which of the following nutrients is incorrectly paired with its function in a cell-wall?

A. Potassium Formation of cell-wall.
B. Magnesium Constituent of chlorophyll.
C. Nitrogen -Constituent of protein.
D. Phosphorous Component of nucleic acid.

72. All of the following are correct regarding parenchyma tissue EXCEPT:

A. They are found in the epidermis, pith and cortex
B. The whole body of Bryophytes is made up of these tissues
C. They are loosely packed with intercellular spaces in leaves

D. They are of two types namely fibers and sclerosis

73. Which of the following contains enzymes for the detoxification of alcohol?
A. Ribosomes
B. Peroxisomes
A. C. Glyoxysomes
C. Lysosomes

UNIT NO. (05)

1. Diptera refers to a (n):
A. genus
B. species
C. order
D. family
E. class

2. The mouse is known as Mus musculus. The Mus is the
A. Phylum
B. Class
C. Order
D. Genus
E. Species

3. All viruses
A. Carry DNA
B. Carry RNA
C. Lack protein
D. Cannot reproduce outside of cells

4. Closely related species are grouped together into _____.
A. families
B. orders
C. phyla
D. kingdom
E. genera

5. Arboviruses cause:
I. Encephalitis
II. Yellow fever
III. Dengue
A. I only
B. II and III only
C. I and III only
D. I and II only
E. I, II and III

6. _____ is commonly known as Almond.
A. rosa indica
B. pyrus malus
C. pyrus communis
D. prunus amygdalus
E. prunus persica

7. Which one of the following is not a viral disease?
A. influenza
B. hepatitis
C. AIDS
D. Pneumonia
E. rabies

8. Which of the following groups have the most in common with one another?
A. members of the same kingdom
B. members of the same genus
C. members of the same phylum
D. members of the same class
E. members of the same family

9. A viral reproductive cycle that culminates in death of host cell is known as:
A. Lysogenic cycle
B. Lytic cycle
C. Kreb's cycle
D. Glycolysis
E. Electron-transport chain

10. All of the following diseases are caused by viruses EXCEPT:
A. Poliomyelitis
B. Common cold
C. Yellow fever
D. Diphtheria
E. Encephalitis

11. In plants and animals, Colorado tick fever is caused by:
A. Enveloped plus-strand RNA group virus
B. Minus-strand RNA group virus
C. Double-stranded RNA group virus
D. Small genome DNA group virus
E. Bacteriophages

12. Which one of the terms below correctly describes the relationship between the skeletal system in the wing of bird, fore-limb of turtle, fore-leg of horse and arm of man?
A. Analogous
B. Homologous
C. Homozygous
D. Monotypic
E. Taxonomic

13. The scientific name of the dog is Canis familiaris and that of the coyote is Canis latans. This indicates that both the dog and the coyote are members of the
A. Same genus but different species
B. Same species but different genera
C. Same genus but different classes
D. Same species but different classes
E. Same class but different genera

14. Viruses resemble living things because they:
A. Circulate
B. Move
C. Reproduce
D. Are crystalline
E. Are able to respond to stimuli in the environment

15. Which of the following is not a bacterial disease?
A. Typhoid and T B
B. Rabies and Polio
C. Diphtheria and Cholera
D. Dysentery and Diarrhea

16. All of the following are symptoms of hepatitis, except:
A. Deficit Immunity
B. Enlargement of liver
C. Fever and fatigue
D. Jaundice

17. The TMV first appeared on the leaves of Tobacco plant and was characterized by:
A. Wrinkling of leaves
B. Yellow patches on lamina surface
C. Falling off of the leaves
D. Transmission from one organism to another

18. Mumps, a viral disease is caused by:
A. Plus-strand RNA virus
B. Enveloped minus RNA virus
C. non enveloped minus RNA virus
D. None of the above

19. Vermiform appendix in man is example of:
A. Homologous organs
B. Vestigial organs
C. Analogous organs
D. None of the above

20. Binomial nomenclature was first time proposed by _____.
A. Charles Darwin (1859)
B. Rodolph Virchow (1855)
A. C Louis Pasteur (1862)
C. Carolus Linnaeus (1707)
D. Robert brown (1773)

21. The Latin words of the name given to a human being, Homo sapiens, include the:
A. Genus and family
B. Family and order
C. Order and class
D. Genus and class
E. Genus and species

22. Chicken pox is caused by:
A. Hepatitis A virus
B. Varicella zoster virus
C. Influenza virus
D. Human immunodeficiency virus
E. Rabies virus

23. The viruses are:
A. Cellular
B. Prokaryotes
C. Non-cellular
D. Eukaryotes
E. Visible with naked eye

24. A bacteriophage consists solely of:
A. DNA and protein
B. RNA and protein
C. RNA only

D. Protein only
E. DNA only

25. Rabies is caused by _____.
A. Bacteria
B. Rhabdovirus
C. Insect bite
D. Rhinovirus

26. Closely related species are grouped together into _____.
A. families
B. orders
C. phyla
D. kingdom
E. genera

27. Encircle the miss-match:
A. Colds... Rhino virus
B. Yellow-fever... Bacteria
C. Encephalitis... Virus
D. Minus Strand RNA virus... Paramylons virus
E. Rabies... Dog bite

UNIT NO. (06)

1. Shape of a coccus is
A. Spherical
B. Rod shaped
C. Helical
D. Spiral
E. Elongated

2. The cell wall of most of the bacteria have unique macromolecule called _____.
A. cellulose
B. chitin
C. fibres
D. fats
E. peptidoglycan

3. The most common method of bacterial reproduction is:
A. Fission
B. Transduction
C. Endospore
D. Conjugation
E. Transformation

4. Almost all the prokaryotes belong to the kingdom:
A. Fungi
B. Plantae
C. Animalia
D. Protista
E. Monera

5. Bacilli bacteria are _____ shaped.
A. Spherical
A. e. Spring
B. Rod
C. Screw
D. Comma

6. The hollow, filamentous appendages which help in conjugation in bacteria are:
A. Flagella
B. Cell wall
C. Capsule
D. Pilli
E. Storage bodies

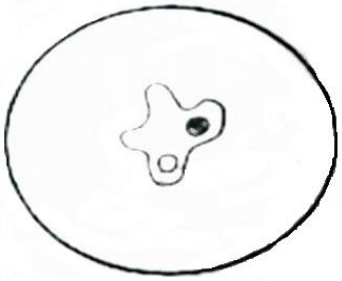
7. Which features enable an organism to be identified as a prokaryote?
I. cell wall
II. Circular DNA
III. Nucleus
IV. Ribosomes
A. I only
B. II only
C. III only
D. I and IV only
E. II and IV only

8. A chain of coccus is seen in a bacteria called:
A. Micrococcus
B. Diplococcus
C. Streptococcus
D. Sarcinia
E. Staphylococcus

Questions 9-10

A student studied a drop of pond water with the low power of compound microscope and

made the following exact drawing of an organism she observed:



9. In which kingdom is the organism classified?
A. Protista
B. Monera
C. Metazoa
D. Animal
E. Bryophyta

10. The organism moves by means of:
A. Peristalsis
B. Pinocytosis
C. Porifera
D. Protozoa
E. Pseudopodia

11. When the tuft of flagella are present at both the ends in the structure of bacterial cell, then the condition is known as:
A. Atrichous
B. Lophotrichous
C. Peritrichous
D. Amphitrichous
E. Bitrichous

12. Regarding bacteria:
A. Cocci are rod- shaped
B. All contain RNA
C. Bacilli are spiral shaped
D. None of these

13. The complementary mRNA for the DNA triplet GAT would read:
A. CTA
B. CUA
C. CTG
D. CTC

14. Rod shaped bacteria are called
A. Bacilli
B. Plasmodia
C. Cocci
D. Spirilli

15. Some bacteria live on dead organic matter they are call
A. Parasite
B. Phages
C. Saprophytes
D. Symbionts

16. Sexual reproduction in bacteria is taken by:
A. A, Binary fission
B. Conidia
C. Conjugation
D. Zoospore

17. Cyanobacteria is the typical example of:
A. Chlorophyceae
B. Greenhaceae
C. Green algae
D. Fungi

18. Lichen is associated between:
A. Fungus and Algae
B. Algae and Bacteria
C. Bacteria and Fungus
D. Bacteria and Virus

19. Which structure in bacteria composed of polysaccharides and amino acids that prevents bacteria from antibiotics and increases its pathogenicity?
A. Flagella
B. Capsule
C. Cell Membrane
D. Cyto skeleton

20. Photosynthetic Bacteria use which of the following instead of H_2O?
A. H_2S
B. H_2SO_4
C. C. H_2 Gas
D. Atomic Hydrogen

21. Which of the following is a bacterial disease:
A. Leishmaniosis
B. Tetanus

C. Measles
D. Polio

22. Kingdom Monera includes all of the following except
A. Viruses
B. Bacteria
C. Fungi
D. Blue - green algae

23. The cell wall of a bacteria is made up of all of the following except:
A. Amino acids
B. Chitin
C. Polysaccharides
D. Cellulose

24. Regarding metronomes of bacterial cell which is correct:
A. They are invagination of cell membrane into cytoplasm
B. They are in the form of vesicles, tubules or lamellae
C. They help in respiration
D. All of the above

25. Bacterial pili help in:
A. Locomotion
B. Conjugation
C. Phagocytosis
D. Pinocytosis
E. Exocytosis

26. _____ bacteria are also called invisible enemies of man.
A. Cocci bacteria
B. Rhizobium Bacteria
C. Pathogenic Bacteria
D. Bacillus

27. The cell wall of most of the bacteria have unique macromolecule called _____.
A. cellulose
B. chitin
C. fibers
D. fats
E. peptidoglycan

28. Which of the following structure (s) is/are found in a generalized bacterial cell?
A. flagellum
B. pili
C. capsule
D. cell wall
E. all of the above

29. Five steps of the lytic cycle of a T4 phage are given below:
1. The T 4 phage uses its tail to stick to specific receptor.
2. The cell's metabolic machinery, directed by phage DNA, produces phage proteins and nucleotides from the cell's degraded DNA, are used to make copies of the phage genome.
3. The phage then directs production of an enzyme that digest the bacterial cell wall.
4. The empty capsid of the phage is left as a ghost outside the cell.
5. The sheath of the tail contracts, thrusting a hollow core through the wall and membrane of the cell.
Which of the following is the correct sequence of the cycle?
A. 3 → 5 → 4 → 2 →1
B. 2 → 4 → 5 → 1→ 3
C. 5 → 1 → 4 → 2→ 3
D. 1 → 5 → 4 → 2 →3
E. 4 → 5 → 1 → 3 →2

30. Tuberculosis is caused by:
A. bacterium
B. allergy
C. nicotine
D. virus

31. In which of the following phase of bacterial growth, death rate is more rapid than multiplication rate?
A. Stationary phase
B. LAG phase
C. Decline phase
D. LOG phase

UNIT NO. (07)

1. **Organisms that are included in the protoctista are:**
   A. slime molds
   B. conidia
   C. mucor
   D. spongocoel
   E. euplectella

2. **Which of the following is not a characteristic of the kingdom Protista?**
   A. Members can be photosynthetic.
   B. Members can be free living.
   C. Some members move via flagella.
   D. Some members are shaped like rods and termed bacilli.
   E. Some members spend part of their life cycle inside insects.

3. **All of the following organisms belong to the kingdom Protista EXCEPT:**
   A. Ulva
   B. Euglena
   C. Suctoria
   D. Slime mold
   E. Common Molds

4. **The number of protist phyla is:**
   A. 1
   B. 3
   C. 5
   D. 7
   E. 9

5. **Which of the following kingdom(s) includes single-celled organisms?**
   I. Monera
   II. Protista
   III. Fungi
   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

6. **Protists are classified separately from plants and animals because:**
   A. They appeared later in evolutionary history
   B. Their classification is not clear cut
   C. They are harmful to humans
   D. Linnaeus did not know of their existence

7. **Identify the protist in which photosynthesis does not take place:**
   A. Euglena
   B. Ulva
   C. Slime moulds
   D. Chlorella
   E. None of the above

8. **The causative agent of malaria is:**
   A. Plasmodium
   B. Trypanosoma
   C. Volvox
   D. Entamoeba histolytica

9. **Amoeba causes:**
   A. Dysentery
   B. Malaria
   C. Sleeping sickness
   D. Gangrene

10. **Which of the following statement is true for Euglena:**
    A. Autotrophic animal
    B. Unicellular Algae
    C. Prokaryotic autotrophy
    D. D A-cellular animal

11. **In meiosis I crossing over takes place in _____ stage.**
    A. Pachytene
    B. Diplotene
    C. Ygotene
    D. Diakinesis

12. **The eye spot in Euglena is sensitive for:**
    A. Dark
    B. Light
    C. Red light
    D. Blue light

13. The number of chromosomes in sporophytic ulva:
A. 13
B. 26
C. 24
D. 12

14. Who discovered protozoan in the red blood cells of human:
A. Leveran
B. King
C. Ronald Ross
D. Grassi

15. Movement in protozoan specially in sarcodinians is
A. Amoebid
B. Euglenoid
C. Flagellary
D. Brachiation

16. Plasmodium can be founding the mosquito at:
A. Salivary gland
B. CBC
C. Stomach
D. Both A & B

17. A green single celled organism in the protista kingdom:
A. Algae
B. Bacteria
C. Euglena
D. Amoeba

18. Amoeba is:
A. Acellular
B. Prokaryote
C. Multinucleated
D. None of the above

19. Nostos contains following except:
A. Cellulose
B. Ribosomes
C. Golgi Apparatus
D. Chloroplasts

20. Malaria is caused by:
A. Mosquito
B. Virus
C. Protozoa
D. Bacteria

21. Which protozoan class is totally parasite?
A. Protozoa
B. Plasmodium
C. Ciliate
D. Sporozoa

22. Animals and plants characters are found in:
A. Euglena
B. Paramecium
C. Bacteria
D. Virus

23. In which cycle of plasmodium which of the following does not effected or g changed:
A. Sporozoa
B. Merozoites
C. Cryptozoic
D. Trapezoids

24. The following is true about Nostos except:
A. It is filamentous
B. It contains chlorophyll
C. It is parasitic
D. Reproduces asexually

25. Regarding Ulva:
A. The thallus is 3 cell thick
B. The gametes are biflagellate
C. The gametes are quadriflagellate
D. Gametes fuse with others from the same thallus

26. Equisetum is commonly called:
A. Club mosses
B. Horse tails
C. Ferns
D. Mosses

27. Hammering used which algae for experiment:
A. Acetabularia
B. Chlamydomonas
C. Neurospora
D. None of the above

28. The following is true about Nostos except:

A. It is filamentous
B. It contains chlorophyll
C. It is parasitic
D. It reproduces asexually
E. It is phagocytic

29. Trypanosoma belongs to class:

A. Sarcodina
B. Flagellata
C. Ciliata
D. Suctoria
E. Sporozoa

30. The amoeboid stage of slime mold is called _____.

A. Amoeba
B. Euglena
C. Plasmodium
D. Parasite

31. _____ is one of the common liverworts.

A. Anthocerotae
B. Riccia
C. Moss
D. Marchantia

32. All of the following organisms belong to the kingdom Protista EXCEPT:

A. Ulva
B. Euglena
C. Suctoria
D. Slime mold
E. Common Molds

33. Which of the following statements concerning nucleolus is correct?

A. It disappears at the time of cell division
B. There is only one nucleolus in every cell
C. It plays important role in the synthesis of ribonucleic acid and ribosomes in prokaryotic cells
D. It helps in destroying worn out organelles
E. It captures energy for the cell.

34. In mosquito, the plasmodium is found in:

A. salivary glands
B. wings
C. blood
D. both A & B

35. Three words are shown below:

Isomorphic sporophyte gametophyte

These words can be used in the spaces P, Q, and R to complete the sentence below.

Thallus in Ulva is of two types. The one with 26 chromosomes is called ...P... and the other with 13 chromosomes is called …Q... Morphologically both gametophyte and sporophyte are exactly alike hence called ...R...

	Gametophyte	Sporophyte	Isomorphic
A.	p	Q	R
B.	Q	P	R
C.	R	P	Q
D.	P	R	Q

36. During which stage of meiosis do centromeres divide?

A. prophase I
B. metaphase I
C. prophase II
D. metaphase II

37. Pseudopodia are found in:

A. Flagellates
B. Rhizopods
C. Ciliophoran
D. Suctoria

38. Nostoc filaments are intermixed in gelatinous mass that form ball like structure called _____.

A. Chromoplasm
B. Sarcina
A. C. Kokkos
C. Coenobium

39. Plasmodium belongs to class

A. Flagellate
B. Sarcodina
C. Sporozoa
D. Ciliate

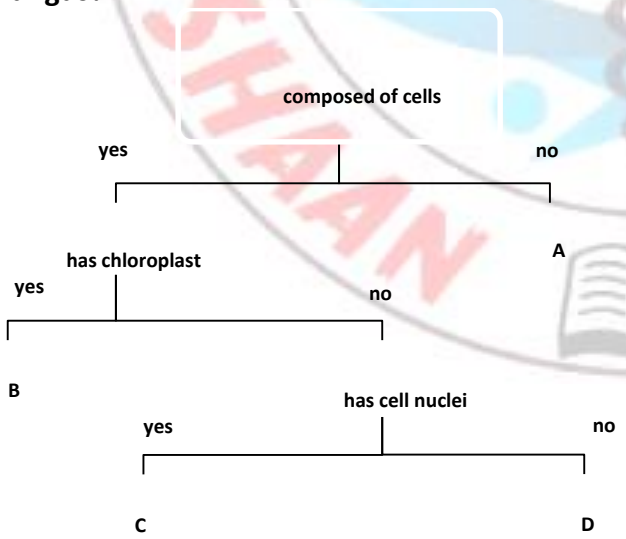
UNIT NO. (08)

1. **Molds and yeast are classified as**
   A. Rhodophytes
   B. Bryophytes
   C. Fungi
   D. Ciliates
   E. Flagellates

2. **Two organisms live in close association with one another. One organism is helped by the association, while the other is neither helped nor harmed. Which of the following terms best describes this relationship?**
   A. Mutualism
   B. Commensalism
   C. Symbiosis
   D. Parasitism
   E. Predator prey relationship

3. **Mushrooms belongs to:**
   A. Zygomycota
   B. Ascomycota
   C. Basidiomycota
   D. Deuteromycota
   E. Yeasts

4. **Using the flow diagram, which organism is a fungus?**



   A. A
   B. B
   C. C
   D. D

5. **Penicillin is produced by _____.**
   A. Bacteria
   B. Virus
   C. Algae
   D. Fungi
   E. Protozoa

6. **Why is yeast used in bread-making?**
   A. Aerobic respiration produces alcohol.
   B. Aerobic respiration produces carbon dioxide.
   C. Anaerobic respiration produces alcohol
   D. Anaerobic respiration produces carbon dioxide.
   E. Both C & D

7. **The scientific name of button mushroom is:**
   A. agaricus campestris
   B. sycopodium phlegmaria
   C. anthoceros fusiformis
   D. ginkgo biloba
   E. agaricus bisporus

8. **A single mushroom may produce 500, 000 spores _____ at the peak of its production.**
   A. a minute
   B. an hour
   C. a day
   D. a week
   E. a month

9. **Chlamydomonas:**
   A. Is a multicultural alga
   B. Has a single flagellum
   C. Has no system of water regulation
   D. Has a light sensitive structure

10. **All of the following are examples of fungi:**
    A. Yeast
    B. Mushroom
    C. Moulds
    D. Vorticella

11. **When hybrids are crossed the genotype of the offspring is,**
    A. 1:1
    B. 3:1
    C. 1:2:1
    D. 4:1

12. The following may cause mutation

A. Malaria
B. Tuberculosis
C. Ultra violet rays
D. Colchicine's

13. The blue pigment found only in blue green algae is:

A. Chlorophyll
B. Xanthophyll
C. Carotses
D. Phycocyanin

14. Lichen is associated between:

A. Fungus and Algae
B. Algae and Bacteria
C. Bacteria and Fungus
D. Bacteria and Virus

15. Neurospora is a fungus which is used to understand the principle of:

A. Reproduction
B. Locomotion
C. Inheritance
D. None of the above

16. Fungi cause many diseases in humans such as _____.

A. Elephantiasis
B. Leishmaniasis
C. Warts
D. Monalisis

17. Which of the following regarding true fungi is correct

A. They are autotrophs
B. They have chlorophyll
C. Less number of species
D. They have mycelium and hypae

18. Ringworm is caused by:

A. Round worm
B. Fungus
C. Protozoa
D. None of the above

19. Most optimum environment for the growth of fungus is:

A. Dry
B. Moist
C. Shady
D. All of the above

20. Which statement about fungi is not true?

A. They have cellulose
B. They are heterotrophs
C. They have starch
D. They are coenocytic

21. Basidiomycota reproduce:

A. Sexually
B. Asexually
C. Both sexually and asexually
D. None of the above

22. Optimal habitat for fungi is;

A. Dry
B. Shady
C. Moist
D. Torrential

23. Fungi do not contain:

A. Cell wall
B. Hyphae
C. Chlorophyll
D. Mycelium
E. Spores

24. Which of the following fungus is utilized in baking Industry?

A. Mushrooms
B. Yeast
C. Bread mold
D. Penicillium
E. Penicillium Neomycin

25. Fungi whose growth is favored by fire is called:

A. Pyrophilus
B. Prophilus
C. Philus
D. Prephylus

26. Genetically isolated unit of population is known as:

A. Deme
B. Gene
C. Biom
D. Specie

27. Which of the followings is the fungal disease?

A. Pneumonia
B. Tinea corporis
C. Taeniasis
D. Amebiasis

UNIT NO. (09)

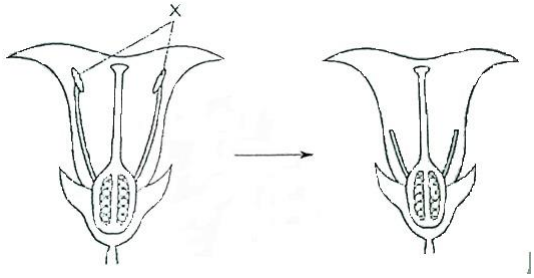
1. Vascular Cambium produces:

A. Primary xylem
B. Primary phloem
C. Secondary xylem
D. Secondary phloem
E. Both C & D

2. The scientific name of gumtree is Acacia nilotica and that of Katha plant is Acacia catechu. This indicates that both gumtree and Katha plants are members of the:

A. Same species but different genera
B. Same genus but different classes
C. Same species but different classes
D. Same genus but different species
E. Same class but different genera

3. The diagram shows a flower in longitudinal section.
Before they had developed fully, a plant breeder removed the structures labelled X, as shown.



What is the effect of removing these structures?

A. It prevents asexual reproduction.
B. It prevents the flower from being pollinated.
C. It prevents the flower from producing seeds.
D. It prevents the development of fruit from ovary.
E. It prevents the flower from pollinating itself.

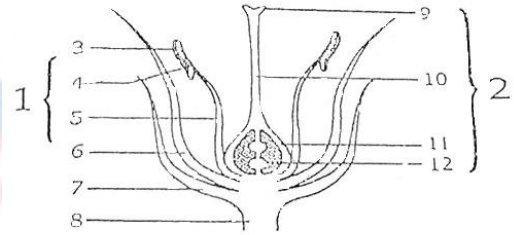
4. Plants that have true root, stems, and leaves, as well as flowers and seeds enclosed in fruit are classified as

A. Bryophytes
B. Tracheophytes
C. Gymnosperms
D. Angiosperms
E. Endosperms

5. Conifers, such as pine trees, are classified as

A. angiosperm
B. gymnosperm
C. fern
D. mosses
E. none of the above

Questions 6 - 7 refer to the following diagram.



6. Which structure contains the female gametophytes?

A. 1
B. 6
C. 7
D. 9
E. 12

7. Where do pollen grains develop?

A. 4
B. 5
C. 6
D. 7
E. 8

8. Plants absorb it in the form of soluble phosphates. It is present abundantly in growing and storage organs of plants. What is it?

A. H_2O
B. CO_2
C. K
D. P
E. N

9. Fern has _____ pairs of chromosome.

A. 23
B. 40
C. 500
D. 13
E. 7

10. The botanical name of touch-me-not is:

A. Acacia nilotica
B. Mimosa pudica
C. Acacia catechu
D. Prosopis glandulosa
E. Albizzia Lebbek

11. Peach trees, apple trees, tomatoes, and chhui mui are example of

A. gymnosperms
B. bryophytes
C. angiosperms
D. chlorophytes
E. rhodophytes

12. The botanical name of "brinjal" is:

A. Solanum melongena
B. Datura alba
C. Solanum nigrum
D. Solanum tuberosum
E. Cestrum nocturnum

13. Wheat, Oats, rice & corns belong to the family:

A. Fabaceae
B. Poaceae
C. Solinaceae
D. Rosaceae
E. Casia

14. The adaptive characters exhibited by bryophytes for their survival on land, include all except:

A. Heterogamy
B. Absorption of CO_2
C. Lignin fortified tissues
D. Conservation of water
E. Formation of embryos

15. All of the following plants belong to Mimosacea family EXCEPT:

A. Acacia nilotica
B. Cicer arietinum
C. Mimosa pudica
D. Prosopis glandulosa
E. Acacia catechu

16. The floral formula of family fabaceae or pea family is:

A. ⊕, ♂♀, K (5), $\overline{C\ (5)}$ A_5, $\underline{G}_{(2)}$

B. +, ♂♀, K (5), $C_{1+2+\ (2)}$, $A_{(9)\ +1}$, $\underline{G}_1$

C. +, ♂♀, K (5) or 5, C_5, A_{10}, $\underline{G}_1$

D. ⊕, ♂♀, K (5), $C_{5\ or\ (5)}$, $A_{\alpha\ or\ (10)}$, $\underline{G}_1$

E. None of the above

17. In gymnosperms, after fertilization, the megasporngium gives rise to:

A. Fruit
B. Seed
C. New plant
D. Thorns
E. Leaves

18. The number of chromosomes in fern is:

A. 2 chromosomes
B. 14 chromosomes

C. 46 chromosomes
D. 80 chromosomes
E. 1000 chromosomes

19. Pollen grains in conifers are:
A. Absent
B. Winged in all species
C. Contained in sporangium and are never released
D. Produced by microspore mitotically and released
E. Not winged

20. The floral formula of family solanaceae or potato family is:

A. ⊕, $\overset{\nearrow}{\underset{+}{\bigcirc}}$, K $_{(5)}$, $\overset{\frown}{C}_{(5)}$ A_5, $\underline{G}_{(2)}$

B. +, $\overset{\nearrow}{\underset{+}{\bigcirc}}$, K $_{(5)}$, $C_{1+2+(2)}$, $A_{(9)+1}$, $\underline{G}_1$

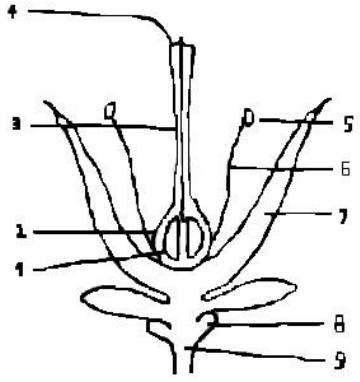
C. +, $\overset{\nearrow}{\underset{+}{\bigcirc}}$, K $_{(5)\text{ or }5}$, C_5, A_{10}, $\underline{G}_1$

D. ⊕, $\overset{\nearrow}{\underset{+}{\bigcirc}}$, K $_{(5)}$, $C_{5\text{ or }(5)}$, $A_{\alpha\text{ or }(10)}$, $\underline{G}_1$

E. None of the above

21. All of the followings are legume families except:
A. Mimosaceae
B. Fabaceae
C. Poaceae
D. Caesalpiniaceae
E. None of the above

Questions 22 – 24



22. The fruit develops from
A. 2
B. 3
C. 7
D. 8
E. 9

23. During pollination, pollen is transferred from
A. 4 to 1
B. 3 to 2
C. 4 to 5
D. 5 to 4
E. 5 to 9

24. The formation of haploid cells through meiosis takes place in structures numbered
A. 1 and 5
B. 1 and 6
C. 3 and 4
D. 1, 4, and 8
E. 4, 7, and 9

25. Cryptogams:
A. Are non-flowering plants
B. From seeds + fruits
C. Include conifers + cycads
D. Include algae

26. Which of the following is not a part of seed:
A. Plumule
B. Testa
C. Pericarp
D. Cotyledon

27. Most highly developed plants are
A. Saprophytes
B. Angiosperms
C. Bryophytes
D. Gymnosperms

28. Which one of the following is the major advantage of using a light microscope instead of an electron microscope?
A. A superior resolving power
B. Constant depth of focus
C. Observation of living matter
D. Use of very thing sections

29. Dalbergia sisso is botanical name of _____.

A. Sesbenia
B. Edible pea
C. Sweet pea
D. Red wood

30. Cells which are absent in gymnosperms but present in angiosperms are _____.
A. Vessels
B. Tracheid's
C. Collenchyma
D. Parenchyma

31. In catkin inflorescence the flowers are:
A. Motile
B. Sessile
C. Stalked
D. Branched

32. The primitive vascular plant rhynia is:
A. Pterodophyte
B. Bryophyte
C. Spermatophyte
D. Gametophyte

33. The botanical name of mustard is
A. Brassica oleracea
B. Brassica compestris
C. Brassica napus
D. Raphanus sativus

34. Flowering plants which produce seeds within fruits called:
A. Angiosperms
B. Gymnosperms
C. Cryptogams
D. Pteridophytes

35. The reproductive structure of ferns is:
A. Cones
B. Needles
C. Sporophyll
D. Gametophylls

36. Solanacea is also called:
A. Legume family
B. Potato family
C. Night Shade Family
D. b &c both

37. Maize Endosperm is:
A. Diploid
B. Haploid
C. Triploid
D. None

38. Which of the following have an edible seed coat?
A. Guava
B. Mango
C. Pomegranate
D. Water Melon

39. Most of the fruits belong to Family:
A. Poaeceae
B. Fabaceae
C. C. Roseacie
D. Solanacae

40. The chloroplasts in an Elodea green plant cell move because:
A. They are equipped with cilia
B. The have flagella
C. They are carried around by the streaming protoplasm
D. They carry on plasmolysis

41. Which of the following is not an individual flower
A. Sun flower
B. Petunia Alba
C. Daisy
D. Lily

42. Almond is a:
A. Pome
B. Silique
C. Lomentum
D. Drupe

43. Plasmodium is a:
A. Parasite
B. Bacteria
C. Virus
D. Saprophyte

44. Regarding a leaf:

A. The leaf-axil is the angle between the stipule and stem
B. The leaf apex is the part by which the leaf is attached to the stem
C. A compound leaf has a divided lamina
D. A compound leaf has terminal buds and nodes

45. In angiosperms fertilization occurs at the
A. Stigma
B. Pollen grain
C. Embryo sac
D. Style

46. Botanical name of "Lady of the night"
A. Atropa belladonna
B. Capsicum annum
C. Cestrum nocturnum
D. Pyrus communis

47. An increase in the diameter of an oak tree is due to:
A. Bark
B. Lenticel
C. Cambium
D. Annual rings
E. Xylem & phloem

48. Which of the following is included in Bryophytes?
A. Mosses
B. Club mosses
C. Ferns
D. Seed plants
E. Horse tails

49. _____ is from pea family.
A. Cassia Fistula
B. Rosa Indica
C. Pisum Sativum
D. Acacia

50. The botanical name of Imli is:
A. Cassia fistula
B. Mimosa pudica
C. Tamarindus indica
D. Datura alba
E. Rosa indica

51. Which one is not the group of Gymnosperm?
A. Cycads
B. Ginkgo
C. Gnetae
D. Conifers
E. Musci

52. The botanical name of gum tree is:
A. Acacia nilotica
B. Mimosa pudica
C. Acacia catechu
D. Prosopis glandulosa
E. Albizzia Lebbek

53. The floral formula of family mimosaceae is:

A. $\oplus, \overset{\nearrow}{\underset{+}{\bigcirc}}, K_{(5)}, \overline{C_{(5)}}\ A_5, \underline{G}_{(2)}$

B. $+, \overset{\nearrow}{\underset{+}{\bigcirc}}, K_{(5)}, C_{1+2+(2)}, A_{(9)+1}, \underline{G}_1$

C. $+, \overset{\nearrow}{\underset{+}{\bigcirc}}, K_{(5)\text{ or }5}, C_5, A_{10}, \underline{G}_1$

D. $\oplus, \overset{\nearrow}{\underset{+}{\bigcirc}}, K_{(5)}, C_{5\text{ or }(5)}, A_{\alpha\text{ or }(10)}, \underline{G}_1$

E. None of the above

54. The scientific name of potato is Solanum tuberosum and that of brinjal is Solanum melongena. This indicates that both potato and brinjal are members of the
A. Same species but different genera
B. Same genus but different classes
C. Same species but different classes
D. Same genus but different species
E. Same class but different genera

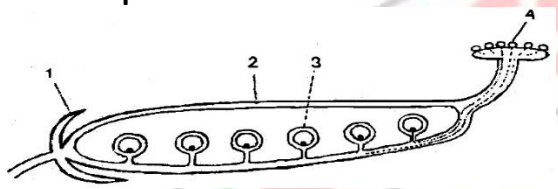
55. Which of the following is true in angiosperm life cycle?
A. Gametophyte are photosynthetic and partially independent than sporophyte
B. Sporophytes are totally dependent on gametophytes.
C. Gametophytes are totally dependent on sporophytes.
D. Both gametophytes and sporophytes are totally dependent on each other

E. Both gametophytes and sporophytes are totally independent of each other

56. Antheridia and archegonia are _____ organs in bryophytes.

A. reproductive
B. digestive
C. respiratory
D. none of the above

57. The diagram shows part of a flower after it has been pollinated.



Which row correctly identifies one of the labelled structures?

	Labeled structure	Flower part
A.	1	stigma
B.	2	pericarp
C.	3	radicle
D.	4	seed

58. The scientific name of Thorn apple is:

A. lycopodium phlegmaria
B. Anthoceros fusiformis
C. Ginkgo biloba
D. datura alba
E. Agaricus bisporus

59. Which of the following types of cell are found in the secondary xylem of angiosperms?

A. tracheids, parenchyma, fibers, collenchyma but no vessels
B. vessels, tracheids, parenchyma, collenchyma but no fibers
C. vessels, tracheids, fibres, collenchyma but no parenchyma
D. vessels, tracheids, fibres, parenchyma but no collenchyma
E. vessels, fibres, parenchyma, collench but no tracheids

60. The floral formula of family caesalpiniaceae or cassia family is:

A. ⊕, ♀, K (5), C (5) A_5, $\underline{G}_{(2)}$

B. +, ♂, K (5), $C_{1+2+(2)}$, $A_{(9)+1}$, $\underline{G}_1$

C. +, ♂, K (5) or 5, C_5, A_{10}, $\underline{G}_1$

D. ⊕, ♀, K (5), C_5 or (5), A_{α} or (10), $\underline{G}_1$

E. None of the above

61. Minerals salts enter a plant largely through its:

A. root hairs
B. stomata
C. guard cells
D. cell wall

62. All of the followings are the effects of red light on plant, EXCEPT:

A. Causes epicoty (plumule) hook to unbend
B. Induces increase in leaf area
C. Elongation of internodes is promoted
D. Stimulate flowering in long day plants
E. Phytochrome 660 changes to phytochrome 730

63. Below the point at which the cotyledons are attached, the embryo axis is called _____.

A. Radicle
B. Epicotyl
C. Hypocotyl
D. Coleoptile

64. Prosopis glandulosa is the botanical name of _____.

A. Chhui mui
B. Kikar

C. Bauble
D. Devi

65. Pistal is the part of:
A. Sepal
B. Petal
C. Stamen
D. Carpel

UNIT NO. (10)

1. Which of the following is/are adaptation(s) for parasitic mode of life in Platyhelminthes?
A. Thick body covers
B. High fertility rate
C. Adhesive organs like suckers
D. Simplified digestive system
E. All of the above

2. Arthropods can be characterized by all of the following EXCEPT
A. A hard exoskeleton
B. A water vascular system
C. Jointed appendages
D. Moulting
E. Segmented body

3. Ascaris belongs to the phylum
A. Platyhelminthes
B. Annelida
C. Mollusca
D. Nematoda
E. Arthropoda

4. Which of the following is a hermaphrodite?
A. Ant
B. Earthworm
C. Aphid
D. Trout
E. Wasp

5. Bat is:
A. A bird
B. An insect
C. A mammal
D. A reptile
E. An amphibian

6. Annelida are:
A. Acoelomate
B. Pseudo coelomate
C. Haemo coelomate
D. Coelomate
E. None of the above

7. Which statement about the phylum Echinodermata is false?
A. The phylum includes starfish and sea urchins.
B. Echinoderms usually reproduce sexually.
C. The phylum includes crayfish.
D. Echinoderms are heterotrophs.
E. Echinoderms are invertebrates.

8. Compound eyes are found in
A. Porifera
B. Coelenterata
C. Mollusca
D. Arthropoda
E. Annelida

9. The segmented worms belong to the phylum _____.
A. Annelida
B. Nematoda
C. Porifera
D. Mollusca
E. Arthropoda

10. _____ are exclusively marine invertebrates.
A. Arthropods
B. Echinoderms
C. Protozoans
D. Nematods
E. Platyhelminthes

11. Snail moves with the help of _____.
A. Foot
B. Cilia
C. Flagella
D. Pseudopodia
E. Shell

12. _____ is a typical protozoan that has both animal and plant like characteristics.
A. Virus

B. Euglena
C. Ulva
D. Paramecium
E. Amoeba

13. A man has the following symptoms during a Filariasis:
I. excessive inflammation of legs
II. Inflammation of arms & scrotum
The disease is caused by
A. A round worm (Ascaris)
B. A flat worm (Dugesia)
C. A hook worm (Ancylostoma)
D. A thread worm (Wuchereria)
E. An earth worm

14. The open type circulatory system is present in:
A. Humans
B. Fishes
C. Arthropods
D. Cow
E. None of the above

15. Which group of organisms has the following features?
I. three pairs of jointed legs
II. three-part segmented body
III. one pair of antennae
A. arachnids
B. crustaceans
C. insects
D. myriapods

16. Which of the following bird is placed in the sub class Ratitae?
A. Ostrich
B. Pigeon
C. Crow
D. Parrot
E. Peacock

17. Which of the following have a pupa stage in their development?
A. Amoeba
B. Insects
C. Hydra
D. Sponges
E. Frogs

18. Class of Annelida whose members are exclusively marine is?
A. Polychaeta
B. Oligochaeta
C. Hirudinaria
D. None of the above

19. Pheretima posthuma is biological name for _____.
A. sea anemone
B. corals
C. obelia
D. jelly fish
E. earthworm

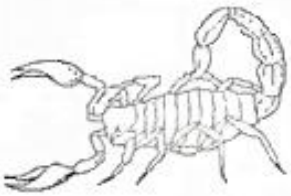
20. Which pair contains organisms of different chyla?
A. moss, liverwort
B. mucor, rhizopus
C. moss, club moss
D. petunia, tobacco
E. star fish, brittle star

21. 100. Which animal is not an arthropod?

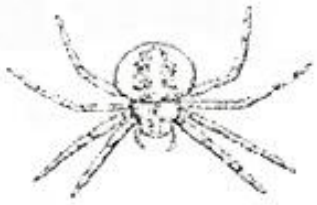
A.

B.

C.



D.



22. Of the following, the animal not included in the same phylum as snail is the:

A. Pila
A. e. Octopus
B. Prawn
C. Laligo
D. Pearl Oyster

23. Hydra, Sea anemone & corals occur only as:

A. Medusa form
B. Spicules
C. Polyp form
D. Sycon form
E. None of the above

24. The remains of Archaeopteryx indicate that birds are most closely related to:

A. Flying insects
B. Flying mammals
C. Flying fish
D. Reptiles
E. Amphibian

25. Example of Cnidarians include all except:

A. Corals
B. Jelly fish
C. Hydra
D. Sponges
E. Sea anemone

26. Which group of organisms has the following features?

I. three pairs of jointed legs
II. three-part segmented body
III. one pair of antennae

A. arachnids
B. crustaceans
C. insects
D. myriapods

27. The table shows some characteristics of four different vertebrates.
Which vertebrate is a reptile?

	fins	legs	scales	hairs
A	√	x	√	x
B	x	√	√	x
C	x	√	x	x
D	x	√	x	√

Key
√ = feature present
x = feature absent

A. A
B. B
C. C
D. D

28. Platyhelminthes means:

A. Flat worms
B. Round worms
C. Segmented worms
D. None of the above

29. All of the following are mammals EXCEPT the:

A. Porpoise
B. Shark
C. Whale
D. Walrus
E. Seal

30. Molluses have all of the following except:

A. A well-developed nervous system
B. Kidneys
C. Nostrils tor respiration
D. Circulatory system with a heart

31. Crustacea includes all of the following except:

A. Crabs
B. Lobsters
C. Oysters
D. Crayfish

32. Which of the following Cnidarian lives in colonies?

A. Tapeworm
B. Obelia
C. Jelly fish
D. Sea anemone

33. Earthworms feed on:

A. Decaying vegetation
B. Organic matter
C. Soil
D. All of the above

34. Function of the "tube feet" in Phylum Echinodermata is

A. Locomotion
B. Anchoring to hard surface
C. Grabbing the prey
D. All of the above

35. Nematode include all of the following except
A. Hookworms
B. Guinea worms
C. Earthworms
D. Ascaris

36. Arthropoda have all of the following except
A. Hard exoskeleton
B. Jointed legs
C. Segmentation
D. Closed circulation

37. Hydra and corals are classified in
A. Coelenterate
B. Porifera
C. Echinodermata
D. Mollusca

38. Snell is included in the class _____.
A. Gastropoda
B. Bivalvia
C. Arachnida
D. Myriapoda

39. Ascaris lives in the _____ of man.
A. intestine
B. Liver
C. Blood
D. Bladder

40. Sea star moves with the help of _____.
A. Pseudopodia
B. Tube feet
C. Cilia
D. Flagellum

41. Pike and tout are:
A. Jawless fishes
B. Bony fishes.
C. Cartilaginous fishes
D. All of the above

42. Defensive cells of cnidarians are called _____.
A. Nematocysts
B. Gonocytes
C. Oocytes
D. Gastrocytes

43. The feathers which help the birds in flying are:
A. Quill feathers
B. Hair feathers
C. Down feathers
D. Plumulae

44. A purely marine phylum:
A. Mollusca
B. Echinodermata
C. Annelids
D. Arthropods

45. Echinoderms have a brain:
A. Well-developed
B. Rudimentary
C. Absent
D. None oi the above

46. Male honey bees are
A. Diploid
B. Haploid
C. Triploid
D. None

47. Club Mosses belong to the sub-division:
A. Spermopsida
B. Pteropsida
C. Lycopsida
D. Psilopsida

48. Which one of the following undergoes complete metamorphosis?
A. Grasshopper
B. Butterfly
C. Crab
D. Scorpion

49. Pokilotherms are the animals:

A. Whose arteries contract in cold temperature
B. Who have lot of stored body fats
C. Who maintain their body temperature constant
D. Hibernate during winter

50. In which of the following exoskeleton of glasslike silica is found:
A. Mall uses
B. Arthropoda
C. Diatoms
D. Star Fish

51. Subcutaneous fat accumulation is essential for;
A. Seal
B. Shark
C. Elephant
D. Kangaroo

52. Although the duck- billed platypus lays eggs, it is classified as a
A. Bird
B. Reptile
C. Rodent
D. Mammal

53. A tadpole's tail is broken down during metamorphosis into an adult frog. Which organelle increases in number in the cell of the tail at this time?
A. Centriole
B. Lysosomes
C. Golgi apparatus
D. E.R

54. When warm blooded animals go to cold place:
A. Their metabolic rate decreases
B. Their hair erector muscles relax
C. Their capillaries get constricted
D. The can't breathe

55. Which of the following have no digestive canal?
A. Trematodes
B. Taenia
C. Enterobius
D. Ascaris

56. The egg of a frog shows:
A. an upper pigmented animal pole
B. 4 Jelly-like membranes
C. an animal pole made up of yolk.
D. a size of 1-2 cm

57. The closest relative of a Lobster is:
A. Grasshopper
B. Squid
C. Oyster
D. Sea horse

58. The life was evolved first:
A. On earth
B. In sky
C. In water
D. On the hill

59. The remains of Archaeopteryx indicate that birds are most closely related to:
A. Flying insects
B. Flying mammas
C. Flying fish
D. Reptiles

60. The order monothematic belongs to which subclass:
A. Sub class Eutheria
B. Metatheria
C. Prototheria
D. None of the above

61. Nematode includes all of the following except
A. Hookworms
B. Guinea worms
C. Earthworms
D. Ascaris
E. Ringworm

62. Function of the "tube feet" in Phylum Echinodermata is:
A. Locomotion
B. Anchoring to hard surface
C. Grabbing the prey
D. All of the above
E. None of the above

63. Mollusks have all of the following except:
A. A well-developed nervous system
B. Kidneys
C. Nostrils for respiration
D. Circulatory system with a heart

64. Crustacea includes all of the following except:
A. Crabs
B. Lobsters
C. Oysters
D. Crayfish

65. Brain of echinoderm is;
A. Well developed
B. Poorly developed
C. Rudimentary
D. Absent

66. _____ is commonly known as Hook worm:
A. Ancylostoma duodenale
B. ascaris lumbricoides
C. Enterobius vermicularis
D. Hirudinaria
E. Wuchereria

67. An organism appears to be a segmented worm. Upon observation it is determined that the organism has a closed circulation, a mouth and an anus, and does not have an exoskeleton. The organism most likely belongs to the phylum:
A. Mollusca
B. Annelida
C. Arthropoda
D. Chordate

68. Species of phylum Platyhelminthes are:
A. Round worms
B. flatworms
C. hookworms
D. threadworms
E. Pin worms

69. A characteristics features of Echinoderm is:
A. Canal system
B. Water vascular system
C. Tracheal system
D. Blood vascular system
E. None of the above

70. Forming of silkworms is called _____.
A. Sericulture
B. Apiculture
C. Horticulture
D. None

71. Which one of the following is fish?
A. Star fish
B. Jelly fish
C. Cattle fish
D. Sea horse
E. None of the above

72. Which vertebrate groups have scaly skin?
A. amphibians and fish
B. amphibians and mammals
C. fish and mammals
D. fish and reptiles

73. Archaeopteryx is a transitional stage between the members of which one of the following pairs?
A. amphibian bird
B. fish... amphibian
C. reptile... mammal
D. reptile… bird
E. mammal... man

74. Identify the phylum in which the larva is bilaterally symmetrical but the adult is radially symmetrical:
A. Ctenophora
B. Coelenterate
C. Echinodermata
D. Sipunculoidea

75. Book lungs subseries the function of respiration in:
A. Scorpion
B. Earthworm
C. Frog
D. Cockroaches
E. Fish

76. What is the correct order of arthropod groups, from those with most legs to those with fewest legs?

A. arachnids… crustaceans… insects… myriapods
B. crustaceans… myriapods... insects… arachnids
C. insects... arachnids... myriapods... crustaceans
D. myriapods… arachnids… crustaceans… insects
E. myriapods... crustaceans... arachnids… insects

77. Class Elasmobranch have an exoskeleton of

A. placoid scales
B. cycloid scales
C. ctenoid scales
D. epidermal scales

78. Which of the following is exclusively marine phylum?

A. Mollusca
B. Echinodermata
C. Annelida
D. Arthropod

79. Molluscs have an l made up of:

A. Protein
B. Silica
C. $CaCO_3$
D. Cuticles

80. Group Deuterostomata includes phylum

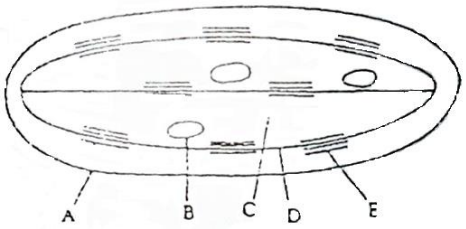
A. Chordata
B. Annelida
C. Arthropoda
D. Echinodermata
E. Both A and D

UNIT NO. (11)

1. What happens during the light phase of photosynthesis?

A. ADP is hydrolyzed and NADPH oxidized
B. ATP is synthesized by photophosphorylation and NADP reduced
C. ATP is hydrolyzed and NADPH oxidized
D. ATP is hydrolyzed and NADP reduced
E. ATP is phosphorylate and NADP oxidized

2. The diagram below represents the structure of a chloroplast as seen in section.



Which label, A, B, C, D or E, indicates the site of the light reaction of photosynthesis?

A. A
A. B. B
B. C
C. D
D. E

3. Which compound captures light energy in plants?

A. O_2
B. CO_2
C. H_2O
D. Chlorophyll
E. None of the above

4. The Calvin Benson cycle

A. Does not use light directly
B. Occurs in the cytoplasm
C. Releases CO_2
D. Produces ATP
E. None of the above

5. Which of the following statements about the Kreb's cycle is not true?

A. The Kreb's cycle occurs in the matrix of the mitochondrion
B. The Kreb's cycle is linked to glycolysis by pyruvate
C. The Kreb's cycle is the single greatest direct source of ATP in the cell
D. Citrate is an intermediate in the Kreb's cycle
E. The Kreb's cycle produces nucleotides such as NADH + H^+ and
F. $FADH_2$

6. **Which of the following statements regarding photosynthesis is NOT true?**
   A. The light cycle occurs only during exposure to light.
   B. The dark cycle occurs only in the absence of light.
   C. ATP is produced during the light cycle.
   D. During the dark cycle, sugar phosphates are produced.
   E. Red and blue light are optimal for photosynthetic function.

7. **Excess water is forced out in the form of droplets through:**
   A. Stomata
   B. Cuticle
   C. Hydathodes
   D. Lenticles
   E. All of the above

8. **Which of the following processes has a net reaction of:**
   Pyruvic acid + $3H_2O$ + 5 carries → $3CO_2$ + 5 carriers ($2H^+$)
   A. Glycolysis
   B. Fermentation
   C. Tricarboxylic Acid Cycle
   D. Electron Transport Chain
   E. None of the above

9. **The source of oxygen in photosynthesis is:**
   A. CO_2
   B. Glucose
   C. ATP
   D. H_2O
   E. NADP

10. **Which of the following is a stage in the light independent reactions in photosynthesis (the Calvin Cycle)?**
    A. Carboxylation of a five-carbon sugar
    B. Photolysis of water
    C. Photophosphorylation of ADP
    D. Release of oxygen
    E. None of the above

11. **Pyruvic acid is the end product of _____.**
    A. Kreb's cycle
    B. Glycolysis
    C. Photosynthesis
    D. Anaerobic respiration
    E. Electron-transport chain

12. **Wines and beers are formed due to _____ process.**
    A. aerobic respiration
    B. hydrolysis
    C. hydrogenation
    D. fermentation
    E. decarboxylation

13. **In which of the following life processes is ATP (adenosine triphosphate) produced?**
    I. Photosynthesis
    II. Aerobic respiration
    III. Anaerobic respiration
    A. I only
    B. II only
    C. I and II only
    D. II and III only
    E. I, II and III

14. **Common to the Krebs cycle and glycolysis in eukaryotes is:**
    A. Production of $FADH_2$
    B. Localization in mitochondria
    C. Occurrence in anaerobic conditions
    D. Substrate-level phosphorylation
    E. Oxygen utilization

15. **The light reaction of photosynthesis occurs in the:**
    A. stroma
    B. thylakoid membranes
    C. mitochondria
    D. nucleus
    E. ribosomes

16. **All of the following are needed for photosynthesis EXCEPT:**
    A. light
    B. glucose
    C. chlorophyll
    D. water
    E. carbon dioxide

17. Limiting regeneration phase of Calvin Denson Cycle only one molecule of SC (triose-phosphate) is produced, which can:
I. re-entry the cycle
II. be used for starch synthesis within the chloroplast
III. exported via a phosphate translocator to cytosol for sucrose synthesis
A. I only
B. III only
C. I and II only
D. II and III only
E. I, II and III

18. The photosynthetic pigments can be separated by a process called:
A. Photosynthesis
B. Respiration
C. Paper chromatography
D. Hydrolysis
E. Bioenergetics

19. Pyruvic acid is the end product of:
A. Glycolysis
B. Krebs cycle
C. Oxidation
D. Electron transport system

20. The dark reaction of photosynthesis:
A. Takes place in the strome of the chloroplast.
B. Involves the fixing of water
C. Causes formation of lactic acid
D. Takes place in the cytoplasm

21. _____ numbers of ATP produce during Aerobic Respiration:
A. 32 ATP
B. 34 ATP
C. 36 ATP
D. 38 ATP

22. Acetyl CoA loses CoA and combines with a 4-Carbon compound which is:
A. Oxaloacetic acid
B. Citric acid
C. Succinic acid
D. Malic acid

23. Product of anaerobic respiration in animals is _____.
A. Pyruvic acid
B. Lactic acid
C. Alcohol
D. $NADPH_2$

24. The end product of glycolysis:
A. Citric acid
B. Pyruvic acid
C. Lactic acid
D. Acetyl CoA

25. Chloroplast can be traced in:
A. Roots
B. Stem
C. Leaf
D. None these

26. Enzymes associated with Krebs cycle are found in:
A. Outer layer of mitochondrion
B. Inner layer of mitochondrion
C. Inner membrane space of mitochondrion
D. Matrix of mitochondrion

27. Xanthophyll is a pigment having:
A. Yellow color
B. Red color
C. Green color
D. Blue color

28. There are different types of chlorophyll like chlorophyll a, and:
A. b, c, d and e
B. b
C. Xanthophyll
D. Only c

29. Plants convert solar energy into chemical energy present in the bonds substances namely:
A. $NADPH_2$
B. Nucleotide
C. ATP
D. RNA

30. In light antennae complex _____ is not found:

A. Haemoglobin
B. Chlorophyll a
C. Chlorophyll b
D. Carotenoids

31. In which of the following processes ATP is produced?

I. Photosynthesis
I. Aerobic respiration
Ill. Anaerobic respiration

A. I only
B. ll and Ill only
C. I, II and III
D. II only

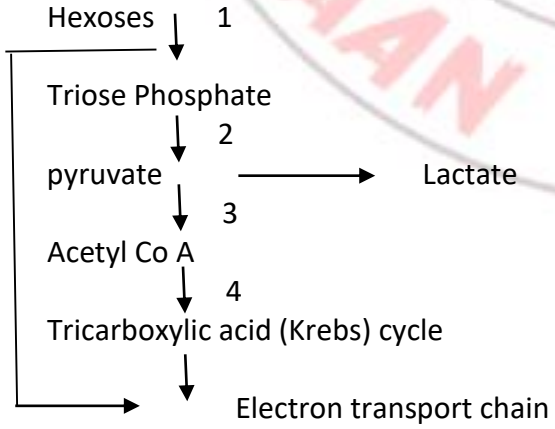
32. In aerobic respiration, the final hydrogen acceptor is:

A. CO_2
B. H_2O
C. ATP
D. Molecular oxygen

33. The reaction $CH_3COOH \rightarrow CH_3CHO + CO_2$ is catalyzed by;

A. Decarboxylase
B. Dehydrogenase
C. Hydrolase
D. Transferase

34. The diagram below summarizes the stages involved in respiratory metabolism of mammalian skeletal muscle.



Stage 3 in the diagram occurs in mammalian muscles ceils under anaerobic c
Why is stage 3 necessary?

A. To detoxify pyruvate
B. To form lactate which immediately converted to glycogen
C. To oxidize the $NADH_2$ facilitating stage 2
D. To provide $NADH_2$ tor the electron transport chain

35. In the dark reaction of photosynthesis, carbon dioxide first combines with the phosphoenolpyruvic acid to produce:

A. Malic acid
B. Oxaloacetic acid
C. Phosphoglyceraldehyde
D. Ribulose diphosphate

36. Concerning Krebs cycle:

A. It converts pyruvate to hydrogen and water for transfer
B. Acetyl Co-A is a 4 carbon n
C. The cycle produces 2 molecules of ATP
D. The cycle uses up to 3 molecules of water per molecule glucose

37. The dark reaction of photosynthesis:

A. Build up molecules of Pyruvate to form glucose
B. Release energy
C. Produces GALP as the first stable intermediate
D. Requires NADH

38. Enzymes associated with krebs cycle are found in:

A. Outer layer of mitochondrion
B. Inner layer of mitochondrion
C. Inner membrane space of mitochondrion
D. Matrix of mitochondrion

39. Xanthophyll is a pigment having:

A. Yellow color
B. Red color
C. Green color
D. Blue color

40. There are different types of chlorophyll like chlorophyll a, and

A. b, c, d and e
B. b and B_{12}
C. Xanthophyl

D. Only "c"

41. Chloroplast contain grana and storm, grana are formed by _____ while stoma is a homogenous matrix:
A. Chromosomes
B. Thylakoid
C. Xanthophyl
D. Phycocyanin

42. The number of ATPs formed during glycolysis:
A. 8
B. 10
C. 32
D. 6

43. Phosphoglycerate formed during photorespiration produces which amino acid
A. Phenylalanine
B. Serine
C. Methionine
D. Glycine

44. In which of the following processes ATP is produced?
I. Photosynthesis
II. Aerobic respiration
III. Anaerobic respiration
A. I only
B. II and III only
C. I, II and III
D. II only
E. None of these

45. Which one of the following is a characteristic of mitochondria?
F. They store proteolytic enzymes
G. They provide sites for anaerobic respiration
H. They produce cellular secretions
I. They release energy via Krebs cycle
J. They produce glucose

46. Where does the oxygen released during photosynthesis come from?
A. Water
B. Carbon dioxide
C. Stored carbohydrates
D. Stored fats

47. The main process that occurs in the dark reaction in photosynthesis is:
A. That water is split
B. Light energy is converted into chemical energy
C. That glucose is oxidized
D. That carbon dioxide is fixed
E. None of the above

48. In paper chromatography xanthophyll will give _____ color:
A. Orange
B. Grey
C. Yellow
D. blue-green
E. Yellow-green

49. The Calvin Cycle consist of _____ main reactions:
A. 3
B. 6
C. 9
D. 1
E. 16

50. The light dependent reaction of photosynthesis occurs in:
A. Stroma of chloroplast
B. Guard cells of stomata
C. Thylakoid membrane of chloroplast
D. Cytoplasm of leaf cell
E. None of the above

51. The end product of Glycolysis is:
A. Glucose-6-phosphate
B. Fructose-6-phosphate
C. Pyruvate
D. 3-Phosphoglycerate
E. Phosphoglyceraldehyde

52. Creatine phosphate serves as muscle reserves of high energy phosphate by providing _____.
A. Nerve Impulses
B. ATP's
C. Calcium ions
D. Lactic acid

53. Glucose → 2pyruvic acid + $2H_2O$
$2ADP + 2P_i + 2ATP$
$2NAD + 4H \rightarrow 2NADH + 2H^+$
These three reactions collectively constitute _____.

A. Krebs cycle
B. Calvin's cycle
C. Electron transport chain
D. Light reaction
E. Glycolysis

54. In the Krebs cycle, substrate level phosphorylation accompanies the formation of:

A. Citrate
B. Alpha-ketoglutarate
C. Succinate
D. Fumarate
E. Oxaloacetate

55. Three word equations are shown:
P. carbon dioxide + water → glucose oxygen
Q. glucose + oxygen → carbon dioxide + water
R. glucose → alcohol + carbon dioxide
What is/are the equation(s) for anaerobic respiration in yeast?

A. P only
B. Q only
C. R only
D. All of the above

56. During the first three steps of glycolysis, glucose is converted to fructose 1, 6 diphosphate by the rearrangement of the molecule and addition of two phosphate groups. The phosphate group comes from:

A. Phospholipids of the membrane
B. ADP
C. Inorganic phosphate
D. ATP

57. The dark reactions of photosynthesis are characterized by:

A. Synthesis of ATP, O_2 and NADH
B. Utilization of ATP, CO_2 and NADPH
C. Electron transfer from NADPH to RuBP
D. Carbon dioxide transfer from RuBP to glucose

Rubica

58. $RuBP + O_2 \longrightarrow PGA +$ _____.

A. Phasphoglycerate
B. Phasphoglycolate
C. Glycerate
D. Glycolate

59. Where do the light-dependent reactions of photosynthesis occur?

A. In the guard cells of the stomata
B. Stroma of chloroplast
C. In the thylakoid membrane of chloroplast
D. Cytoplasm of leaf cell

60. Four tubes were set up under certain conditions as shown in the table.

TUBES	CONDITIONS	CONTENTS
1	Oxygen deficiet	Pyruvate + yeast
2	Oxygen rich	Glucose + faculative aerobes
3	Oxygen rich	Glucose + an animal cell containing mitochondria
4	Oxygen deficiet.	Pyruvate + obligate aerobes

After incubation, each sample was analysed to determine the presence of carbon dioxide and lactate. In which tubes is lactate most likely to be present?

A. 1 and 2 only
B. 2, 3, and 4 only
C. 1 and 4 only
D. 1, 2 and 3 only

UNIT NO. (12)

1. **Why do some root cells have root hairs?**
   A. for the maintenance of the temperature of the cell sap
   B. to increase the surface area of the cells
   C. to increase the volume of the cell sap
   D. to provide a place for cell nuclei
   E. to allow movement of soil particles

2. **Chemosynthesis is a kind of nutrition requiring:**
   A. Inorganic Compounds
   B. Organic compounds
   C. Any kind of compounds
   D. Light
   E. None of the above

3. **Sundew is an example of _____.**
   A. Autotrophic plant
   B. Parasitic plant
   C. Saprophytic plant
   D. Carnivorous plant
   E. Extinct plant

4. **Nutritional deficiency (vitamin D deficiency) results in softening of the bones. This disease in children is called:**
   A. Osteoporosis
   B. Rickets
   C. Arthritis
   D. Cleft palate
   E. Microcephaly

5. **_____ continuously changes the kinds of plants and animals.**
   A. Predation
   B. Succession
   C. Symbiosis
   D. Parasitism
   E. Grazing

6. **During the process of phototrophic nutrition (photosynthesis), the materials used by phototrophic organisms are:**
   A. CO_2 & H_2O
   B. Minerals (Nitrogen, Phosphorus, Sulphur & Magnesium etc.)
   C. Light
   D. Green pigments (Chlorophyll "a", "b")
   E. All of the above

7. **Plants prevent excessive water loss from their aerial parts by a waxy coating called:**
   A. Mesoderm
   B. Lignin
   C. Cuticle
   D. Sporopollenin
   E. Cell wall

8. **The important process of holozoic nutrition includes:**
   A. ingestion
   B. Digestion
   C. Assimilation
   D. Egestion
   E. All of the above

9. **Most _____ are saprophytes that obtain their food directly from dead organic matter.**
   A. Algae
   B. Fungi
   C. Gymnosperms
   D. Angiosperms
   E. None of the above

10. **The nitrates absorbed by the root are converted into**
    A. Animal protein
    B. Ammonia
    C. Amino acids
    D. Carbohydrates
    E. None of the above

11. **Planaria feeds through the:**
    A. Mouth
    B. Pharynx
    C. Esophagus
    D. Oral groove

12. **What is the main role of vitamin K in the diet of humans?**
    A. To participate in the formation of visual purple
    B. To promote the production of blood clotting factors
    C. To prevent skin disorders

D. Deposition of Calcium in the bones
E. All of the above.

13. Lacteals of Villi absorb:
A. Amino Acids
B. Glucose
C. Hydrochloric Acid
D. Fatty Acids

14. Pepsin and trypsin:
A. Are both secreted with acid digestive juices
B. Are both secreted by the pancreas
C. Breakdown protein to amino acids
D. Are specific enzymes releasing peptide and polypeptide chain

15. Vitamins K
A. is mostly found in green vegetables
B. deficiency causes Pellagra
C. promotes production of blood clotting factors
D. prevent night blindness

16. Where is oxygen produced in plants?
A. A root hair cell
B. Mesophyll Cell
C. Leaf epidermal cell
D. Phloem cell

17. Saliva in mouth helps in digestion of
A. Bread
B. Meat
C. Fat
D. Table salt

18. Digestion of cell contents by lysosomes is termed as _____.
A. Endocytosis
B. Autophagy
C. Immunolysis
D. Exocytosis

19. The organism in which both extracellular and intracellular digestion takes place is _____.
A. Hydra
B. Amoeba
C. Paramecium
D. Planaria

20. Which parasite can't survive in artificial medium?
A. Endoparasite
B. Obligate
C. Ectoparasite
D. Facultative

21. Alpha cells of pancreas secrete:
A. Amylase
B. Lipase
C. Insulin
D. Glucagon

22. A person with insufficient iron in his diet may become anemic because:
A. Not enough oxyhemoglobin is formed in the liver
B. Iron is used in building hemoglobin
C. Iron is used in making fibrinogen
D. Iron enhances blood production

23. Why is Vit B, (thiamine) is important in the human diet?
A. It acts as a hormone
B. It acts as antigen
C. It acts as a coenzyme
D. It has a structural function

24. The part of the digestive system that doesn't secrete any enzyme is
A. Buccal cavity
B. Oesophagus
C. Stomach
D. Intestine

25. Vitamin D deficiency causes:
A. Osteomalacia in children
B. Rickets in adults
C. Rickets in children
D. All of the above

26. About the stomach:
A. Oxyntic cells produce pepsinogen
B. Chief cells produce HCL

C. Goblet cells produce mucus
D. Villi are present in small numbers

27. Cows can digest cellulose through enzyme cellulose produced by:
A. Intestinal cells
B. Gastric cells
C. Cannot digest
D. Bacteria living symbiotically in their Guts

28. What is the main role of vitamin K in the diet of humans?
A. To participate in the formation of visual purple
B. To promote the production of blood clotting factors
C. To prevent skin disorders
D. Deposition of Calcium in the bones C
E. All of the above

29. Vitamins are-com _____ compounds;
A. Inorganic
B. Organic
C. Both A &B
D. None of them

30. In a human alimentary canal, where does digestion begin?
A. Mouth
B. Oesophagus
C. Stomach
D. Duodenum

31. _____ causes amoebic dysentery in humans:
A. A Pelomyxa palustris
B. Entamoeba histolytica
C. Trichonympha
D. Trypanosoma
E. Radiolarian ooze

32. Ileum is about _____ long.
A. 3.6 millimeters
B. 3.6 centimeters
C. 3.6 inches
D. 3.6 meters
E. 3.6 kilometers

33. The propulsive movement of the gastro-intestinal tract (GI tract) is:
A. Peristalsis
B. Epiglottis
C. Antiperistalsis
D. Anus
E. None of the above

34. Identify the incorrect statement about the Bathyal zone
A. It ranges from surface to depth of about 2000 me
B. It consist of pelagic and benthic zone
C. It is aphetic
D. It contains producers that prepare food for consumers
E. None of the above

35. The reaction involved in chemotropic nutrition is:
A. $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6CO_2 + 6H_2O$
B. $2H_2S + O_2 \rightarrow (CH_2O) + H_2O + 2S$
C. $NH_4 + 3O_2 \rightarrow 2NO_2 + 2H_2O + 4H^+ +$ energy
D. $CH_3.CO.COOH \rightarrow CH_3.CHO + CO_2$
E. 5GAP + 3ATP → 3RuBP + 3ADP + 2Pi

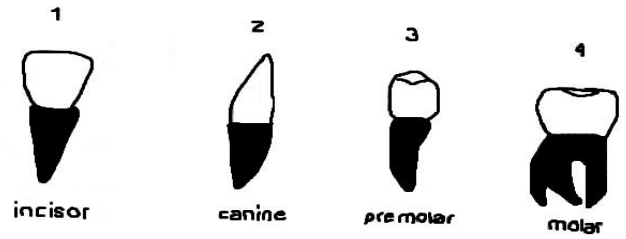
36. The propulsive movement of the gastro-intestinal tract (GI tract) is
A. Peristalsis
B. Epiglottis
C. Antiperistalsis
D. Anus
E. None of the above

37. A psychological condition usually seen in girls and young women, with loss of appetite is:
A. Obesity
B. Malnutrition
C. Anorexia Nervosa
D. Dyspepsia
E. Peptic ulcer

38. Parasitic fungi absorbs nutrients directly from the living host with the help of special hyphal tips called _____.
A. Roots
B. Root hair
C. Rhizoids

D. Haustoria
E. None of the above

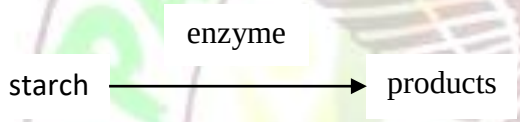
39. The diagram shows the four types of human tooth.



Which teeth are used for cutting rather than grinding food?

A. 1 and 2
B. 2 and 3
C. 3 and 4
D. 4 and 1

40. The following reaction occurs in the human alimentary canal.



What is the enzyme and the product?

	ENZYME	PRODUCT
A.	acid	glucose
B.	alkali	energy
C.	amylase	maltose
D.	bile	amino acid

41. Four words are shown below:
Facultative obligate saprophytes parasites

These words can be used in the spaces P, Q, R and S to complete the sentence below. Among heterotrophic plants those which depend on living plants and animals for their nutritional requirements are known as ...P Parasites which depend for their nutrition entirely on other living organisms are known as ...Q... or total parasites and those which depend for these requirements partially on other living called ...R... or partial parasites. On the other hand, the plants which depend on dead or rotten organic remains of plants and animals are called ...S....

	obligate	parasites	saprophytes	facultative
A.	P	Q	R	S
B.	Q	P	S	R
C.	R	S	Q	P
D.	S	R	Q	P

UNIT NO. (13)

1. All of the following are functions of the liver EXCEPT
A. Produce bile
B. Store glycogen
C. Secrete insulin
D. Store vitamins

2. The absorption of oxygen from the atmosphere into the blood takes place in the
A. Pulmonary artery
B. Pulmonary vein
C. Alveoli
D. Trachea
E. Bronchi

3. Pharynx leads air into _____ through glottis.
A. trachea
B. bronchus
C. alveoli
D. nasal sac
E. larynx

4. A bean seed contains all of the following except
A. A seed coat
B. An epicotyl
C. A hypocotyl
D. A hypha
E. Cotyledon

5. In the process of inspiration _____ and _____ are involved.
A. intercostal muscles ... diaphram
B. deltoid muscles ... diaphram
C. trapezius ... intercostal muscles
D. biceps ... triceps
E. none of the above

6. **Respiratory organs in fish are called _____.**
   A. Lungs
   B. Skin
   C. Gills
   D. Tracheal system
   E. Stomata

7. **In the early morning, the water droplets can be seen on the tips of grass blades & leaf margins of small plants. This is a process called:**
   A. Adhesion
   B. Guttation
   C. Cohesion
   D. Respiration
   E. Plasmolysis

8. **Which of the following are considered to be the respiratory surfaces of the lungs?**
   A. Pleural membranes
   B. Pleural cavity
   C. Bronchioles
   D. Alveoli

9. **Which structures are found in a liver cell?**

	CELL MEMBRANE	CELL WALL	CHLOROPLAST	LARGE VACUOLE	CYTOPLASM	NUCLEUS
A	√	√	x	x	x	x
B	x	x	√	√	x	x
C	√	x	x	x	√	√
D	x	√	x	x	x	√
E	x	x	√	x	√	√

10. **Which is the correct sequence of passageways through which air travels during inhalation?**
    A. Pharynx → trachea → bronchioles →bronchi → alveoli
    B. Pharynx → trachea → lungs → bronchi → alveoli
    C. Larynx → pharynx → trachea → bronchi → alveoli
    D. Pharynx → larynx → trachea → bronchi → alveoli

11. **Which statement concerning transpiration is correct?**
    A. On a humid day, the water potential gradient between the intercellular air space and the external atmosphere increases to stimulate water loss by evaporation.
    B. Water arriving at the spongy mesophyll cells via the symplast pathway must move by osmosis through the cell surface membrane before evaporation from the surface of the cells.
    C. Water diffuses down the water potential gradient from the saturated air space through the guard cells before evaporating from the surface of the cells into the atmosphere.
    D. Water moves up the xylem in the apoplast pathway and can continue on this pathway by osmosis to reach the spongy mesophyll cells before evaporating into the intercellular air space.

12. **What causes the observed change in skin temperature on exposure to cold air?**
    A. less blood flowing just below the skin
    B. less blood going to the heart and lungs
    C. more blood flowing just below the skin
    D. more blood going to the heart and lungs

13. **The absorption of oxygen from the atmosphere into the blood takes place in the:**
    A. Pulmonary artery
    B. Pulmonary vein
    C. Alveoli
    D. Trachea
    E. Bronchi

14. **All of the followings are characteristics features of tuberculosis except:**
    A. Cough
    B. Pain in chest
    C. Acidity
    D. Shortness of breath
    E. Weight loss

15. **During inhalation**
    A. The diaphragm flattens out, and the ribs are raised

B. The diaphragm is raised, and the ribs are lowered
C. The diaphragm flattens out, and the ribs are lowered
D. The diaphragm is raised, and the ribs are raised
E. The diaphragm is raised, and the ribs are stationary

16. Gaseous exchange in Planaria takes place by means of:
A. Osmosis
B. Diffusion
C. Breathing
D. Active transport

17. Regarding the respiratory system in humans:
A. The trachea is completely surrounded by rings of cartilage
B. The trachea divides into 3 bronchi
C. The vocal cords lie in the larynx
D. The lungs are rigid structures with little elasticity

18. The function of oxygen in cellular respiration is:
A. To combine with hydrogen from organic molecules to form carbon dioxide
B. To combine with Carbon from organic molecules to form carbon dioxide
C. To oxidize ADP to ATP
D. To combine with glucose to form carbon dioxide

19. Which of the following increase the rate of respiration most efficiently?
A. Lack of oxygen in the alveoli
B. Excess of carbon dioxide in the blood
C. Excess of carbon dioxide in the lungs
D. Lack of oxygen in the tissues

20. Rate of transpiration varies with all the following except
A. Temperature
B. Decreased number of chloroplasts
C. Light
D. Wind

21. The following are involved with plant respiration
A. Stomata
B. Chloroplasts
C. Auxins
D. Geotropism

22. During inspiration, the path of air is:
A. Nostrils - Pharynx-Bronchi - Trachea - Lungs
B. Nostrils -Bronchi- Pharynx- Trachea - Lungs
C. Nostrils - Pharynx - Trachea - Bronchi - Lungs
D. Nostrils - Pharynx - Lungs Trachea – Bronchi

23. During inspiration, the path of air is:
A. Nostrils - Pharynx-Bronchi - Trachea - Lungs
B. Nostrils -Bronchi- Pharynx- Trachea - Lungs
C. Nostrils - Pharynx - Trachea - Bronchi - Lungs
D. Nostrils - Pharynx - Lungs Trachea – Bronchi

24. Depletion of ozone layer is due to CFC which release _____.
A. Cl^- atoms
B. CO
C. F
D. CCl_4

25. The humidity in air is inversely proportional to _____ process in plants.
A. Transpiration
B. Respiration
C. Photosynthesis
D. None of the above

26. Centers of cellular respiration in a cell is:
A. Mitochondrion
B. Cytoplasm

C. Golgi bodies
D. Ribosome

27. Which animal uses highly vascularized skin for respiration?
A. Fish
B. Frog
C. Snake
D. Anew borne mammal

28. In coughing the air is forcibly blown larynx while in sneezing it is blown through:
A. Mouth
B. Nasal cavities
C. Both of these
D. None of these

29. Earth Worms gaseous exchange occurs through:
A. Lungs
B. Skin
C. Blood
D. Nephridia

30. Guttation is due to:
A. High Transpiration
B. Low Relative Humidity
C. Negative Root Pressure
D. Positive root Pressure

31. Which type of respiration is the most effective in frog?
A. Coetaneous
B. Lung
C. Pulmo-cutaneous
D. Through gills

32. Which of the following is the most efficient way of respiration in frog:
A. Pulmonary
B. Buccopharyngeal
C. Both bucco and pharyngeal
D. Coetaneous

33. If the level of CO_2 and H+ ions increase in the body the rate of breathing will:
A. Increase
B. Decrease
C. remains constant
D. Unstriated and voluntary

34. Ciliated epithelial cells in the nasal passages are useful because they;
A. Filter dust and bacteria
B. Provide the sense of smell
C. Reduce the humidity of inhaled air
D. Cool incoming air especially in summer

35. The best method of determining the relation of leaf - surface area to transpiration rat would be to compare the transpiration rates of:
A. Two identical geranium plant and one with the leaves removed
B. Two identical geranium plants exposed to different temperature.
C. A normal geranium plant and one whose stomata have been closed by spreading Vaseline over the lower epidermis of the leaves.
D. Identical geranium plants exposed to different wind velocities

36. A person who is exercising breathes more rapidly because:
A. His lungs use up more energy
B. His calorie production goes down
C. He gives off more CO_2 which stimulates the medulla
D. Glycogen in the muscles is converted to glucose

37. What is the percentage of Oxygen in a sample of exhaled air?
A. 20.96%
B. 16%
C. 79%
D. 4%

38. In the soil, ammonia is converted to nitrites by a bacterium called:
A. Nitrobacteria
B. Nitrosamines
C. Azotobacter
D. Clostridium

39. The nerve which supplies diaphragm is called:
A. Vagus nerve

B. Intercostal nerve
C. Diaphragmic nerve
D. Phrenic nerve

40. Which one of the following factors increases residual volume of lungs?
A. Aging
B. Emphysema
C. None of the above
D. Both of the above

41. A person who is exercising breathes more rapidly because:
A. His lungs use up more energy
B. His calorie production goes down
C. He gives off more CO_2 which stimulates the medulla
D. Glycogen in the muscles is converted to glucose
E. His blood sugar level goes down

42. In which situation would transpiration be at a minimum?
A. On a windy day
B. On a hot day
C. On a humid day
D. During dry season

43. Bacteria in plague converts sugar into acid which causes _____.
A. Cavity
B. Dental Decay
C. Dental caries
D. Gum Boil

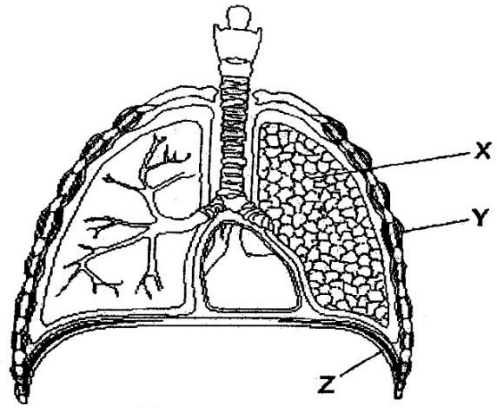
44. Pharynx leads air into _____ through glottis.
A. trachea
B. bronchus
C. alveoli
D. nasal sac
E. larynx

45. Which of the following describes the movements involved in breathing out?

	movements of ribs	movements of diaphragm
A.	down and in	downwards
B.	down and in	upwards
C.	up and out	downwards
D.	up and out	upwards

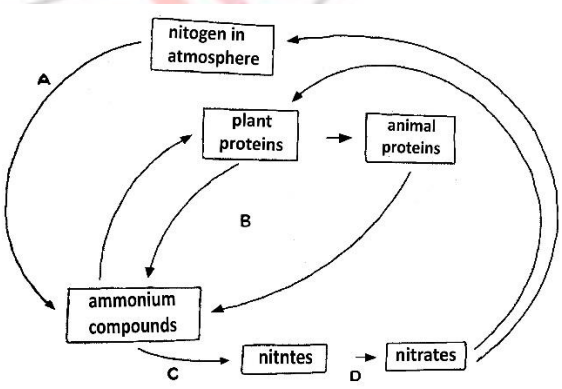
46. The adaptive feature (s) which help (s) the fish to live in water include (s):
A. A tail and an air bladder
B. Unpaired and paired fins
C. Streamed lined body
D. Gills and strong sense of smell
E. All of the above

47. The diagram represents the human respiratory system.



Which structure (s) contain (s) muscles that contract when breathing in?
A. X only
B. X and Y only
C. X and Z only
D. Y and Z only
E. X, Y and Z

48. The diagram shows a simplified nitrogen cycle. During which stage does decomposition start?



A. A
B. B
C. C
D. D

49. What happens to the volume of the thorax and the air pressure in the lungs during breathing in?

	volume of thorax	Air pressure in lungs
A.	decreases	increases
B.	decreases	remains constant
C.	increases	increases
D.	increases	remains constant
E.	increases	decrease

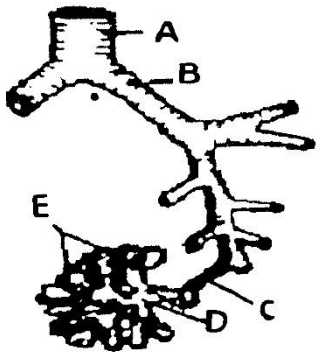
50. Which row correctly shows the areas of the gas exchange system that contain cartilage, ciliated epithelium and goblet cells?

	cartilage	ciliated epithelium	goblet cells
A.	bronchiole, trachea	bronchiole, trachea	Bronchus, trachea alveoli
B.	Bronchus, trachea	bronchiole, Bronchus	alveoli trachea
C.	bronchiole, trachea alveoli	Bronchus, trachea	bronchiole, Bronchus
D.	Bronchus, trachea	Nasal cavity, trachea	Bronchus, trachea

51. The lower two pairs of ribs are _____.

A. True ribs
B. False ribs
C. Floating ribs
D. Articulated ribs

52. In the diagram showing the bronchial tree given below, parts have been indicated by alphabets. Choose the answer in which the alphabets correctly match with the parts they indicate.



A. A=trachea, B=bronchus, C=respiratory bronchiole, D=alveolar duct, E=alveoli.
B. A=trachea, B=bronchus, C=alveolar duct, D=respiratory bronchiole, E=atrium
C. A=bronchus, B=alveolar duct, C=respiratory bronchiole, D=trachea, E=alveoli
D. A=trachea, B=alveolar duct, C=respiratory bronchiole, D=bronchus, E=alveoli

UNIT NO. (14)

1. Which of the following is NOT involved in cell mediated immunity?

A. Helper T cells
B. Cytotoxic T cells
C. Suppressor T cells
D. Memory T cells
E. None of the above

2. Destruction of all beta cells in the pancreas would cause:

A. glucagon secretion to stop and a decrease in blood glucose
B. glucagon secretion to stop and an increase in blood glucose
C. insulin secretion to stop and an increase in blood glucose
D. insulin secretion to stop and a decrease in blood glucose
E. insulin secretion to increase and a decrease in blood glucose

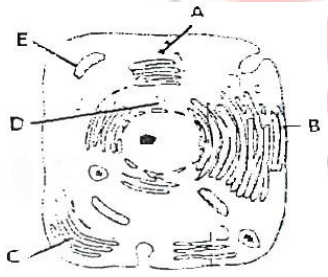
3. During the action potential:

A. the polarity of neurolemma first changes to -65 mv and then restores to +40 mv again
B. the polarity of neurolemma first changes to +40 mv and then restores to -65 mv again
C. the polarity of neurolemma first changes to -85 mv and then restores to +30 mv again
D. the polarity of neurolemma first changes to +30 mv and then restores to -85 mv again
E. the polarity of neurolemma first changes to 0 mv and then restores to +40 mv again

4. What role does pepsin play in digestion?

A. It kills the bacteria of stomach
B. It converts soluble milk proteins into insoluble proteins
C. It converts starch and glycogen into maltose
D. It activates the gastric glands to produce gastric juices
E. It converts proteins into short chain polypeptides

5. The diagram shows a generalized animal cell. Which structure would be involved in the final secretion of digestive enzymes from this cell?



A. A
B. B
C. C
D. D
E. E

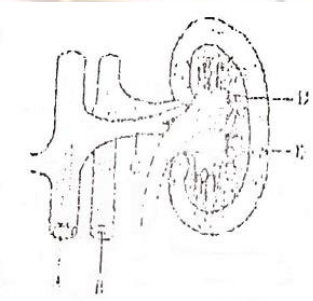
6. Identify the incorrectly matched pair:

A. Cardiac output ... volume of blood pumped per minute by the left ventricle
B. Arterial systole ... contraction of the two atria
C. Heart murmur ... defect of heart valves
D. Diastole ... phase of contraction of cardiac muscle
E. Right atrium in diastolic phase ... receives deoxygenated blood from vena cava

7. In which form is carbon dioxide mainly transported in blood?

A. As carbamino - haemoglobin
B. As carbonic acid
C. As hydrogen carbonate
D. In solution

8. The diagram shows a section through a kidney and associated blood vessels.



In which area is there the greatest rate of movement of fluid from the blood through the walls of blood vessels?

A. A
B. B
C. C
D. D
E. E

9. Which of the following terms describes the process by which the plasma membrane moves substances inward against a concentration gradient?

A. Facilitated diffusion
B. Active transport
C. Osmosis
D. Simple diffusion
E. Autotropism

10. Pepsin İs a (n) _____, secreted by the _____.

A. enzyme ... stomach
B. hormone ... pancreas
C. antibody ... gall bladder
D. pigment ... skin
E. antigen ... blood

11. Bile is stored in

A. Liver
B. Pancreas
C. Duodenum
D. Gall bladder
E. Spleen

12. The outer protective covering of the heart is called

A. epicardium
B. mesocardium
C. pericardium
D. peritoneum
E. pleura

13. Which valve action results from an increase in pressure in the ventricles of the heart?

A. The closing of all the heart valves
B. The closing of semi-lunar valves
C. The opening of the bicuspid valve
D. The opening of the semi-lunar valves
E. The opening of the tricuspid valve

14. White blood cells picking up foreign bodies from the blood stream is an example of:

A. Pinocytosis
B. Exocytosis
C. Phagocytosis
D. Osmosis
E. None of the above

15. Which process allows the movement of molecules that are too large to enter through a cell surface membrane?

A. active transport
B. endocytosis
C. exocytosis
D. facilitated diffusion

16. Pancreatic lipase is involved in the digestion of

A. starch
B. protein
C. fat
D. cellulose
E. nucleic acid

17. If a plant utilized H_2SO_4 instead of water, the plant would release

A. CO_2
B. H_2O
C. O_2
D. SO_4^{2-}
E. None of the above

18. The hemoglobin of a person with sickle-cell anemia differs from normal molecules of hemoglobin by one:

A. monosaccharide, fructose
B. disaccharide, sucrose
C. fatty acid, glutamic acid
D. lipid, oleic acid
E. amino acid, valine

19. The possible causes of atherosclerosis are:

A. Hypertension
B. A high serum cholesterol level
C. Family history of arterial disease
D. Physical inactivity
E. All of the above

20. The utilization of the absorbed food molecules within the cells to provide energy for tissue building is called

A. Digestion
B. Assimilation
C. Egestion
D. Absorption
E. Ingestion

21. Plaque when combines with certain chemicals in the saliva, it becomes hardened & calcified forming a hard deposit known as:

A. Molar
B. Dental caries
A. c. Calculus
C. Gingivitis
D. Dentine

22. A patient is having an epigastric discomfort following meals, characterized by:

I. Heart burn
II. Flatulence
III. Nausea & vomiting S (he) is suffering from a disorder known as:

A. Constipation
B. Piles
C. Hemorrhoids
D. Dyspepsia
E. Food poisoning

23. In type-I diabetes:

A. Alpha cells are destroyed by the lymphocytes
B. The beta cells are destroyed by the lymphocytes
C. Level of insulin is close to or above normal
D. The acid base balance of the body is maintained
E. None of the above

24. Which features enable the aorta to withstand ventricular systole?

A. collagen fibres and elastin fibres
B. collagen fibres and smooth muscle
C. elastin fibres and endothelium
D. endothelium and smooth muscle

25. Which features enable the aorta to withstand ventricular systole?

E. collagen fibres and elastin fibres
F. collagen fibres and smooth muscle
G. elastin fibres and endothelium
H. endothelium and smooth muscle

26. Which cells become memory cells in the immune response?

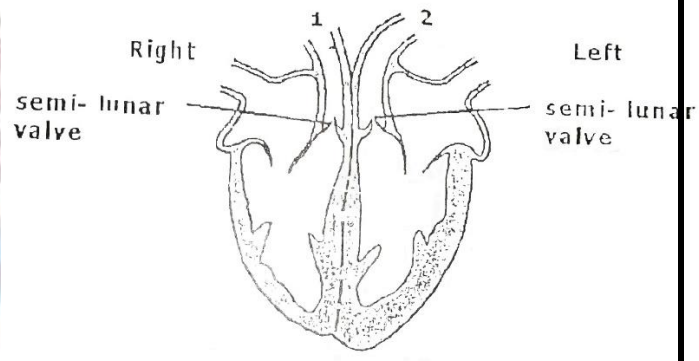
I. B-lymphocytes
II. T-lymphocytes
III. Phagocytes

A. I only
B. II only
C. I and II only
D. II and III only
E. I, II and III

27. After starch is ingested, in which order do these processes occur?

A. absorption → assimilation → digestion
B. absorption → digestion → egestion
C. assimilation → digestion → absorption
D. digestion → absorption → assimilation
E. assimilation → absorption → digestion

28. The diagram show a section through the human heart.



What happens as blood is being pumped out of the heart?

	Semi-lunar Valves	Vessel through which blood passes to the lungs
A.	Open	1
B.	Open	2
C.	Closed	1
D.	Closed	2

29. The valve present between left auricle and left ventricle is called:

A. Tricuspid
B. Bicuspid
C. Auriculo-ventricular valve

D. Chordae tendinae
E. Both A and B

30. Which of the following choices correctly illustrates the course that a piece of bread takes though the digestive tract?

A. Mouth → trachea → esophagus → cardiac sphincter → stomach → pyloric sphincter → small intestine → large intestine → rectum → anus
B. Mouth → pharynx → esophagus → cardiac sphincter → stomach → pyloric sphincter → small intestine → large intestine → rectum → anus
C. Mouth → pharynx → esophagus → pyloric sphincter → stomach → cardiac sphincter → small intestine → large intestine → rectum → anus
D. Mouth → pharynx → esophagus → cardiac sphincter → stomach → pyloric sphincter → small intestine → large intestine → anus → rectum
E. None of the above

31. An example of partial root parasite is:

A. Loranthus
B. Viscum
C. Cuscuta
D. Sandal wood tree
E. Orobanche

32. Malpighian body is composed of:

A. Bowman's capsule & glomerulus
B. Pyramids & pelvis
C. Pelvis & medulla
D. Hilus & medulla
E. Nephron & medulla

33. The proper measurements taken to avoid the diseases caused by parasitic worms include:

A. Hygienic living
B. Careful use of edibles
C. Thorough cooking of meat
D. Avoid walking bare footed
E. All of the above

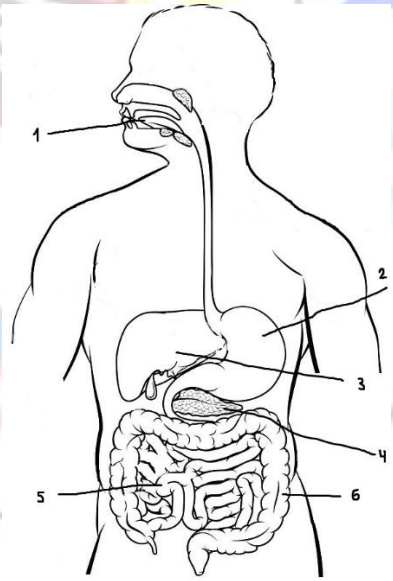
34. The stomatal pore will open when the

A. Turgor of the guard cells decreases
B. Turgor of the guard cells increases
C. Leaf is kept in the dark
D. Amount of CO_2 in the guard cells increases
E. Atmosphere becomes heavy with water vapor

35. In cockroaches, the portion from pre-oral cavity to gizzard is known as _____.

A. Proctodaeum
B. Mesenteron
C. Stomodaeum
D. Maxillae
E. Mandibles

36. The diagram shows some organs of the digestive system.



Where is amylase present?

A. 1, 4 and 5
B. 1, 2 and 3
C. 2, 6 and 4
D. 3, 5 and 4

37. Humoral immunity is carried by a special group of cells called:

A. B-cells

B. Killer cell
C. Helper cell
D. Null cells

38. A part of the digestive system that is not in contact with food is the:
A. Small intestine
B. Stomach
C. Liver
D. Large intestine
E. Trachea

39. All of the following protect the body against the entrance of germs except:
A. Tears
B. Mucous membranes
C. Ciliated cells
D. White blood cells
E. Red blood cells

40. Microtubules perform all of the following except:
A. A Transport of molecule
B. Movement in cilia and flagella
C. Movement of chromosomes
D. Protein synthesis

41. The heart
A. Pumps blood at a constant rate
B. Oxygenate blood
C. Is under some amount of voluntary control
D. Is stimulated by SA node

42. All the following are true about the skin except,
A. It is the largest organ in the body
B. Vitamin E is synthesized here
C. It performs both secretary and excretory functions
D. Melanin is synthesized here

43. Insulin causes;
A. Increased blood sugar
B. Increased calcium deposition in bones
C. Increased permeability of cells to glucose
D. Increased cholesterol in blood

44. Which one of the following possesses the most prominent Golgi apparatus?
A. An islet of Langerhans
B. A retinal rod cell
C. A striated muscle
D. A xylem tracheid

45. The manufactured food is transported to various regions by a process called:
A. Translocation
B. Transpiration
C. Osmosis
D. Diffusion

46. Sugar is stored in the liver as:
A. Starch
B. Glycogen
C. Maltose
D. Cellulose

47. Circulatory system in grass hopper is of
A. Hemi open type
B. Open type
C. Close type
D. Hemi close type

48. The uptake of minerals in a plant occurs through
A. Root hair
B. Root cap
C. Coot tip
D. Stomata
E. Guard cells

49. Animal with open circulatory system:
A. Cockroach
B. Frog
C. Snake
D. Duck billed platypus

50. 50% of blood volume is:
A. Plasma
B. Formed elements
C. Cells
D. Both b and c

51. pH of blood is about:

A. 7.35
B. 7.00
C. 7.85
D. 7.66

52. Ascent of sap is governed by the activity of the living cell in the form of pulsatory. This theory is called:

A. Physical force theories
B. Passive force theories
C. Vital force theories
D. Active force theories

53. Which one of the following plants store water in their parencymatous cells?

A. Succulent Plants
B. Angiosperms Plants
C. Gymnosperms Plants
D. Xerophytic Plants

54. Following are the characteristics of arteries except:

A. They are deep
B. They don't have valves
C. They have narrow lumen
D. They are thin walled

55. Hiroden anti-clotting factor is found in:

A. Leech
B. Earthworm
C. Wuchereria
D. Nereis

56. Tissue fluid don't contain:

A. WBC
B. Glucose
C. Amino acid
D. Fibrinogen

57. In examining of tail of a living goldfish with a microscope, the capillaries can best be found by looking for.

A. The small blood vessels in which there is a pulsating flow of blood
B. The blood vessels in which red blood corpuscles pass through in single file.
C. The blood vessels that contain elastic lamina
D. The blood vessels that contain no valves.

58. Which one of the following tissues contains cells, which are long, cylindrical have perforated end walls and some living contents, and cells which are either, relatively unspecialized, long and thin with dense cytoplasm, or possess lignified walls and no living contents?

A. Collenchyma
B. Phloem
C. Parenchyma
D. Xylem

59. Concerning the valves of the heart:

A. The mitral valve is tricuspid
B. The pulmonary valve closes just after systole
C. The semilunar valves guard the atrioventricular openings
D. The aortic valve opens during diastole

60. Regarding white blood cells

A. The have a regular disc - like shape
B. All types have lobed nuclei
C. The contain granules
D. They can be found outside blood vessels

61. The heart beat:

A. Is initiated in the AVN
B. Is slowed by the sympathetic nervous system
C. Is slowed by the parasympathetic nervous system
D. Propagated in the atria by Purkinje fibers.

62. The chemical structure of Insulin was studied by:

A. Avery
B. Sanger
C. Tantrum
D. Rutherford

63. The absorption of water and mineral coming in roots is controlled by

A. Root hairs
B. Root cambium

C. Endodermis
D. Spongy Mesophyll

64. The volume of blood in the average adult is:
A. 3 L
B. 4 L
C. 5 L
D. 7 L

65. Average diameter of capillaries is
A. 10 micrometers
B. 10 nanometers
C. 10 millimeters
D. 10 picometers

66. The normal pulse pressure is:
A. 20
B. 40
C. 30
D. 35

67. In sickle cell anemia, the amino acid glutamic acid of Hb is replaced by _____.
A. Glycine
B. Serine
C. Valine
D. Aspartic acid

68. A person with insufficient iron in his diet may become anemic because:
A. Not enough oxyhemoglobin is formed in the liver
B. Iron is used in building hemoglobin
C. Iron is used in making fibrinogen
D. Iron enhances blood production
E. Iron enhances oxygen uptake

69. The heart beat:
A. Is initiated in the AVN
B. Is slowed by the sympathetic nervous system
C. Is slowed by the parasympathetic nervous system
D. Propagated in the atria by Purkinje fibers
E. Is propagated through chordae tendinous

70. The chemical structure of Insulin was studied by:
A. Avery
B. Sanger
C. Tantrum
D. Rutherford
E. Mendel

71. Human insulin is a product of:
A. Biotechnology
B. Fermentation
C. Gene sequencing
D. Genetic Engineering
E. Transcription

72. Which one of the following is the major force involved in the ascent of water from the roots to the leaves of plants?
A. Root pressure
B. Active transport
C. Capillary action
D. Transpiration pull

73. Which of the following does not use its blood to carry oxygen?
A. Man
B. Fish
C. Grasshopper
D. Frog

74. The massive accumulation of blood with is a tissue is called as:
A. Haemorrhage
B. Haematoma
C. Hepatoma
D. Haemaccel
E. Haematemesis

75. Haemoglobin carries more oxygen than plasma by:
A. 50 times
B. 20 times
C. 70 times
D. 100 times
E. 200 times

76. The volume of blood which is pumped by the left ventricle into the systemic circuit in one minute is called _____.
A. Cardiac Output
B. Cardiac Input
C. Pulmonary Output
D. Pulmonary Input

77. Heart contraction is regulated by _____.

A. Pace maker
B. Sarcomere
C. Mitochondria
D. Myosin

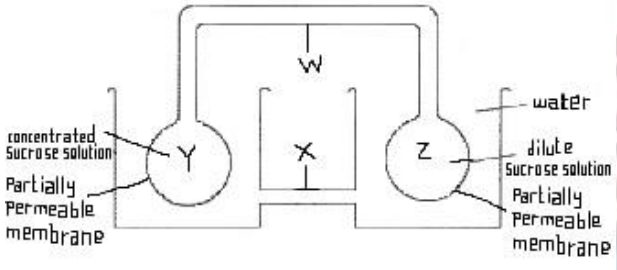
78. Lateral meristem are composed of _____ and phellogen tissues.

A. Phloem
B. Cambium
C. Xylem
D. Inter Xylem

79. Which valve action results from an increase in pressure in the ventricles of the heart?

A. The closing of all the heart valves
B. The closing of semi-lunar valves
C. The opening of the bicuspid valve
D. The opening of the semi-lunar valves
E. The opening of the tricuspid valve

80. The diagram shows a model to demonstrate the mass flow hypothesis of translocation.



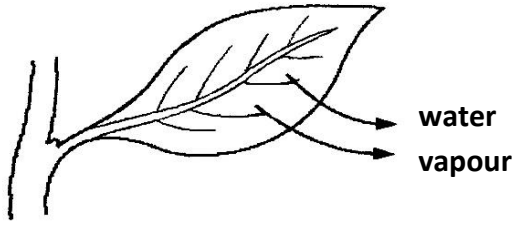
In a plant, what are the structures w, X, Y and z and what is the direction of flow of solution along W?

	Phloem	Xylem	Roots	Leaves	Direction of flow along W
A.	W	X	Y	Z	From Z to Y
B.	W	X	Z	Y	From Y to Z
C.	X	W	Y	Z	From Y to Z
D.	X	W	Z	Y	From Z to Y

81. In the human body, blood circulating from the gut to the heart passes through the:

A. Aorta
B. kidneys
A. C. Liver
C. lungs
D. spleen

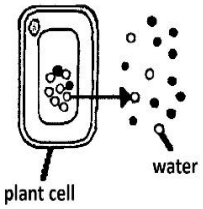
82. The diagram shows how water is lost from a leaf:



By which process is the water lost?

A. osmosis
B. photosynthesis
C. translocation
D. transpiration
E. transcription

83. Which diagram illustrates the process of active transport?

A.


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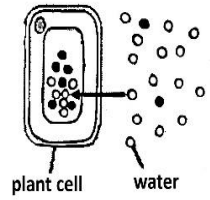

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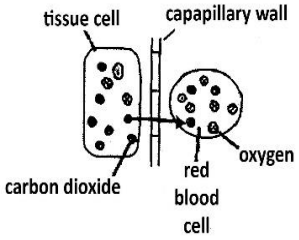

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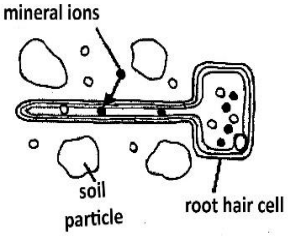


84. The table refers to blood vessels in the human body.

Vessel	blood carried		oxygenated/ deoxygenated
	from	to	
aorta	p	all organs except lungs	oxygenated
pulmonary vein	lungs	heart	Q
hepatic artery	aorta	R	oxygenated
hepatic portal vein	alimentary canal	liver	S

What are P, Q, R and S?

	P	Q	R	S
A.	**left ventricle**	**deoxygenated**	**Kidney**	**deoxygenated**
B.	**left ventricle**	**oxygenated**	**liver**	**deoxygenated**
C.	**right ventricle**	**deoxygenated**	**Kidney**	**oxygenated**
D.	**right ventricle**	**oxygenated**	**liver**	**oxygenated**

85. An example of passive acquired immunity is:

A. vaccination against smallpox
B. use of polio vaccine
C. passing of certain antibodies to the fetus by the pregnant woman
D. inoculation of antitoxin in case of a puncture wound
E. both C & D

86. Which of the following are found in both arteries and capillaries?

A. collagen fibers
B. elastic fibers
C. endothelial cells
D. smooth muscle cells

87. About 55% of the volume of human blood is:

A. plasma
B. blood proteins
C. blood cells
D. both B & C

88. Leukaemia is associated with increased number of _____ in blood.

A. Erythrocytes
B. Basophils
C. Eosinophils
D. Leucocytes

89. Pepsin works best at a pH of _____.

A. 1
B. 1.1
C. 1.3
D. 1.4

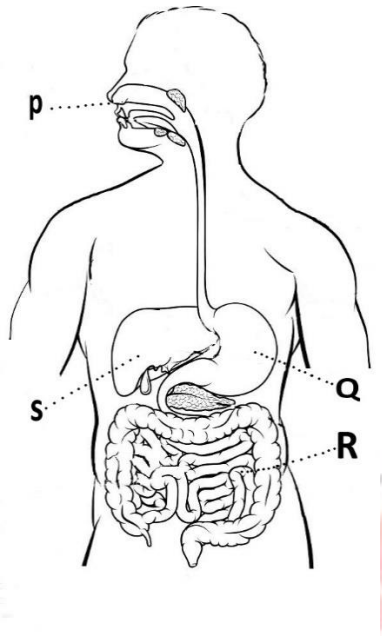
90. One type of congenital heart defect is called atrial septal defect (ASD) where the left and right atria are not completely separated. ASD usually result right atrium. This will cause increased blood pressure in the right atrium and decreased blood pressure in the left atrium. Which of the following rows describes the other effects of ASD on blood pressure and oxygenation?

	blood pressure in pulmonary artery	blood pressure in systemic aorta	% oxygenation of blood in pulmonary artery
A	**decreased**	**increased**	**decreased**
B	**decreased**	**increased**	**increased**
C	**increased**	**decreased**	**decreased**
D	**increased**	**decreased**	**increased**

91. The condition due to loss of appetite for food is termed as:

A. Anorexia nervosa
B. Bulimia nervosa
C. Colour blindness
D. Retarted growth

92. The diagram shows some of the organs of the human body.



In which organs does the digestion of carbohydrates take place?

A. P and Q
B. P and R
C. Q and R
D. Q and S

93. Which of the following are animals with pointed ends and a tube like digestive track?

A. Annelida
B. Arthropoda
C. Nematode
D. Mollusca

94. Movement of ions and large molecules with the help of protein molecules in and out of cell is called _____.

A. Diffusion
B. Facilitated diffusion
C. Passive transport
D. Osmosis

95. Five words are shown below:

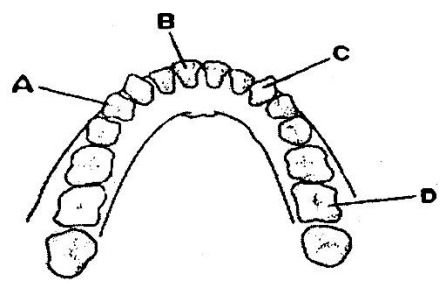
Labium Maxillae Labium Mandibles Antennae

These words can be used in the spaces P, Q, RS and T to complete the sentence below. Cockroaches are omnivorous and can eat any kind of organic matter. They search their food by their ...P.... Their digestive system is tubular, having a straight slightly coiled digestive tube opening at both the ends. Hence, the digestive system is complete. The mouth lies at the base of the pre-oral cavity which is bounded by the mouth parts ...Q... (Upper lip) ...R... (lower lip), mandibles and maxillae. The …S… pick up and bring food to the …T...for mastication.

Antennae Maxillae Labium Mandibles

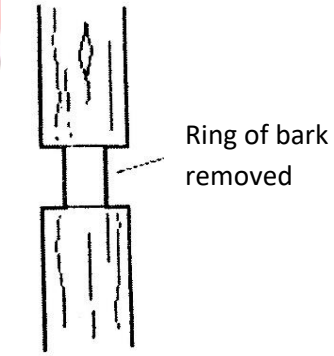
	Labrum	Antennae	Maxillae	Labium	Mandibles
A.	P	Q	R	S	T
B.	Q	P	S	R	T
C.	R	S	Q	P	T
D.	S	R	Q	T	P

96. The diagram shows the teeth of the lower jaw of a human. Which tooth is an incisor?



A. A
B. B
C. C
D. D

97. The diagram shows a tree trunk, with a ring of bark, which includes the phloem, removed.



The tree will eventually die because this action cuts off the supply of:

A. Mineral salts to the leaves.

B. Organic nutrients from the leaves.
C. Oxygen to the roots.
D. water to the leaves

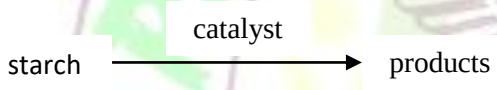
98. The table shows the characteristics of the blood in one blood vessel in the body.

oxygen concentration	carbon dioxide	pressure
high	low	high

Which blood vessel contains blood with these characteristics?

A. aorta
B. pulmonary artery
C. pulmonary vein
D. vena cava

99. The following reaction occurs in the human gastro-intestinal tract.



What are the catalyst and the product?

	Catalyst	Product
A.	acid	glucose
B.	alkali	energy
C.	amylase	maltose
D.	bile	amino acid

100. Atherosclerosis is disease of:

A. Immune system
B. Arterial wall
C. Venal wall
D. Lungs

101. Which of the following processes occur in the vascular tissue in leaves and in roots?

	In leaves	In roots
A.	A Sucrose enters phloem and is polymerized to starch	Water passes from phloem to xylem by osmosis
B.	Sucrose enters phloem by active transport and the water potential becomes more negative	Root pressure & transpiration pull are responsible for ascent of sap
C.	Water passes from phloem to xylem by osmosis, make the phloem water potential less negative	Active transport of water into the xylem makes the water potential more negative
D.	Water passes out of and phloem and is lost through transpiration	Active transport of salts into the pericycle makes the water potential there high

102. Which method of gaining immunity can be described as natural active immunity?

A. Feeding on colostrum
B. Inhaling the chicken pox virus
C. Injection with antibodies
D. Through the placenta

103. During ventricular systole:

A. Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary vein.
B. Oxygenated blood is pumped into the pulmonary artery and deoxygenated blood is pumped into the aorta.
C. Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary artery.
D. Oxygenated blood is pumped into the pulmonary artery and deoxygenated blood is pumped into the pulmonary vein.

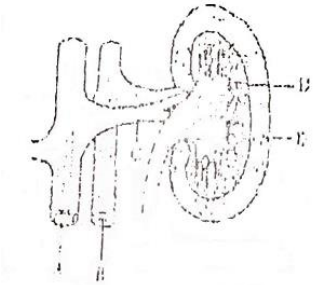
BOOK 2 MCQS

UNIT NO. (01)

1. Blood pressure in the glomerulus is _____ because diameter of efferent arteriole is _____ that of afferent arteriole.

A. low ... much less than
B. high ... much less than
C. low ... much greater than
D. high ... much greater than
E. normal ... is equal to

2. The diagram shows a section through a kidney and associated blood vessels.



In which area is there the greatest rate of movement of fluid from the blood through the walls of blood vessels?

A. A
B. B
C. C
D. D
E. E

3. Ultra-filtration of blood occurs in

A. Bowman's capsule
B. Proximal convoluted tubule
C. Distal tubule
D. Afferent arteriole
E. Efferent arteriole

4. Which of the following statement is correct?

A. Aldosterone is secreted by adrenal medulla
B. Parathormone is secreted by thyroid gland
C. Vasopressin is secreted by posterior pituitary gland
D. Aldosterone increases the reabsorption of potassium ions in the nephron
E. Parathormone increases the reabsorption of sodium ions in nephron

5. An animal cell and a plant cell are placed in distilled water. The animal cell swells and bursts, while the plant cell swells but does not burst. What accounts for this difference?

A. Animal cells have no cell wall.
B. Animal cells have no vacuole.
C. Plant cell surface membranes are partially permeable.
D. Plant cell walls are freely permeable.

6. Which one of the following structures is present in a human nephron?

A. Urethra
B. Ureter
C. Flame cell
D. Bowman's capsule
E. Malpighian tubule

7. Flame cells are the _____ organs in planaria.

A. Reproductive
B. Respiratory
C. Digestive
D. Locomotory
E. Excretory

8. All of the following are parts of a nephron except:

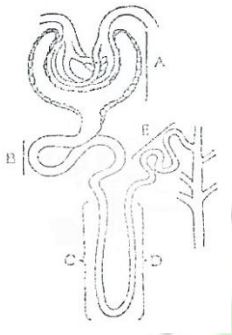
A. Bowman's capsule
B. Proximal convoluted tubule
C. Loop of henle
D. Glomerulus
E. Glottis

9. Of the following, which one best describes phenylketonuria?

A. a vitamin deficiency resulting in abnormal metabolism of proteins

B. an inherited metabolic disorder resulting in a lack of an enzyme
C. a mineral deficiency resulting in abnormal bone formation
D. an abnormal shape in red blood cells
E. a chronic disease of unknown causes

10. The diagram shows a nephron of the mammalian kidney. Which labeled region is mainly responsible for active reabsorption of blood?



A. A
B. B
C. C
D. D
E. E

11. Method in which ultrasonic waves are used to break up calculi is called:

A. Kidney transplant
A. 3. Hemodialysis
B. Lithotripsy
C. Peritoneal dialysis
D. Artificial pacemaker

12. The tube that brings urine from the kidneys to the bladder is the

A. Urethra
B. Ureter
C. Uterus
D. Eustachian tube
E. Bile duct

13. Excretory system of grasshopper consists of:

A. Naphridia
B. Flame cells
C. Malpighian tubules
D. Kidneys

14. The major metabolic factory, detoxification center and storage organ of body is:

A. Stomach
B. Brain
C. Kidney
D. Liver

15. Hemoglobin is:

A. Respiratory pigment
B. Excretory pigment
C. Digestive pigment
D. Storage pigment

16. The excretory organs in insects are:

A. Flame cell
B. Malpighian tubules
C. Contractile vacuoles
D. Kidneys

17. The kidney does not perform the function of:

A. Regulation of blood pressure
B. Secretion of bile
C. Regulation of pH
D. Homeostasis

18. The protoplasm is shrinked in the solution of:

A. Normal saline solution
B. Isotonic solution
C. Hypotonic solution
D. Hypertonic solution

19. Human liver secretes _____.

A. Bile
B. Pepsin
C. Vit D
D. Cholecystokinin

20. In earthworm the absorptive ridge which runs along the dorsal side of intestine is

A. Villi
B. Typhlosole
C. Vessel
D. None

21. The pressure which cell contents exert on cell wall:

A. Turgor pressure
B. Wall pressure

C. Suction pressure
D. Osmotic pressure

22. The internal maintenance in human:
A. Homeostasis
B. Polyploidy
C. Excretion
D. Epistaxis

23. The ability of cell to swell after absorption of H_2O:
A. Inhibition
B. Deplasmolysis
C. Guttation
D. Transpiration

24. Which of the following is not a requirement for seed germination?
A. Oxygen
B. Water
C. Abscisic Acid
D. Temperature

25. The chemical formula of Uric acid is:
A. $(NH_2)_2CO$
B. $NH_2.CO.NH_2$
C. $C_5O_3N_4H_4$
D. $C_6O_4N_2H_2$

26. Which secretion neutralizes the acidity of urethra?
A. Urine
B. Testosterone
C. Sperms
D. Semens

27. Renal vessels leave kidney at:
A. Hypocotyl
B. Hilus
C. Vasa Recta
D. Pyramids

28. Urine contains urea in a concentration of about:
A. 95%
B. 0.3 - 0.7%
C. 2%
D. 5%

29. Sliding filament theory of muscle contraction was given by:
A. Rudolf Virchow
B. Sheldon & Schwann
C. Huxley
D. Robert Brown

30. The process of Hemodialysis takes about:
A. 1-2 hrs
B. 24 hrs
C. 6 -10 hrs
D. More than 24 hrs

31. What is the connection b/w Renal pelvis & urinary bladder?
A. Pyramids of medulla
B. Renal vessels
C. Ureter
D. Urethra

32. The following are all functions of the liver except
A. Detoxification of drugs
B. Excretion of urea
C. Bile production
D. Storage of vitamins

33. Turgor movements are:
A. Irreversible
B. Reversible
C. Unidirectional
D. all of the above

34. Protonephridia:
A. are the excretory organs of earthworms
B. are open at both ends
C. is surrounded by blood capillaries
D. are made up of flame-cells bathed in tissue fluid

35. Plasmolysis of ceil occurs in which environment:
A. Hypotonic
B. Hypertonic
C. Isotonic
D. Hypo osmotic

36. During hot temperature, for thermoregulation the muscle arrector pili of skin:

A. Contracts
B. Relaxes
C. Neither contract nor relax
D. None of the above

37. Radiotherapy and chemotherapy is used in;
A. Cancer
B. AIDS
C. HIV
D. All of them

38. Which of the following is an excretory product?
A. Mucus
B. Carbon
C. Farces
D. Sweat

39. A red blood cell neither swells nor shrivels in blood plasma. This statement signifies that blood plasma is;
A. An isotonic solution
B. A hypertonic solution
C. A hypotonic solution
D. 95% water

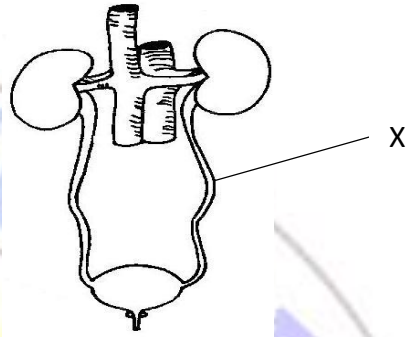
40. Deamination in the liver initially produces:
A. ammonia
B. arginine
C. ornithine
D. urea
E. uric acid

41. Malpighian tubules are involved in excretion in:
A. Cockroach
B. Earthworm
C. Human
D. Planaria
E. Hydra

42. The disease in which patients passed urine that rapidly turned exposure to air is called:
A. Phenylketonuria
B. Alkaptonuria
C. Sickle cell anaemia
D. Hemophilia
E. Anuria

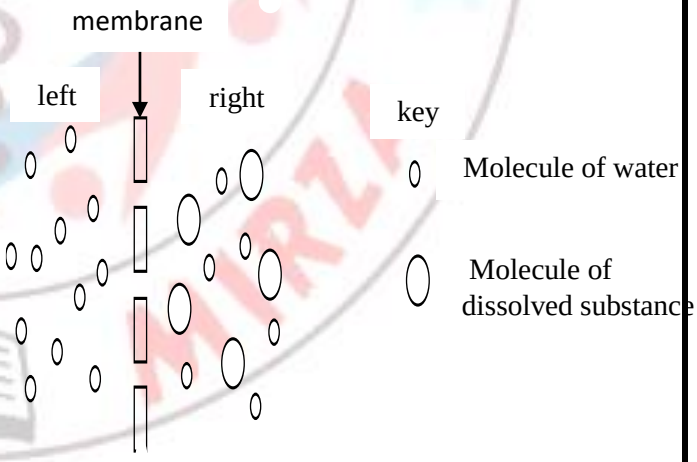
43. The urine contains _____ urea.
A. 1%
B. 2%
C. 3%
D. 4%

44. The diagram shows the human urinary system.



Which substance is not found in the liquid at X in a healthy person?
A. glucose
B. salt
C. toxins
D. water

45. The diagram represents two liquids, separated by a membrane through which osmosis can occur.



What movement of molecules will occur?
A. Molecules of dissolved substance move from left to right.
B. Molecules of dissolved substance move from right to left.
C. Overall, water molecules move from left to right.
D. Overall, water molecules move from right to left.

E. None of the above

46. The site and principle mechanism for the passage of glucose into the bloodstream in the human kidney is the:

A. collecting duct ... by active secretion
B. distal convoluted tubule ... by passive diffusion
C. glomerulus ... by selective reabsorption
D. glomerulus ... by ultrafiltration

	blood vessels in the surface of skin	sweat production
A.	**constrict**	**decreases**
B.	**constrict**	**increases**
C.	**dilate**	**decreases**
D.	**dilate**	**increases**

E. proximal convoluted tubule ... by active reabsorption

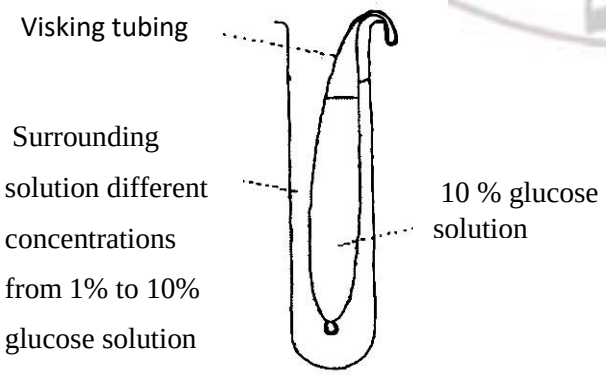
47. Urine formation is the result of:

A. ultra-filtration
B. reabsorption
C. tubular secretion
D. all of the above

48. The condition of a stable internal environment in an organism is:

A. coordination
B. organization
C. homeostasis
D. integration

49. The diagram shows apparatus set up to investigate the effect of changing the concentration of glucose in the surrounding solution on the movement of molecules through a selectively permeable membrane (Visking tubing) in 15 minutes.



As the concentration of glucose solution in the surrounding solution increases, which of the following statements are correct?
I. Net diffusion of water increases.
II. Glucose molecules reach an equilibrium quicker.
III. There is less change in the volume of surrounding solution
IV. Net diffusion of glucose increases.

A. I, II, III and IV
B. I, II and IV only
C. I and III only
D. II and III Only

50. Which of the following correctly describes the thermoregulation in hot temperature?

51. In an isotonic solution there would be:

A. No net movement of water
B. Net movement of water into the cell
C. Net movement of water out of the cell
D. Bursting of the cell

52. The tendency of a solution to take up water when separated from pure water by a selectively permeable membrane is called:

A. Osmotic pressure
B. Turgor potential
C. Diffusion pressure deficit
D. Water potential

53. The components of feedback mechanism are

A. Receptors, Insulators, Effectors
B. Receptors, Suppressors, Effectors
C. Receptors, Control Centre, Effectors
D. Receptors, Depressors, Effectors

UNIT NO. (02)

1. The action of the roots of a tree in growing into a drain pipe is an example of:

A. positive hydrotropism
B. negative hydrotropism
C. positive geotropism
D. negative geotropism
E. negative phototropism

2. The bones at joints are held together by a tissue, the

A. Tendons

B. Connective tissue
C. Joints
D. Ligaments

3. Which of the following statements about skeletal muscle tissue is true?

A. In the muscle fiber, action is the thick filament. B. The sarcoplasmic reticulum stores Ca^{2+} within a muscle cell.
B. In a muscles fiber, myosin is the thin filament.
C. Contraction of a muscle fiber can occur in the absence of Ca^{2+}.

4. A muscle that bends a joint is termed as:

A. flexor
B. insertion
C. tonus
D. diastole
E. extensor

5. The movement of plants in response to touch stimulus is called:

A. hydrotropism
B. chemotropism
C. geotropism
D. thigmotropism
E. Phototropism

6. The number of muscles in a human body is about:

A. 200
B. 300
C. 400
D. 500
E. 600

7. The total number of bones in a human's skeleton is

A. 207
B. 206
C. 208
D. 205
E. 203

8. Each myosin filament is surrounded by:

A. 4 thin filaments
B. 6 thin filaments
C. 8 thin filaments
D. 12 thin filaments
E. 14 thin filaments

9. What is the correct sequence of the bones in the arm of a mammal, from the hand to the shoulder?

Hand → shoulder

A. A. humerus radius scapula
B. B. humerus scapula radius
C. C. radius humerus scapula
D. D. scapula radius humerus

10. Identify the bones in which the connecting joints are immovable:

A. Phalanges
B. Wrist
C. Arm
D. Skull bones

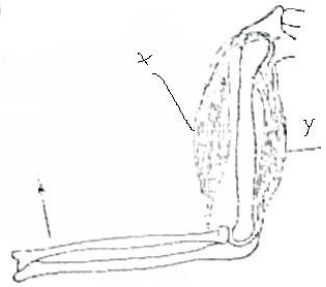
11. Which one of the fallowing is not true?

A. The joints of elbow & knee are hinge joints
B. The joint cavity is fitted with lubricating synovial fluid
C. Bones of the skull are connected through fixed joints
D. Hips & shoulder joints are the example of ball and socket joints
E. Cells of bones are called osteoblasts

12. The number of tarsals and metatarsals in human feet are:

A. 14 and 10
B. 16 and 10
C. 14 and 16
D. 28 and 14
E. 28 and 16

13. The diagram shows the bones and muscles of the upper-arm.



What must happen for the bones in the lower arm to move in the direction of the arrow?

A. Muscle X contracts and muscle Y contracts.
B. Muscle X contracts and muscle Y relaxes.
C. Muscle X relaxes and muscle Y contracts.
D. Muscle X relaxes and muscle Y relaxes.

14. Select the correct statement:
A. The ankle has seven tarsals
B. Wrist contains nine small carpel bones
C. Fibula is the bone of thigh
D. Four metatarsals are present in the sole

15. Which bones meet at the elbow joint and what kind of movement do they allow?

	Bones	Movement
A.	humerus and scapula	in one plane only
B.	humerus and scapula	in three planes
C.	ulna and humerus	in one plane only
D.	ulna and humerus	in three planes

16. When the knee moves back and forth as a person walls, what keeps the surfaces of the leg bones from rubbing against each other?
A. The articular cartilage
B. The bone marrow
C. The periosteum
D. A sheath of smooth muscle
E. Ligaments

17. Obesity, muscle wasting, hypertension and diabetes are the characteristics of:
A. Addison's disease
B. Turner's syndrome
C. Cushing's syndrome
D. Sickle cell anemia
E. Huntington's disease

18. Identify the bones in which the connecting joints are immovable:
A. Phalanges
B. Wrist
C. Arm
D. Leg
E. Skull bones

19. Creatine Phosphate serves as muscle's reserve of high energy phosphate by providing _____.
A. Nerve impulses
B. Acetyl chlorine
C. ATPs
D. Calcium ions
E. Lactic acid

20. Five hip vertebrae fuse together to make:
A. coccyx
B. sacrum
C. phalanges
D. cranium
E. femur

21. How many bones are present in the wrist?
A. Four bones
B. Six bones
C. Eight bones
D. Ten bones
E. Many bones

22. Identify the correct statement:
A. Protractor and retractor muscles move the arm away from the body and towards the body.
B. Abductor and adductor muscles move the arm in forward and backward direction
A. C. When biceps contract, elbow opens straight
C. When triceps contract, elbow bends
D. None of the above

23. The correct order of arrangement, in terms of increasing complexity, of the following is
I. organ
II. cell
III. tissue
IV. organism
V. system
A. II-I-III-IV-V
B. II-III-IV-I-V
C. II-III-I-IV-V
D. II-III-IV-V-I
E. II-III-I-V-IV

24. The contraction of a muscle depends upon
I. Nerve impulse
II. Energy
III. Calcium ions
A. I only
B. II only

C. I and III only
D. II & III only
E. I, II & III

25. Human cells maintain concentration gradients across their plasma membranes, such that there is a high sodium concentration outside the cell and a high potassium concentration inside the cell. Suppose that within the cell membrane are sodium "leak" channels. These channels would allow sodium to

A. move out of the cell by simple diffusion
B. move into the cell by simple diffusion
C. move out of the cell by facilitated diffusion
D. move into the cell by facilitated diffusion
E. move into the cell by active transport

26. The following sequence of events occurs at the neuromuscular junction.
nerve impulse → release of V → end plate potential → W produced in muscle fibre → X released from sarcoplasmic reticulum → formation of Y → muscle contraction
Which one of the following shows the correct sequence from V - Y?

	V	W	X	Y
A	acetylcholine	action potential	calcium ions	actomyosin
B	acetylcholine	action potential	actomyosin	calcium ions
C	actomyosin	acetylcholine	calcium ions	action potential
D	calcium ions	action potential	acetylcholine	actomyosin
E	calcium ions	actomyosin	acetylcholine	action potential

27. Which bones meet at the elbow joint and what kind of movement do they allow?

	BONES	MOVEMENT
A.	Humerus and scapula	Sliding
B.	Humerus and scapula	Back and forth
C.	Ulna and humerus	Sliding
D.	Ulna and humerus	Back and forth

28. Human cells maintain concentration gradients across their plasma membranes, such that there is a high sodium concentration outside the cell and a high potassium concentration inside the cell. Suppose that within the cell membrane are sodium "leak" channels. These channels would allow sodium to

A. move out of the cell by simple diffusion
B. move into the cell by simple diffusion
C. move out of the cell by facilitated diffusion
D. move into the cell by facilitated diffusion
E. move into the cell by active transport

29. Myofibrils:

A. Are found in smooth muscles
B. Are the smallest fibers that make up a muscle?
C. Are crossed by transverse Y-Bands
D. Cannot contract

30. Vertebral column is the part of _____ skeleton.

A. Axial
B. Appendicular
C. Exoskeleton
D. Hydrostatic

31. _____ Muscle pulls the limb outward away from the body.

A. Adductor
B. Protractor
C. Abductor
D. Extensor

32. The dark band in muscle fibers are due to:

A. Actin
B. Myosin & Actin
C. Tropomyosin
D. I – band

33. Growth of pollen tube towards ovary is an example of _____ movement.

A. Phototropic
B. Chemotactic
C. Sensory
D. Mechanical

34. Locomotion by pseudopodium is found in:

A. Amoeba
B. Chlamydomonas
C. Ciliates

D. Euglena

35. An automatic, preprogrammed and genetically inherited behavior is:

A. Learning
B. Instinctive
C. Parental
D. Genetical

36. The muscles which rotate the whole or part of limb at one of its joint:

A. Protractor
B. Retractor
C. Rotractor
D. Rotator

37. Positive geotropism by the:

A. Root
B. Stem
C. Leave
D. Flower

38. _____ movement is due to touch response:

A. Thermonastic
B. Photonastic
C. Seisnmonastic
D. Thigmotropism

39. Which one of the following is voluntary muscle?

A. Biceps
B. Cardiac
C. C. Stomach
D. Vessels

40. Ring Worm is caused by:

A. Bacteria
B. Virus
C. C. Neutrophils
D. Fungus

41. Formation of annual ring is the result of the activity of:

A. Cork Cambium
B. Cork Cambium and Vascular cambium
C. Intercalary meristem
D. lateral cabium

42. Lacteals requires which muscle to flow:

A. Unstriated and involuntary
B. Striated and voluntary
C. Striated and involuntary
D. Unstriated and voluntary

43. How many metacarpal bones are present in a lower limb of a human being?

A. 5
B. 7
C. 2
D. None of these

44. Cardiac muscles are:

A. Involuntary & Untreated
B. Voluntary striated
C. Involuntary & Striated
D. Skeletal muscles

45. The example of gliding joints is:

A. Ankle & Wrist
B. Ribs
C. Vertebrae
D. Ball & Socket joint

46. The intra muscular injection at hip should be injected in:

A. Inner & lower quadrant
B. Outer & upper quadrant
C. Sciatic nerve
D. Iliac vein

47. Abductor muscular allow the arm to move:

A. Towards the body
B. Away from the body
C. Upwards
D. Downwards

48. The physiological or functional contact between two neurons is called:

A. Neuroglia
B. Action potential
C. Synapse
D. RMR

49. All are the bones of axial skeleton except

A. Scapula
B. Sternum
C. Ribs
D. Vertebrae

50. An increase in the diameter of an oak tree is due to

A. Bark
B. Lenticel
C. Cambium
D. Annual rings

51. The lower jaw is supported by a single bone called _____:

A. Maxilla
B. Dentary
C. Cranium
D. Clavicle

52. Secondary growth results from activity of which meristem

A. Apical
B. Intercalary
C. Lateral
D. All of the above

53. An action potential in a muscle fiber causes the release of Ca^{++} from:

A. Actin
B. Myosin
C. Sarcolemma
D. Sarcoplasmic reticulum
E. Golgi bodies

54. The muscles attached to the bones are:

A. voluntary and smooth
B. Involuntary and smooth
C. Voluntary and striated
D. Involuntary and striated
E. Smooth and striated

55. Identify the incorrect statement from the following:

A. Apical growth increases the length of stems and roots
B. Xylem is situated on the outer side of the cambium ring and the phloem on the inner side
C. Secondary growth increases the diameter of stems an root
D. The cells in elongation phase don't divide
E. The cells in formative regions are closely packed together

56. The causes of cyanosis include:

A. deficiency of vitamin C
B. varicella zoster virus
C. degeneration of the cartilage of joints
D. ventricular septum defect
E. None of the above

57. Which of the following bones are present in the palm of hand?

A. Carpals
B. metacarpals
C. Phalanges
D. Tarsal
E. Radius

58. Growth movement caused in response to gravitational stimulus is called:

A. Nutation
B. Geotropism
C. Nastic movement
D. Tropic movement
E. Turgor movement

59. Bones of the skull are joined by:

A. Fixed joints
B. Sliding joints
C. Pivot joints
D. Hinge joints
E. Gliding joints

60. The endoskeleton is made up of _____ and _____.

A. Bones and cartilages
B. Muscles and Tissues
C. Actin, Myosin
D. None

61. The disease in which bones remain soft and get deformed is called _____.

A. Goiter
B. Anaemia
C. Rickets
D. Haemophilia

62. The movement in plants is of two types' _____ and _____.

A. Autonomic, paratonic
B. Primary, Secondary

C. Free, Fixed
D. Parietal, regular

63. The movement of plants in response to touch stimulus is called:

A. hydrotropism
B. chemotropism
C. geotropism
D. thigmotropism
E. phototropism

64. The number of muscles in a human body is about:

A. 200
B. 300
C. 400
D. 500
E. 600

65. When a physician elicits the knee-jerk reflex by tapping deep tendons in the knee, the normal response is for the leer leg to swing forward. When this happens:

A. Muscles in the front of the thigh are contracting and muscles in the back of the thigh are relaxing
B. Muscles in the front of the lower leg are contracting and muscles in the back of the lower leg are relaxing
C. Muscles in the back of the thigh are contracting and muscles in the front of the thigh are relaxing
D. Muscles in the back of the lower leg are contracting and muscles in the front of the lower leg are relaxing
E. None of the above

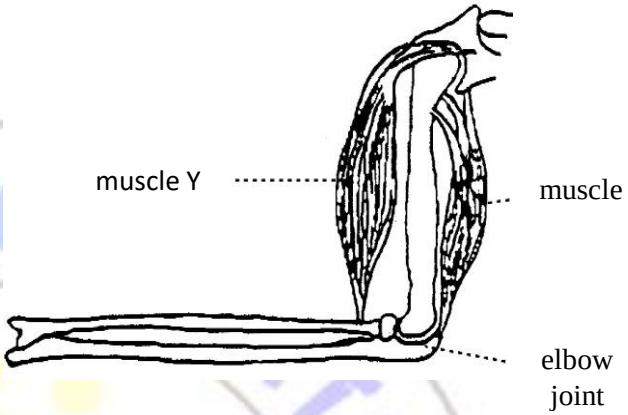
66. How many metacarpals are present in the hand?

A. 4
B. 3
C. 6
D. 5
E. 8

67. Joints found at the vertebrae are:

A. gliding joints
B. sliding joints
C. partially moveable joints
A. Did. fixed joints
D. pivot joints

68. The diagram shows some of the muscles and bones of the human arm.



When muscle X contracts, what happens to the arm and what happens to muscle Y?

	arm	muscle Y
A.	bends	contracts
B.	bends	relaxes
D.	straightens	relaxes
C.	straightens	contracts

69. Identify the bones in which the connecting joints are freely moveable joints:

A. Ankle
B. Wrist
C. Vertebrae
D. Elbow
E. All of the above

70. The phytohormones controlling the plant movement is/are:

A. Auxins
B. Gibberellins
C. Abscisic acid
D. Cytokinin
E. All of the above

71. Nutritional deficiency (vitamin D deficiency) results in softening of the bones. This disease is called:

A. Rickets
B. Cleft palate
C. Microcephaly
D. Down's syndrome

72. Hinge-joint occurs in:

A. elbow
B. wrist
C. ankle
D. back bone

73. The radius and ulna join at the wrist with the _____ small carpal bones.

A. 4
B. 6
C. 7
D. 8

74. Which of the following statements describe sliding joints?
I. These joints allow bone to slide over another bone to make movement in many directions
II. Vertebrae are linked by sliding joints
III. These joints don't allow the joining bones to move
IV. Bones of ankle or wrist are connected by sliding joints

A. I only
B. I & II only
C. I & III only
D. I &IV only
E. I, II, III & IV

UNIT NO. (03)

1. When a sensory receptor receives a threshold stimulus, it will do all of the following EXCEPT:

A. become depolarized
B. transduce the stimulus to an action potential
C. inhibit the spread of the action potential to sensory neurons
D. cause the sensory neurons to send action potentials to the central nervous system
E. none of the above

2. All of the following are true about the endocrine system EXCEPT

A. It relies on chemical messenger that travel through the bloodstream
B. It is a control system that has extremely rapid effects on the body
C. The hormones affect only certain "target" organs
D. It is involved in maintaining body homeostasis
E. Its organs secrete hormones directly into the bloodstream rather than through dusts

3. The hormone progesterone

A. Stimulates follicle growth
B. Stimulates FSH production
C. Is solely responsible for the development of secondary sex characteristics
D. Is produced by the anterior pituitary
E. Prepares the uterus for implantation

4. The structural and functional unit of nervous system is

A. Neuron
B. Nerve
C. Receptor
D. Effector
E. Axon

5. The concentration of Na ions in the body fluids is controlled by _____ hormone.

A. ADH
B. parathormone
C. aldosterone
D. estrogen
E. thyroxin

6. The largest gland of the body is:

A. Pancreas
B. Liver
C. Pituitary gland
D. Thyroid gland
E. Parathyroid gland

7. Blinking of eye is an example of:

A. taxes
B. reflex
C. learning
D. insight learning
E. imprinting

8. Hyperthyroidism is always associated with

A. low blood pressure

B. severely diminished mental activity
C. low metabolic rate
D. low body temperature
E. increased heart rate

9. In a reflex arc:
A. the sensory neuron synapses directly with the motor neuron
B. sensory and motor neuron can synapse outside of the spinal cord
C. sensory neurons synapse in the brain
D. the motor response occurs without synaptic delay
E. a minimum of three neurons must participate

10. Which of the following associations of brain structure and function is false?
A. hypothalamus: appetite
B. cerebellum: motor coordination
C. cerebral cortex: higher intellectual function
D. medulla: basic emotional drives

11. Pick the odd one out:
A. Aorta
B. Arteries
C. Capillaries
D. Veins
E. Nephron

12. _____ are responsible for secondary sexual characters in male.
A. Cortisol
B. Androgens
C. Thyroid glands
D. Glucagon
E. Aldosterone

13. The strong contractions of uterus muscles are controlled by a hormone called _____.
A. Cortisol
B. Progesterone
C. Insulin
D. Testosterone
E. Oxytocin

14. The antidiuretic hormone is released from:
A. Hypothalamus
B. Anterior pituitary lobe
C. Thalamus
D. The posterior pituitary lobe
E. Medulla oblongata

15. The phytohormones controlling the plant movement are:
A. Auxins
B. Gibberellins
C. Abscisic acid
D. Cytokinin
E. All of the above

16. The region where the impulse moves is called synapse. It consists of:
A. The axon terminals, synaptic cleft & the dendrite of other neuron
B. Sensory neuron, motor neuron & axon
C. Myelinated & unmyelinated neurons
D. Soma & Nissl substance
E. None of the above

17. Which of the following pairings is correct?
A. Sensory nerves ... afferent nerve pathway
B. Motor nerves ... efferent nerve pathway
C. Motor nerves ... afferent nerve pathway
D. Sensory nerves ... efferent nerve pathway
E. Both A & B

18. Which of the following associations between the hormone and its role is FALSE?
A. Estrogen-development of secondary sexual characteristics
B. Progesterone-development and maintenance of endometrial walls
C. LH-stimulate ovulation
D. FSH-formation of the ovarian follicles into the corpus luteum

19. Which part of the central nervous system controls the body's water balance?
A. cerebellum
B. cerebrum
C. hypothalamus
D. medulla

20. Adrenal gland is located:
A. At the side of the kidney
B. On the top of each kidney

C. On lower side of the liver
D. At the end of the pancreas
E. Near the gall bladder

21. _____ are the cells that separate neurons from each other and form myelin sheath.

A. Soma
B. Axon
C. Inter neurons
D. GIial cells
E. Nissl substance

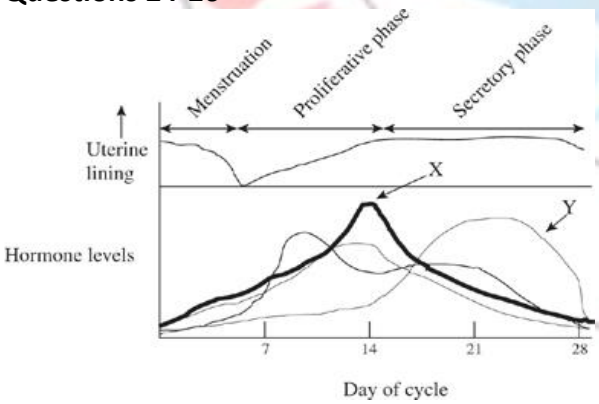
22. _____ pairs of cranial nerves and _____ pairs of spinal nerve constitute peripheral Nervous system in man.

A. 6 ... 2
B. 12 ... 24
C. 24 ... 12
D. 31 ... 12
E. 12 ... 31

23. A nerve cell that receives stimuli from the outside is known as a (n):

A. Motor neuron
B. Sensory neuron
C. Efferent neuron
D. Interneuron
E. Ganglion

Questions 24-26



24. The hormone labeled X in the diagram is often used in over -the- counter diagnostic tests to determine when ovulation has occurred. This hormone is:

A. estrogen
B. progesterone
C. FSH
D. LH
E. Testosterone

25. Based on the peak levels of hormone X, on what day of the cycle is ovulation most likely to occur?

A. Day 21
B. Day 14
C. Day 12
D. Day 25
E. Day 28

26. The hormone labeled Y in the diagram is:

A. progesterone, secreted by the corpus luteum after ovulation has occurred
B. progesterone, secreted by the ovary after ovulation has occurred
C. estrogen, secreted by the corpus luteum after ovulation has occurred
D. estrogen, secreted by the ovary after ovulation has occurred
E. estrogen, secreted by the follicle before ovulation occurs

27. The pituitary gland secretes of the following except:

A. Growth hormone
B. Calcitonin
C. Prolactin
D. Oxytocin

28. Thyroid stimulating hormone levels:

A. Would be raised in a person with hyperthyroidism
B. Would be low in patients with hypothyroidism
C. Would be low in patient with hypothyroidism
D. Would be unaffected in hypothyroidism

29. Retina contains light sensitive receptor cells called:

A. Rods
B. Cones
C. Both rods and cones
D. Optic nerves

30. Removal of the thyroid gland in an adult would cause an increase in:

A. BMR

B. Conversion of glycogen to glucose
C. Excretion of Na+ from the kidney
D. Secretion of TSH

31. An action potential in a muscle fiber causes the release of calcium ions from
A. Actin
B. Myosin
C. Sarcolemma
D. Sarcoplasmic reticulum

32. The motor nerve cell transmits impulses from
A. The effector organ to the spinal cord
B. Receptor cells to the spinal cord
C. Receptor cells to the effector organ
D. Spinal cord to the effector organ

33. Removal of the thyroid gland in an adult would cause an increase in,
A. Basal metabolic rate
B. Conversion of glycogen to glucose
C. Excretion of Na+ from the kidney
D. Secretion of TSH

34. The active visual receptor of the eye are:
A. Iris & Pupil
B. Iris & Lens
C. Rods & Cones
D. Cornea & Retina

35. The natural clock in the human body:
A. Pineal body
B. Medulla
C. Pons
D. Cerebellum

36. The forebrain is divisible into two components:
A. Cerebellum and Cerebral hemisphere
B. Medulla and Pons
C. Telencephalon and Diencephalons
D. Telencephalon and Medulla

37. Sugar level in blood is maintained by:
A. Liver
B. Kidney
C. Adrenal gland
D. Islet of Langerhans

38. Under secretion of thyroxine in infants causes _____.
A. Cretinism
B. Dwarfism
C. Gigantism
D. Osteoporosis

39. Rods and cones (photoreceptor cells) are present in
A. Iris
B. Pupil
C. Cornea
D. Retina

40. Adrenal glands are found adjacent to:
A. Kidney
B. Heart
C. Lungs
D. Liver

41. Sensors that receive stimulus:
A. Receptor
B. Neuron
C. Effector
D. All of the above

42. Which of the following is not a reflex action?
A. Eye blink
B. Knee jerk
C. An animal salivating spontaneously as the bell rings without given food
D. Watering of mouth at the sight of food

43. When your hand touches the hot body, which path is taken by stimulus to withdraw your hand?
A. Sensory Neurons → Spinal Cord → Brain → Muscle.
B. Sensory Neurons → Spinal Cord → Muscle
C. Sensory Neurons → Brain → Spinal Cord → motor Neuron
D. Hot Object → Spinal Cord → Hand

44. The phytohormone responsible for Fruit development, bud sprouting, development of pollen tube and parthenocarpy is:

A. Oxin
B. Gibberellin
C. Cytokine
D. Thailomycın

45. Forgetfulness, loss of memory and losing track of even the most familiar places are the progressive characteristics of which disease:
A. Huntington's Disease
B. Parkison's disease
C. Alzheimer's Disease
D. Caposi's Sarcoma

46. Which is associated with long term memory.
A. Hippocampus
B. Hypothalamus
C. Brain Stem
D. Pons

47. Pituitary gland is controlled by which of the following:
A. Adrenal Cortex
B. ACTH
C. Hypothalamus
D. Cytoxan

48. The largest part of fore brain is
A. Diencephalons
B. Corpus callosum
C. Telencephalon
D. Cerebrum

49. The physiological or functional contact between two neurons is called:
E. Neuroglia
F. Action potential
G. Synapse
H. RMR

50. The automatic nervous system controls:
A. Sight
B. Thinking
C. Digestion
D. Memory

51. The disease caused by lack of ADH is
A. Diabetes Mellitus
B. Acromegaly
C. Diabetic Insipidus
D. Cushing's disease

52. Neurons.
A. Unipolar types are not found in invertebrates
B. Pseudo unipolar have 2 cell bodies
C. Bipolar have 2 cell bodies
D. Multipolar have multiple Dendron's

53. Thirst center is found in the:
A. Pharynx
B. Medulla
C. Hypothalamus
D. Pineal gland

54. Which of the following are common to all neurons?
A. A cell body which contains a nucleus
B. A thick myelin heath
C. Presence of nodes of Ranvier
D. Several long axons

55. Which of the following is not true? A rise in Adrenaline concentration causes:
A. The liver to change more glucose to glycogen
B. Increases the rate of respiration
C. The muscles to go tense
D. The heart to beat faster

56. Retina contains color sensitive receptors called:
A. Rods
B. Cones
C. Both rods and cones
D. Optic nerves

57. Polar bodies are formed during:
A. Phototropism
B. Oogenesis
C. Spermatogenesis
D. Fertilization

58. The pairing of homologous chromosomes is called
A. Meiosis
B. Synapsis
C. Spermatogenesis
D. Crossing over

59. Pancreatic juice is secreted by pancreas under the stimulation of which hormone

A. Gastrin
B. Secretin
C. Renin
D. Insulin

60. The dorsal root of spinal nerve is:

A. Sensory
B. Motor
C. Mixed
D. None of the above

61. Myxedema in elder is caused by:

A. Hyperthyroidism
B. Hypothyroidism
C. Not related to any condition
D. Both a and b

62. The automatic nervous system controls:

A. Sight
B. Thinking
C. Digestion
D. Memory
E. Movement

63. The disease caused by lack of ADH is:

A. Diabetes Mellitus
B. Acromegaly
C. Diabetic Insipidus
D. Cushing's disease
E. Addison's disease

64. Thyroid stimulating hormone levels:

A. Would be raised in a person with hyperthyroidism
B. Would be low in patients with hypothyroidism
C. Would be high in patient with hypothyroidism
D. Would be unaffected in hypothyroidism
E. None of the above

65. The pituitary gland secretes of the following except:

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67. Removal of the thyroid gland in an adult would cause an increase in:

A. BMR
B. Conversion of glycogen to glucose
C. Excretion of Na from the kidney
D. Secretion of TSH

68. A typical neuron at rest is more _____ electrically outside.

A. Positive
B. Negative
C. Neutral
D. None of them

69. Goiter is a disease caused by deficiency of;

A. Iron
B. Calcium
C. Iodine
D. Chorine

70. The prolactin hormone responsible for the activation of mammary glands to start producing milk is a hormone of:

A. Pituitary gland
B. Pancreas
C. Thyroid gland C
D. Thymus gland
E. Adrenal gland

71. Deficient production of hormones by adrenal glands results in:

A. Cushing's syndrome
B. Addison's disease
C. Diabetes Mellitus
D. Goiter
E. Epilepsy

72. The loose connection between two neurons is called _____.

A. Axon

B. Dendrite
C. Synapse
D. Cell Body

73. The plasma membrane of neuron is called _____.

A. Neurilemma
B. Neurolaena
C. Neuronite
D. Neuromelanin

74. The gas hormone which helps in rapid ripening of fruit is called _____.

A. Auxin
B. Cytokinin
C. Ethene
D. Abscisic acid

75. The concentration of Na ions in the body fluids is controlled by _____ hormone.

A. ADH
B. parathormone
C. aldosterone
D. estrogen
E. thyroxin

76. The region where the impulse moves from one neuron to another is called _____.

A. Axon
B. Dendrites
C. Synapse
D. Thalamus
E. Cerebellum

77. Four events in the transmission of nerve impulses across synapses are:
I. Depolarization of the presynaptic membrane
II. Propagation of postsynaptic action potential
III. Reabsorption of the transmitter substance
IV. Release of transmitter substance into the synaptic cleft
In which sequence do these events occur?

	FIRST	→		LAST
A.	I	III	II	IV
B.	I	IV	II	III
C.	IV	I	III	II
D.	IV	III	I	II
E.	II	I	IV	III

78. What are the functions of the inter, motor and sensory neurons in a reflex response?

	INTER NEURON	MOTOR NEURON	SENSORY NEURON
A.	to connect neurons within the central nervous system	to conduct impulses to the effector from the central nervous	to conduct impulses from the receptor to the central nervous system
B.	to conduct impulses to the effector	to connect neurons within the central nervous system	to receive the stimulus
C.	to conduct impulses from the central nervous system	to conduct impulses from the receptor to the central nervous system	to connect neurons within the central nervous system
D.	to conduct Impulses from the receptor to the central nervous system	to conduct impulses from the receptor to the central nervous system	to conduct impulses to the effector

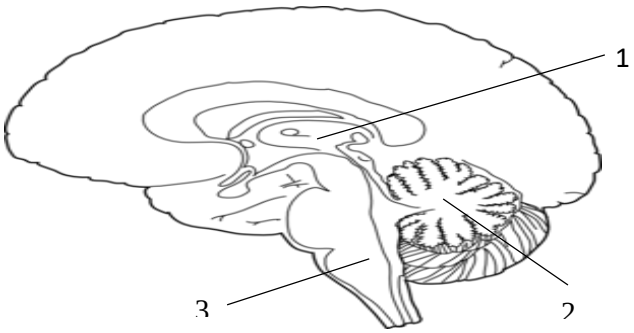
79. How many meninges cover the human brain?

A. 5
B. 4
C. 3
D. 2
E. 1

80. In an experiment, the production of hormone secretin was blocked. As a result, levels of all of the following enzymes were affected EXCEPT:

A. trypsin
B. pepsin
C. chymotrypsin
D. amylase
E. lipase

81. The diagram shows a section through the human brain.



What are some functions of the parts labelled 1, 2 and 3?

	1	2	3
A.	heart beat and blood pressure	forms visual images	controls digestion
B.	perception of pleasure and pain	muscular coordination	heart beat and blood pressure
C.	muscular coordination	heart beat and perception	perception of pleasure and pain
D.	perception of pleasure and pain	controls digestion	heart beat and blood pressure
E.	muscular coordination	perception of pleasure and pain	heart beat and blood pressure

82. The following sequence of events occurs at the neuromuscular junction.
Nerve impulse → release of V → end plate potential → w produced in muscle fiber → X released from sarcoplasmic reticulum → formation of Y → muscle contraction.
Which one of the following shows the correct sequence from V → Y?

	V	W	X	Y
A	acetylcholine	action potential	calcium ions	actomyosin
B	acetylcholine	action potential	actomyosin	calcium ions
C	actomyosin	acetylcholine	calcium ions	action potential
D	calcium ions	action potential	acetylcholine	actomyosin
E	calcium ions	actomyosin	acetylcholine	action potential

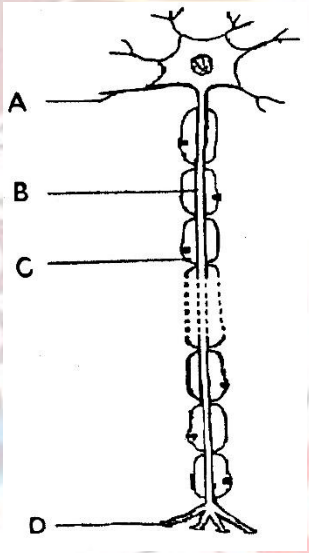
83. Which of the following is not secreted by thyroid gland?

A. thyroxin
B. triiodothyronine
C. calcitonin
D. glucagon

84. The water content of mammalian blood is regulated by antidiuretic hormone (ADH). In which part of the nephron does regulation occur?

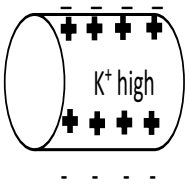
A. the ascending limb of the loop of Henle
B. the collecting duct
C. the descending limb of the loop of Henle
D. the proximal convoluted tubule

85. The diagram shows a motor nerve cell. Which part of the cell contains a transmitter substance?

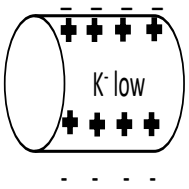


A. A
B. B
C. C
D. D

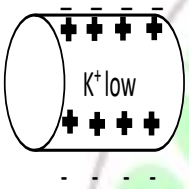
86. Which diagram illustrates the distribution of sodium and potassium ions in a section of a non-myelinated axon which is at resting potential?

A. 

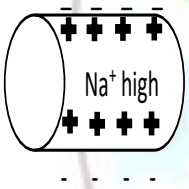
Na+ high

B. 

Na+ low

C. 

K+ low

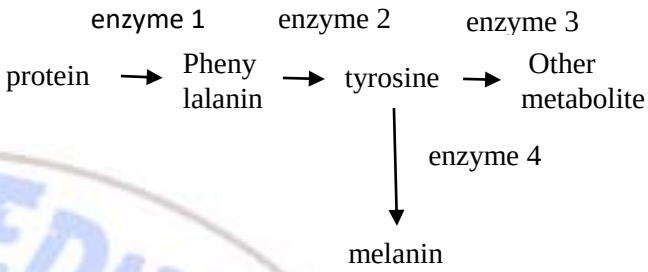
D. 

87. Match the processes listed under Column I with the hormones given under Column II. Choose the answer which gives the correct combination of alphabets of the columns.

	Column I (Processes)		Column II (Hormones)
A.	Production of milk from mammary gland	q	Progesterone
B.	Release of milk	r	Vasopressin
C.	Thickening of endometrium	s	Prolactin
D.		t	oxytocin

A. A=s, B=q, C=r
B. A=s, B=t, C=q
C. A=q, B=t, C=s
D. A=s, B=r, C=q

88. Newborn babies are screened for the presence of high levels of the amino acid phenylalanine in the blood, which indicates the hereditary disease phenylketonuria. Pale skin color is also the indication of sufferers from this disease.
The following series of reactions occurs in normal metabolism.



Which enzyme is lacking in persons with phenylketouria?

A. 1
B. 2
C. 3
D. 4

89. Match the parts of the human brain listed under Column I with the functions given under Column II. Choose the answer which gives the correct combination of alphabets of the two columns.

	Column I (Part of the Brain)		Column II (Functions)
A.	Cerebral hemisphere	p	Relaying impulses
B.	Thalamus	q	Posture and balance
C.	Cerebellum	r	Control of sleep and wakening
D.	Medulla oblongata	s	Reflex actions
		t	Intelligence memory

A. A=r, B=q, C=p, D=s
B. A=r, B=s, C=q, D=t
C. A=t, B=p, C=q, D=r
D. A=t, B=q, C=p, D=s

90. Which of the following type and function of the neuron is correct?

	Motor neuron	Sensory neuron	Inter neuron
A.	It takes command of the control center to the effector	Carries sensory information from the receptor to the Other neuron or directly to CNS	They are found in central nervous System
B.	Carries sensory information from the receptor to the Other neuron or directly to CNS	It takes command of the control counter to the effector	They are found in central nervous System
C.	They are found in central nervous System	It takes command of the control counter to the effector	Carries sensory information from the receptor to the Other neuron or directly to CNS
D.	Carries sensory information from the receptor to the Other neuron or directly to CNS	They are found in central nervous System	It takes command of the counter center to the effector

91. Which part of the brain regulates body temperature?

A. cerebellum
B. cerebrum
C. hypothalamus
D. medulla

92. Match the hormones listed under Column I with the roles given under Column II. Choose the answer which gives the correct combination of the alphabets of the two columns

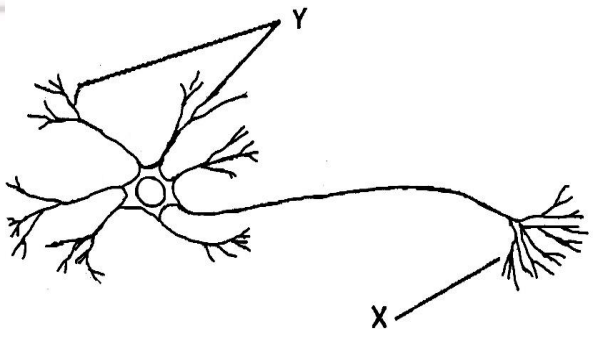
	Column I (Hormones)		Column II (Roles)
A.	FSH	p	Preparation of endometrium for implantation
B.	LH	q	Female secondary sexual characters
C.	progesterone	r	Contraction of uterine muscles
D.	Estrogen	s	Development of corpus luteum
E.		t	Maturation of follicle

A. A=t, B=s, C=p, D=q
B. A=r, B=t, C=s, D=q
C. A=t, B=p, C=s, D=q
D. A=q, B=s, C=p, D=r

93. Cranium (a part of the skull) forms the brain box and consist of _____ bones

A. 10
B. 08
C. 05
D. 03

94. The diagram shows a neurone.



Which of the given structures could be found at X and Y?

	X	Y
A	brain	intestine
B	brain	leg
C	eye	hand
D	skin	spinal cord

UNIT NO. (04)

1. The female gamete of a flower is formed in the:

A. pollen grain
B. pollen tube
C. stigma
D. style
E. embryo sac

2. If the sperm cell of a fruit fly has 4 chromosomes, then the number of chromosomes in each body cell is:

A. 2
B. 4
C. 6
D. 8
E. 16

3. Which one of the following is not a sexually transmitted disease?

A. Gonorrhea
B. Syphilis
C. Genital herpes
D. Meningitis
E. AIDS

4. Germ cells give rise to:

A. legs
B. head
C. eggs and sperms
D. hands
E. all body parts

5. Which of the following is an example(s) of cloning?

I. Identical twins in humans
II. Asexual reproduction in plants
III. Tumor

A. I only
B. II and III only
C. I and III only
D. I and II only
E. I, II and III

6. Parthenogenesis is a type of reproduction which requires:

A. One parent-female
B. One parent-male
C. Two parents
D. No parents
E. None of the above

7. A rope like structure, which connects embryo to placenta is called _____.

A. Spinal cord
B. Umbilical cord
C. Optical fiber
D. Vocal cord
E. Spindle fiber

8. The first ever cloned sheep was named as _____.

A. Silly
B. Dolly
A. C. Jolly
C. Honey
D. Tommy

9. Which of the following is/are function(s) of semen?

I. It provides the sperms with food
II. It provides the sperms with a medium to swim in
III. It neutralizes the acidity of urethra caused by the passage of Urine

A. I only
B. III only
C. I and II only
D. II and III only
E. I, II and III

10. The transfer of pollen grains from anther to stigma is called:

A. Fertilization
B. Transpiration
C. Pollination
D. Diffusion

11. On which date is a woman most likely to ovulate if the first day of menstrual loss was 1 February?

A. 5 February
B. 14 February
A. C. 24 February
C. 28 February
D. 1 March

12. Which of the following incorrectly pairs the term with its definition?

A. Scrotum-location of the testes
B. Epididymis-site of sperm maturation
C. Vas deferens-tube connecting the epididymis to the prostate
D. Semen-composed of seminal fluid and sperm
E. Urethra-tube for urinary & reproductive discharge

13. A type of asexual reproduction in which individual resembles exactly to the egg donor is called:

A. Regeneration
B. Budding
C. Parthenogenesis
D. Cloning
E. Fission

14. Fertilized ovum in human is implanted in:

A. Oviduct
B. Uterus
C. Placenta
D. Umbilical Cord
E. Vagina

15. The sperms produced by seminiferous tubules are stored in

A. Vas deferens
B. Urethra
C. Epididymis
D. Bladder
E. Sperm duct

16. The following is a part of the female reproductive tract:

A. Vas deferens
B. Cervix
C. Spermatozoa
D. Ovary

17. The mammalian placenta has all of the following functions except

A. Excretion
B. Nutrition
C. Hormone secretion
D. Stock absorptions

18. _____ Hormone stimulates mammary gland to secrete milk and process of labor.

A. Oxytocin
B. F.S.H
C. L.H
D. T.S.H.

19. The menstrual stage lasts for:

A. 1 to 5 days
B. 14 to 16 days
C. 25 to 28 days
D. 8 t0 18 days

20. Fertilization in mammals takes place in _____.

A. Uterus
B. Ovary
C. Vagina
D. Fallopian tube

21. Some plants form embryo without fertilization called

A. Apomixis
B. Epimixis
C. Apomixes
D. Endomixis

22. Spores are

A. Diploid
B. Haploid
C. Triploid
D. Cone

23. In vitro fertilization is:

A. Fertilization of egg outside the body in lab
B. Fertilization within the female
C. Fertilization in water exclusively
D. Giving nutrition to fertilized egg

24. The hormone which helps in the contraction of uterus at time of birth is:

A. Prolactin
B. Oxytocin
C. Gonadotrophin
D. Antidiuretic hormone

25. The supply line b/w embryo & mother is:

A. Placenta
B. Umbilical cord
C. Amnion
D. Chorion

26. Which of the following disease if not treated can cause blindness in new born:

A. Syphilis
B. AIOS
C. Hepatitis
D. Gonorrhea

27. The sperms are stored in:

A. Seminiferous tubules
B. Vas Deferens
C. Epididymis
D. b) Testes

28. Conception in human female takes place at:

A. Uterus
B. Vagina
C. Ovary
D. Fallopian tube

29. The chemical attractant which directs the pollen tube to enter the ovary to micropyle is:

A. Seminal fluid
B. Abscisic acid
C. Auxin
D. Calcium

30. Thermos regulation is done by sweat glands in mammals especially, but some lack glands so they do:

A. Guttation
B. Transpiration
C. Panting
D. Hydathodes

31. The process in which fruit privation takes place without the formation of seeds, is called:

A. Pathogenesis
B. Regeneration
C. Apomixes
D. Parthenocarpy

32. Every statement is true about fraternal twins except:

A. They can be of different sex
B. They are dizygotic
C. They are developed sexually
D. The genotype of each zygote is sense

33. About urethra each statement is correct except:

A. It is the last part of urinary system
B. It is the extension of urinary bladder
C. It is a known as urogenital duct in females
D. Contains prostatic gland at its tip

34. About menstruation phase: pick the odd one out:

A. Onset off bleeding and debris of uterus through vagina.
B. Lasts about 5 days
C. Progesterone secretion stops
D. Blood & myometrium flows out through vagina.

35. In comparison with the number of gametes produced from one primary sex cell during oogenesis, the number of gametes produced from one primary sex cell during spermatogenesis is:

A. The same
B. 4 times as many
C. Twice as many
D. Half

36. The development of an egg without fertilization is called

A. Oogenesis
B. Parthenogenesis
C. Fertilization
D. Growth

37. Which of the following in the mammalian ovary produces Estrogen?

A. Corpus Luteum
B. Germinal epithelium
C. Graafian follicle

D. Connective tissue

38. How does a paramecium reproduce sexually?

A. Conjugation
B. Parthenogenesis
C. Budding
D. Spore formation

39. Correct sequence in the menstrual cycle is:

A. Ovulation, follicle stage, corpus luteum, menstruation
B. Corpus luteum, Ovulation, follicle, menstruation
C. Follicle, Ovulation, Corpus luteum, menstruation
D. Fertilization, cleavage, differentiation, Ovulation, menstruation

40. Primary spermatocytes have _____ chromosomes:

A. Diploid
B. Triploid
C. Haploid
D. None of the above

41. Growth of the mucous lining (endometrium) of uterus is enhanced by _____.

A. Estrogen
B. Progesterone
C. L.H
D. FSH

42. The _____ of female provides safe and moist place for the development of embryo in most animals:

A. Ovary
B. Vagina
C. Uterus
D. Cervix
E. Fallopian tube

43. At the onset of the birth, there is decrease level of:

A. Estrogen
B. Progesterone
C. TSH
D. GH
E. L.H

44. The Prolactin hormone responsible for activation of mammary glands to start producing milk is a hormone of:

A. Pituitary gland
B. Pancreas
C. Thyroid gland
D. Thymus gland
E. Adrenal gland

45. All of the following are sexually transmitted diseases except:

A. Syphilis
B. Gonorrhea
C. Alzheimer's Disease
D. Genital herpes
E. AIDS

46. Amniocentesis is performed between the:

A. 16^{th} and 18^{th} week of gestation
B. 1^{st} and 2^{nd} week of gestation
C. 30^{th} and 32^{nd} week of gestation
D. 37^{th} and 38^{th} week of gestation
E. After the delivery of the baby

47. Fertilized ovum in human is implanted in _____.

A. Oviduct
B. Uterus
C. Placenta
D. Vagina

48. FSH stimulates the ovary to produce a hormone of its own, called _____.

A. Oestrogen
B. Progesterone
C. Androgen
D. LH

49. Male and female sea urchins release their sperm and eggs into the water where fertilization takes place. How can their reproduction be described?

A. asexual reproduction which results in genetically dissimilar offspring
B. asexual reproduction which results in genetically identical offspring
C. sexual reproduction which results in genetically dissimilar offspring

D. sexual reproduction which results in genetically identical offspring

50. When a fetus is in the uterus, what carries oxygen away from the placenta?

A. The amniotic fluid
B. The amniotic sac
C. The lining of the uterus
D. The umbilical cord

51. How does the second meiotic division differ from mitosis?
In the second meiotic division:

A. chiasmata form between the chromatids of a bivalent.
B. each chromosome replicates to form two chromatids during metaphase
C. the separating chromatids of a pair differ genetically
D. none of the above

52. Testes are structures that produce:

A. spores
B. sperms
C. seeds
D. ova

53. Spirochete bacterium Treponema pallidum causes _____.

A. Gonorrhea
B. Syphilis
C. Genital herpes
D. AIDS

UNIT NO. (05)

1. What is the correct sequence of events in the development of the embryo?

A. morula → cleavage → blastula → gastrula
B. cleavage → morula → blastula → gastrula
C. cleavage → gastrula → blastula → morula
D. blastula → cleavage → gastrula → morula
E. morula → blastula → cleavage → gastrula

2. _____ is the reconstruction of the lost part of the body.

A. Growth
B. Development
C. Regeneration
D. Blastulation
E. Gastrulation

3. The development of an egg without being fertilized by a sperm is known as:

A. Metamorphosis
B. Regeneration
C. Differentiation
D. Parthenogenesis
E. Incubation

4. Gastrulation in a frog's embryo involves all of the following except:

A. Epiboly
B. Involution
C. Rotation
D. Invagination

5. Mesoderm gives rise to:

A. Lens of the eye
B. Teeth enamel
C. Liver
D. Heart

6. _____ germinal layer give raise all the body muscles:

A. Ectoderm
B. Endoderm
C. Mesoderm
D. Chorion

7. The science of aging is called:

A. Ethonology
B. Gerontology
C. Embryology
D. Genetics

8. The whole tail of tadpole and its gills are lost during metamorphosis the change is:

A. Progressive
B. Retrogative
C. Organizational
D. None of the above

9. Extremely small amount of yolk are called _____.

A. Alecithal
B. Polylecithal
C. Oligolecithal

10. Ectoderm give rise to _____.

A. Muscular system
B. Nervous system
C. Vascular system
D. Digestive system

11. Science of aging is called _____.

A. Paleontology
B. Entomology
C. Gerontology
D. Parasitology

12. Seedless fruits which grow without fertilization are called _____.

A. Angiosperms
B. Parthenocarpus
C. Ovulatory
D. Mesangial

13. According to Hay flick the aging is due to loss of:

A. Cell function
B. Immunity
C. Stability
D. A.O.T

14. Eggs of amphioxus:

A. Alecithal
B. Telolecithal
C. Meiolecithal
D. Mesolecithal

15. When a diploid egg is formed without fertilization

A. Parthenogenesis
B. Apomixes
C. Facultative apomixes
D. Reverse transcription

16. In chick embryo the space between 2 layers is:

A. Coelom
B. Blastocoel
C. Primitive Streak
D. Gastrocoel

17. Endoderm gives rise to all of the following except:

A. Liver
B. Lungs
C. Thyroid
D. Nervous system

18. Mesoderm gives rise to:

A. Lens of the eye
B. Teeth enamel
C. Liver
D. Heart

19. Cytoplasmic Localization is a consequence of:

A. Fertilization
B. Cleavage
C. Morula
D. Blastula
E. Gastrula

20. The process of division of zygote is called _____.

A. Cleavage
B. Development
C. Enlargement
D. Differentiation

21. Germ cells give rise to:

A. legs
B. head
C. eggs and sperms
D. hands
E. all body parts

22. A bean seed contains all of the following except

A. A seed coat
B. An epicotyl
C. A hypocotyl
D. A hypha
E. Cotyledon

23. _____ is the reconstruction of the lost part of the body.

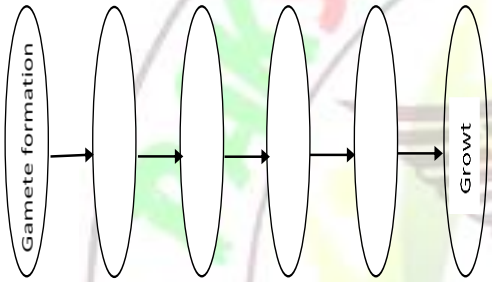
A. Growth
B. Development
C. Regeneration
D. Blastulation
E. Gastrulation

24. The egg of a chick is laid at which of the following stages?

A. gastrula
B. blastula
C. cleavage
D. morula
E. neurulation

25. Scurvy is caused by deficiency of vitamin _____.

A. A
A. B
B. C
C. D



26. Which of the following is the correct sequence of missing events in the above given diagram?

A. Cleavage → Fertilization → Organogenesis → Gastrulation
B. Organogenesis → Gastrulation → Fertilization → Cleavage
C. Fertilization → Cleavage → Gastrulation → Organogenesis

Gastrulation → Fertilization → Organogenesis → Cleavage

UNIT NO. (06)

1. Which one of the following statements correctly describes the transcription of DNA?

A. It produces amino acids
B. It results in an increased DNA synthesis
C. It produces messenger RNA
D. It is a semi conservative process
E. It occurs at the surface of the ribosome

2. The formation of chiasmata is an important feature of meiotic division because it

A. Ensures that the same genetic characteristics appear in the daughter cells as in the parents
B. Ensures that the number of genes in the new chromosomes remains constant
C. Provides opportunities for new genotypes to arise
D. Prevents homologous chromosomes from pairing
E. Allows attachment of the chromatids to the spindle fibers

3. Which of the following nitrogenous bases are found in DNA?

I. Thymine
II. Cytosine
III. Uracil

A. I only
B. II only
C. I and II only
D. I and III only
E. I, II, and III

4. Which is correctly associated?

A. RNA: thymine
B. DNA: uracil
C. RNA: replication
D. mRNA: picks up amino acids
E. RNA: ribose sugars

5. In DNA, guanine forms a base pair with _____ while adenine forms a base pair with _____

A. thymine ... cytosine
B. adenine ... guanine
C. cytosine ... thymine
D. thymine ... thymine
E. cytosine ... cytosine

6. Which of the following is not found in a molecule of DNA?

A. Adenine
B. Deoxyribose
C. Phosphorus
D. Uracil
E. Thymine

7. The combination of XXY (47) chromosomes results in:

A. Down's Syndrome
B. Turner's Syndrome
C. Klinefelter's Syndrome
D. Sickle cell anemia
E. Color blindness

8. Cells from a bacterial clone were grown for many generations on a medium in which all the nitrogen compounds contained only the isotope nitrogen 15 (^{15}N). Adenine comprised 36% of the nitrogen bases present. A sample of these bacteria was transferred to a medium in which the only nitrogen source was ^{14}N and was provided with conditions suitable for asexual reproduction. What was the percentage of guanine in the DNA?

A. 14%
B. 18%
C. 28%
D. 36%
E. 64%

9. Which of the following is a Female sexual defect?

A. Microcephaly
B. Polydactyly
C. Turner's syndrome
D. Klinefelter's syndrome
E. Cleft lip and palate

10. The chromosome number in humans is:

A. 3 pairs
B. 13 pairs
C. 23 pairs
D. 33 pairs
E. 43 pairs

11. In Downs syndrome the 21st pair of chromosomes:

A. lacks one chromosome
B. has an extra chromosome attached to it
C. is missing
D. lacks genes
E. none of the above

12. Which one is not the component of nucleotide of DNA?

A. H_3PO_4
B. Sugar (Deoxyribose)
C. N-bases
D. Sugar (ribose)
E. None of the above

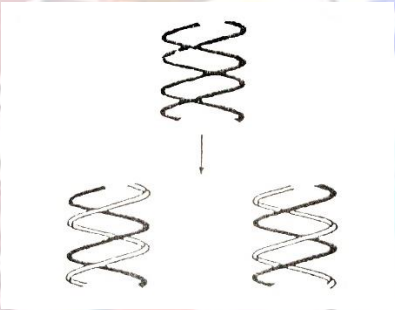
13. The chromosomes with equal arms resembling the letter 'V' are called:

A. Telocentric
B. Sub-metacentric
C. Metacentric
D. Acrocentric
E. Autosomes

14. In mature cells each chromosome consists of two thin threads called:

A. Chromatids
B. Centromere
C. Karyotype
D. Chromomeres
E. Kinetochore

15. The diagram shows a process involving DNA.



What is the name of the process and the stage in the cell cycle at which it occurs?

	Process	Stage
A.	replication	... interphase
B.	replication	... prophase
C.	transcription	... interphase
D.	transcription	... prophase
E.	replication	... telophase

16. Adenine comprised 36% of the nitrogenous bases in the DNA of cells from a bacterial clone. What was the percentage of guanine in the DNA?

A. 14%
B. 18%
C. 28%
D. 36%
E. 64%

17. If one ribose molecule was bonded to one adenine molecule and one phosphate molecule, we would have a

A. Ribosome
B. Nucleotide
C. Nucleic acid
D. ATD
E. ADP

18. Which of the following RNA sequences would be transcribed from the DNA sequence ATGCCTAGGAC?

A. TACGGATCCTG
B. UAGCGAUCCUG
C. AUGCCUAGGAC
D. UACGGAUCCUG
E. GCAUUCGAAGU

19. The above diagram illustrates:

A. Hemophilia
B. Phenylketonuria
C. Sickle cell anemia
D. Down's Syndrome

20. The bond between adenine and thymine is:

A. Single bond
B. Double bond
C. Triple bond
D. Covalent bend

21. The person with down's syndrome has:

A. One extra chromosome
B. One less chromosome
C. Two extra chromosome
D. Two less chromosome

22. The total Autosomes in human are:

A. 44
B. 46
C. 22
D. 23

23. The results of non - disjunction are:

A. Down syndrome
B. Turner syndrome
C. Klinefelter syndrome
D. All of the above

24. The number of chromosomes in man is:

A. 44
B. 48
C. 46
D. 23

25. The condition in which there is one extra chromosome is:

A. Monosomic
B. Trisomic
C. Disomic
D. Nullisomic

26. Guanine always pairs with

A. Thymine
B. Adenine
C. Cytosine
D. Uracin

27. Which of the following replaced by thymine:

A. Uracil
B. Cytokine
C. Guanine
D. Adenosine

28. Centromere at the end of Chromosomes

A. Meta centric
B. Areocentric
C. Sub Meta centric
D. None of above

29. Number of chromosomes in human cell are:

A. 48
B. 46
C. 44
D. 56

30. The genotype of a Turner's syndrome patient is

A. XXY
B. Trisomy 21

C. XO
D. OXY

31. Which of the following organelles always contains DNA?
A. Centriole
B. Golgi apparatus
C. Lysosome
D. Mitochondrion

32. How is the Down's syndrome inherited?
A. Test cross
B. Mutation
C. Sex linkage
D. Segregation

33. In Turners syndrome the genotype is: hot
A. Male 45 chromosomes
B. Male 46 chromosomes
C. Female 45 chromosomes
D. Female 47 chromosomes

34. Chromatin is to chromosomes as DNA is to:
A. Daughter ceils
B. Mitosis
C. Genes
D. RNA

35. If the sperm ceil of a fruit fly has 4 chromosomes, then the number of chromosomes in each body cell is:
A. 2
B. 4
C. 8
D. 16

36. In non-disjunction, chromosomes fail to
A. Replicate
B. Reduce
C. Separate
D. Fertilize

37. The first indication of DNA action was found in:
A. Protozoa
B. bacteria
C. Drosophila
D. algae

38. Y chromosome is _____:
A. Rod shaped
B. Hook shaped
C. Wire like
D. Coiled shaped

39. The complementary mRNA for the DNA triplet GAT would read:
A. CTA
B. CUA
C. CTG
D. CTC

40. Which of the following is not caused by bacteria?
A. Butter going rancid
B. Yogurt formation
C. Athlete's foot
D. Cheese formation

41. Which part of a nucleic acid allows double strand formation in DNA?
A. Phosphate group
B. Hydroxyl group
C. Sugar
D. Nitrogen base

42. The major sign and symptom of Microcephaly is;
A. Sexual defects
B. Excessive number of toss
C. Mental retardation
D. Small skull in proportion to the normal body size
E. Split in upper lip and gap in the roof mouth

43. Highly condensed portions of the chromatin are called:
A. Euchromatin
B. Hetero chromatin
C. Nucleosome
D. Super coils
E. None of the above

44. In sugar cane number of chromosome is _____.
A. 50
B. 60

C. 70
D. 80

45. Cells from a bacterial clone were grown for many generations on a medium in which all the nitrogen compounds contained only the isotope nitrogen 15 (15 N). Adenine comprised 36% of the nitrogen bases present. A sample of these bacteria was transferred to a medium in which the only nitrogen source was 14 N and was provided with conditions suitable for asexual reproduction. What was the percentage of guanine in the DNA?

A. 14%
B. 18%
A. C. 28%
C. 36%
D. 64%

46. Fern has _____ pairs of chromosome.

A. 23
B. 40
C. 500
D. 13
E. 7

47. The combination of XXY (47) chromosomes results in:

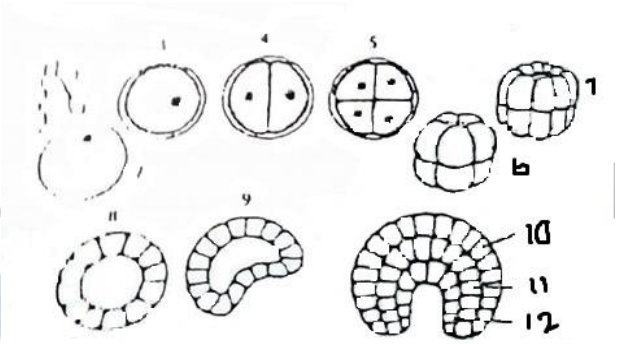
A. Down's Syndrome
B. Turner's Syndrome
C. Klinefelter's Syndrome
D. Sickle cell anemia
E. Color blindness

48. The diagram shows a cell of an organism formed by reduction division.

What is the diploid number for this organism?

A. 10
B. 20
C. 30
D. 40
E. 44

QUESTION 49-50



49. The first cell to contain the diploid number of chromosomes is:

A. 2
B. 3
C. 4
D. 6
E. 9

50. A female gamete containing the monoploid (haploid) number of chromosomes is:

A. 2
B. 3
C. 4
D. 5
E. 8

51. An anti-codon is the sequence of the nitrogenous bases on the:

A. complementary strand of DNA which codes for one amino acid
B. complementary strand of mRNA which codes for one amino acid.
C. tRNA molecules where the amino acid is attached.
D. tRNA molecules where recognizes the appropriate sequence of bases on the mRNA
E. tRNA molecules where instructs the ribosomes to initiate protein synthesis.

52. A short piece of DNA 30 base pairs long was analyzed to find the number of nucleotide bases in each of the polynucleotide strands. Some of the results are shown below.

	Number of nucleotide bases			
	A	**C**	**G**	**T**
Strand 1		**12**		**6**
Strand 2				**8**

How many nucleotides containing guanine were present in strand 1?

A. 2
B. 3
C. 4
D. 6

53. Five different amino acids (numbered 1-5 below) form the following sequence in part of a polypeptide chain:
1-2-3- 4-2- 5- 3
Messenger RNA (mRNA) codons which correspond to these amino acids are:
amino acid 1 UGU
amino acid 2 GAU
amino acid 3 CAC
amino acid 4 UAG
amino acid 5 AAG
Which one of the following DNA base sequences could provide the code for the given section of polypeptide?

A. ACACTTGTGATGCTATTCGTG
B. ACACUAGUGAUGCUAUUCGUG
C. ACACTAGTGATGCTAAACGTG
D. ACACTAGTGATCCTATTCGTG
E. CACATCUTUCTUATCTTAUTU

54. The biochemical analysis of a sample of DNA shows that 32% of the nitrogenous bases are cytosine. What is the total percentage of adenine and uracil in RNA transcribed from this DNA?

A. 16%
B. 18%
C. 32%
D. 36%

55. Which of the following statements correctly describes homologous chromosomes?

A. They are formed during meiosis.
B. They are held together by centromeres.
C. They are chromatids of the same chromosome
D. They carry both morphologically similar members with same set of genes

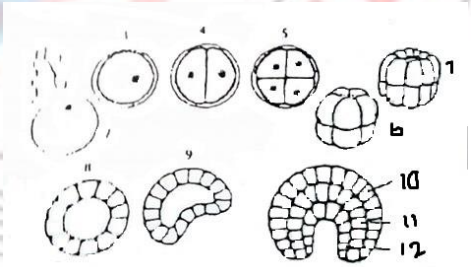
56. The diploid human chromosome set has:

A. 22 pairs of autosomes and 1 pair of sex chromosomes
B. 22 pairs of autosomes and XY chromosomes
C. 22 pairs of autosomes and XX chromosomes
D. Haploid somatic cells and diploid germinal cells
E. Diploid somatic and germinal cells.

57. Which of the following options give the correct sequence (steps) in recombinant DNA technology?
I. Selection of bacteria with desired gene.
II. Insertion of rDNA into host cell
III. Preparation of recombinant rDNA molecules.
IV. Multiplication and production of numerous copies of host with rDNA in it.

A. I → II → III → II
B. I → III → IV → II
C. III → II → IV → I
D. III → IV → II → I
E. IV → III → I → II

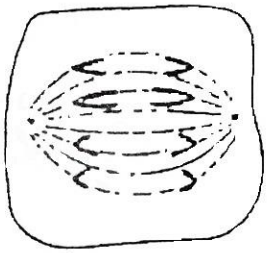
UNIT NO. (07)



1. In the above given diagram which is the first cell to undergo mitotic division?

A. 3
B. 4
C. 5
D. 6
E. 8

2. The diagram below is of a cell from a gametophyte undergoing division. What is the type of division and the stage?



A. Meiosis; prophase I; 2n = 8
B. Meiosis; metaphase II; n = 8
C. Mitosis; prophase; n = 8
D. Mitosis; early metaphase; 2n = 8
E. Mitosis; early anaphase; 2n = 8

3. A process that cannot take place in a haploid cell is

A. mitosis
B. meiosis
C. ATP production
D. DNA replication
E. Transcription

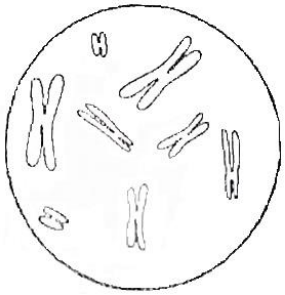
4. The cell of a corn plant contains a diploid number of 20 chromosomes. When it divides by mitosis, what is the number of chromosomes in each of the following resulting cells?

A. 10
B. 15
C. 20
D. 30
E. 40

5. Which of the following activities occur during interphase?
I. DNA duplication
II. RNA synthesis
III. Volume of the cell roughly doubles

A. I only
B. III only
C. I and II only
D. II and III only
E. I, II and III

6. The diagram shows a cell nucleus in prophase of mitosis.



Which statement describes the chromosomes found in each daughter nucleus immediately following division of this cell by mitosis?

A. 8 chromosomes, each consisting of 4 chromatids
B. 8 chromosomes, each containing 1 molecule of DNA
C. 12 chromosomes, each consisting of 4 chromatids
D. 16 chromosomes, each containing 1 nucleus

7. Meiosis differs from mitosis in that:
I. two consecutive cell divisions in one cell take place
II. DNA replicates during Interphase
III. haploid cells are produced from diploid cells

A. I only
B. II only
C. III only
D. I and III
E. I, II, and III

8. "Crossing over" takes place in _____ stage.

A. Leptotene
B. Zygotene
C. Diplotene
D. Pachytene
E. Diakinesis

9. The death of living cells that results from tissue injury is known as:

A. Apoptosis
B. Nuclear budding
C. Mitosis
D. Necrosis
E. Meiosis

10. The mitotic stage in which the sister chromatids physically separate is:

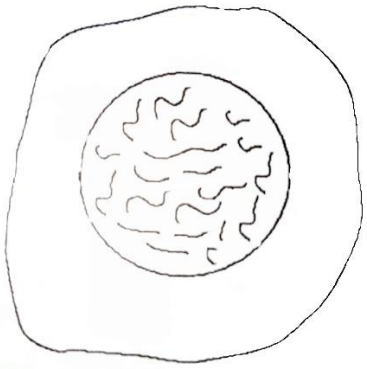
A. Interphase

B. Prophase
C. Metaphase
D. Anaphase
E. Telophase

11. Some chemicals, used to stop tumor growth, work by preventing the DNA double helix from uncoiling and separating. During which stage of the cell cycle would they act?

A. anaphase
B. interphase
C. metaphase
D. prophase
E. telophase

12. The diagram shows a cell of an organism formed by reduction division.



What is the diploid number for this organism?

A. 10
B. 20
C. 30
D. 40
E. 46

13. Genetic exchange via chiasmata occurs in a stage of Meiotic prophase I called:

A. Leptotene
B. Pachytene
C. Diplotene
D. Diakinesis
E. Zygotene

14. The phenomenon known as crossing-over occurs during:

A. Mitosis
B. Meiosis
C. Geographic distribution
D. Active transport

15. A division without formation of spindle is:

A. Mitosis
B. Meiosis
C. Amitosis
D. Karyo kinesis

16. In mitosis the no. of chromosomes in daughter cells

A. 2n
B. n
C. 1/2n
D. None of the above

17. How many mitotic divisions produce 12 cells?

A. 3 Divisions
B. 6 Divisions
C. 4 Divisions
D. 12 Divisions

18. Reduction division in Meiosis is;

A. Anaphase-II
B. Anaphase-I
C. Diagenesis
D. Diplotene

19. What does not take peace in meiosis?

A. Chromosome multiplied
B. Separation of chromosomes
C. Production of hormones
D. Production of enzymes

20. Exchange of genetic material takes place in:

A. Meiosis
B. Prophase I
C. Diplotene
D. Pachytene

21. Amitosis takes place in:

A. Germ cells
B. Somatic cells
C. Skin cells
D. Bacterial cells

22. Nuclei disappear during:

A. Diakinesis
B. Diplotene
C. Pachytene
D. Zygotene

23. During which phase of meiosis are chiasmata formed;

A. Prophase
B. Metaphase
C. Metaphase II
D. Telophase II

24. Chromatids are monad during which stage of meiosis:

A. Anaphase -I
B. Anaphase -II
C. Metaphase- II
D. Telophase -I

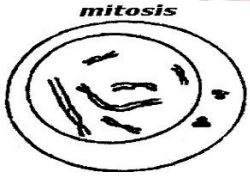
25. Diplotene is the sub-stage of:

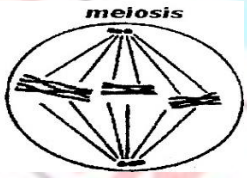
A. Anaphase I
B. Telephone l
C. Prophase l
D. Metaphase l
E. All of the above

26. The cell death which mostly occurs during embryonic development is called _____.

A. Cytosis
B. Necrosis
C. Apoptosis
D. Macrosis

27. The diagrams below show chromosomes in a cell undergoing mitosis and in a cell undergoing meiosis. Which of the following names the stages of division correctly?





	Mitosis	**Meiosis**
A.	prophase	prophase I
B.	prophase	metaphase I
C.	metaphase	anaphase I
D.	metaphase	metaphase II

28. The events shown below occur during different phases of mitosis:

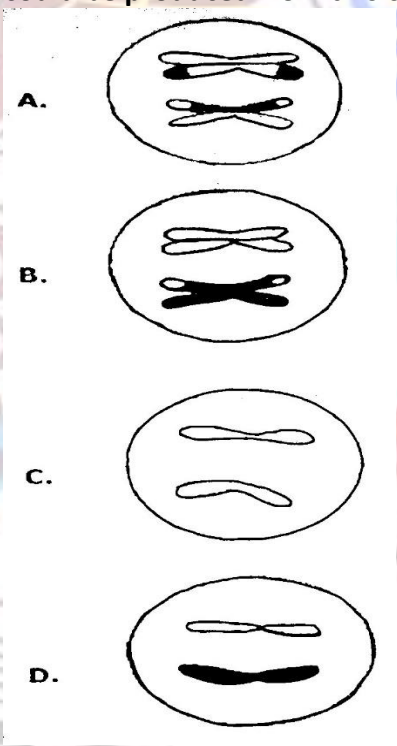
I. spiralization of DNA
II. hydration of DNA
III. centromeres split
IV. centromeres attach to spindle fibers
V. DNA replicates

Which one of the following correctly identifies each of the phases described?

	interphase	prophase	metaphase	anaphase	telophase
A.	I	II	III	IV	V
B.	I	V	IV	II	III
C.	V	I	IV	III	II
D.	II	IV	I	III	V
E.	V	IV	I	II	III

29. The diagram shows a cell at anaphase 1 of meiosis.

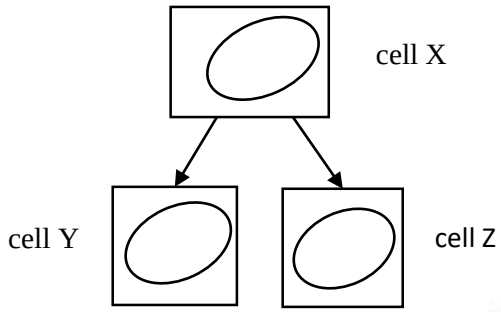
Which diagram shows a normal gamete that could be produced from this cell?



30. Which of the following sub-stage does not occur in meiotic prophase I?

A. Leptotene
B. zygote ne
C. Synapsis
D. Diplotene
E. Diakinesis

31. Cell X contains 24 chromosomes. It divides by mitosis to produce cells Y and z.



How many chromosomes does cell Z contain?

A. 12
B. 24
C. 46
D. 48

32. Which of the following processes occur by mitosis?
I. cloning of plasma cells
II. gamete production
III. replacing damaged cells

A. II only
B. III only
C. I and III only
D. I, II and III

UNIT NO. (08)

1. In sickle cell anemia, the abnormal hemoglobin differs from normal hemoglobin in:

A. a single amino acid
B. the amount of coenzymes
C. the number of iron atoms
D. the number of magnesium atoms
E. the number of genes

2. A woman with normal colour vision, whose father was red green colour blind, married a red green colour blind man. What is the probability of her first born child being red-green colour blind?

A. 1.0
B. 0.75
C. 0.66
D. 0.50
E. 0.25

3. Albinos have a genotype of aa, while all other members of population are either AA or Aa. The offspring of a cross between a heterozygous male and albino female would be

A. 100 % albino
B. 100 % normal
C. 50 % normal, 50 % albino
D. 25 % normal, 75 % albino
E. 75 % normal, 25 % albino

4. A black male mouse (I) is crossed with a black female mouse, and they produce 15 black and 5 white offspring. A different black male mouse (II) is crossed with the same female, and the offspring from the mating are 30 black mice. Which of the following must be true?

A. The female mouse is homozygous
B. Male mouse it is heterozygous
C. Two of the mice are heterozygous
D. All the progeny of mouse II are homozygous
E. All three mice are homozygous

Questions 5 - 6 refer to the following statement:

Father	**Mother**
$X_{(normal)} / Y_{(normal)}$	$X_{(hemophilia)} / X_{(normal)}$

With reference to the parents whose genotypes are shown above

5. _____ % of children is likely to be male.

A. 0
B. 25
C. 50
D. 75
E. 100

6. The possibility of a female child with phenotype: hemophilia is _____ %.

A. 0
B. 25
C. 50
D. 75
E. 100

7. If the male blood type A marries a female with blood type B, which of the following types would be impossible for a first generation child?

A. type B

B. type A
C. type O
D. type AB
E. all types are possible

8. The process of replacing or supplementing the defective allele with a functional, normal allele is known as _____.

A. allele transplant
B. physiotherapy
C. gene therapy
D. mutation
E. cloning

9. In cats, the genes controlling coat-colour are co-dominant (incompletely dominant) and are carried on the X chromosomes. When a black female was mated with a ginger male the resulting litter consisted of black male and tortoise-shell female kittens. What phenotypic ratio would be expected in the F_2 generation?

A. 1 black male: 1 ginger male: 2 tortoise-shell females
B. 1 black male: 1 ginger male: 1 tortoise-shell female: 1 black female
C. 2 black males: 1 tortoise-shell female: 1 ginger female
D. 1 black male: 1 tortoise-shell female: 1 ginger female: 1 black female
E. 2 black males: 1 tortoise-shell female: 1 black female

10. Mendel perform his famous experiments of Heredity on:

A. Maize
B. Bean plants
C. Garden pea
D. Mirabilis plant
E. Wheat

11. A man who is normal for color vision marries a normal heterozygous woman. What is the chance of their son being color blind?

A. 0%
B. 25%
C. 50%
D. 75%
E. 100%

12. A red-flowered plant crossed with a white-flowered plant of the same species, produced F_1, plants which all had pink flowers. Self-pollination of the F_1 plants produced an F_2 generation in which 40 plants had red flowers, 80 had pink flowers and 40 had white flowers. What does this experiment demonstrate?

A. incomplete dominance
B. continuous variation
C. a dihybrid cross
D. linkage
E. multiple alleles

13. Which one of the following genotype cannot occur amongst the offspring from a mating between a person of blood group A and a person of blood group B?

A. AA
B. AB
C. A
D. B
E. O

14. In fruit flies, the gene for wing type is located on an autosomal chromosome. The allele for wild-type wings is dominant over the allele for vestigial wings. If a homozygous dominant male fly is crossed with a female with vestigial wings, what percentage of their female progeny is expected to have wild-type wings?

A. 0 %
B. 25 %
C. 50 %
D. 75 %
E. 100 %

15. The total aggregate of the genes in a population is called:

A. Gene variation
B. Gene code
C. Gene mutation
D. Gene pool
E. Gene trait

16. If the new born babies get mixed up in a hospital, how could you determine their parentage from the information given below?

Baby I Type O

Baby II Type B

Mrs. Ali Type A
Mr. Ali Type AB

Mrs. Ahmad Type A
Mr. Ahmad Type A

A. Baby I is the child of Mr. and Mrs. Ahmad
B. Baby I is the child of Mr. and Mrs. Ali
C. Baby II is the child of Mr. and Mrs. Ahmad
D. Both Baby I and Baby II are the children of Mr. and Mrs. Ali
E. Inadequate Data

17. The four children of two parents each have a different blood group of the ABO series. What were the blood groups of the parents?

A. A and A
B. A and B
C. A and O
D. B and O

18. In some of Mendel's experiments, three quarters of the offspring showed the dominant trait. Which of the following is most likely to be true about the parents?

A. Both were recessive
B. Both were heterozygous
C. Both were dominant
D. One was heterozygous; the other, homozygous dominant
E. One was recessive; the other, homozygous dominant

19. A species of rose plants can be purchased as red, white, or pink flowering plants. Assuming that large petals is a dominant trait, which is the genotype of a plant with pink flowers and large petals? [W = white flowers, w = red flowers, L = large petals, l = small petals]

A. WwLL
B. WWLL
C. WWLl
D. wwLL
E. wwll

20. According to normal genetic prediction a color-blind girl ($X^c X^c$) must have had a father whose genetic makeup was:

A. $X^c X^c$
B. $X^n Y^c$
C. $X^c Y^c$
D. X Y
E. $X^c Y$

21. What are the phenotypes of the parents of a colour blind son and non-carrier daughter with normal colour vision?

	Father	Mother
A.	A. carrier	normal
B.	B. colour-blind	carrier
C.	C. colour-blind	carrier
D.	D. normal	carrier
E.	E. normal	colour-blind

22. Haemophilla is caused by a sex -linked, recessive allele. Two parents have a Haemopiliac son, a normal son a Haemophiliac daughter. What are the most likely genotype of the parents?

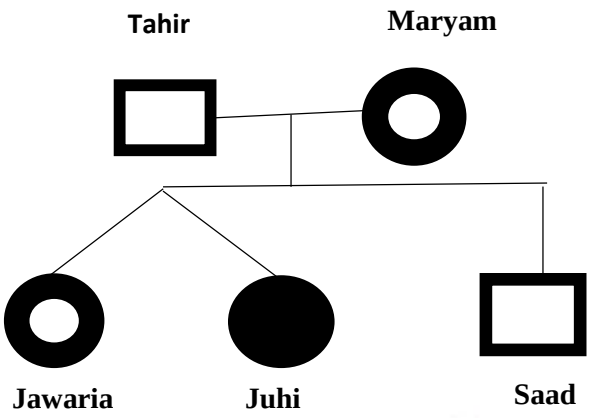
	Mother	Father
A.	A. $X^H X^h$	$X^h Y$
B.	B. $X^H Y^h$	$X^H Y$
C.	C. $X^h X^h$	$X^H Y$
D.	D. $X^H Y^H$	$X^h Y$
E.	None of the above	

23. When hybrids are crossed, the genotype ratio of the offspring is

A. 1 : 1
B. 3 : 1
C. 1 : 2 : 1
D. 4 : 1
E. 3 : 2 : 1

24. Cystic fibrosis patients lack a gene that codes tor a transmembrane carrier of:

A. Na^+ ions
B. K^+ ions
C. Cl^- ions
D. Ca^{2+} ions
E. Mg^{2+} ions



25. In the pedigree of a family shown above, brown eyes are indicated as [redacted] blue eyes as Jaw[redacted] and Juhi are twins. From this chart, it can be determined that:

A. Tahir and Mary are homozygous for brown eyes
B. Jawaria and Juhi are identical twins
C. Juhi is heterozygous for blue eyes
D. Juhi is homozygous for blue eyes
E. Jawaria and Saad are homozygous for brown
A. Eyes

26. Which of the following is an example of discontinuous variation:

A. Range of height of pea plants 30-50 cm
B. Offspring including 2 males and 3 females
C. Pea plants grown in darkness are yellow
D. Adult human weight ranges from 50-95 kg

27. The possible result of crossing between heterozygous (T t) and homozygous dwarf (tt) is.

A. 50% tall and 50% Dwarf
B. 100% tall
C. 100% dwarf
D. 75% tall and 25% dwarf

28. The tendency of gene in chromosomes to remain together is called:

A. Crossing over
B. Synapsis
C. Terminalization
D. Linkage

29. The proportion of different alleles of a gene in a population is termed as:

A. Allele frequency
B. Genetic drift
C. Gene frequency
D. Allelomorph

30. A man with blood group 'A' marries a woman with blood group 'B', child can have

A. A and B
B. B and AB
C. A and AB
D. A, B, AB and O

31. In a population 36% people have Blue Eyes"; allele frequency for blue is

A. 36%
B. 40%
C. 60%
D. 64%

32. O Group is universal donor because

A. It has both A & B Antigens
B. No Antigens
C. A antigen
D. B antigen

33. In sickle cell anemia

A. Valine is replaced by Glutamic Acid
B. Glutamic Acid is replaced by Valine
C. Glutamic Acid is replaced by Adenine
D. B-chain is replaced by Valine

34. Skin color, height and intelligence vary in different people due to:

A. Pleiotropy
B. Epistasis
C. polygenic inheritance
D. Crossing over

35. When phenotypically tall plant is crossed with pure dwarf plant what cross is this:

A. Test
B. Monohybrid
C. Dihybrid
D. Multiple cross

36. If a color blind person marries a homozygous normal female, what are the chances of sons to be color blind?

A. 50%

B. 25%
C. 100%
D. None of these

37. A man who is normal for color vision marries a normal heterozygous woman chance of their son being color blind is:

A. 0%
B. 100%
C. 50%
D. 25%

38. The gene pool of a population tends to remain stable if:

A. Mating is at random
B. There is extreme migration
C. There is selected mattings
D. There are frequent mutations

39. For a guinea pig, black coat (B) is dominant over white coat (b). If 2 guinea pigs mate and produce 75 offspring with black coats and 25 white which coats the genotypes of the presents were most likely:

A. BB x BE
B. Bb x BB
C. Bb x Bb
D. Bb x bb

40. If the women carrying the trait for color-blindness marries a color-blind man that are the chances they will have a color blind son:

A. 100
B. 75
C. 25
D. 50

41. Father has dark eyes and the mother has blue. The possibility of the color of eyes of the offspring:

A. Blue
B. Brown
C. Grey
D. Blue or brown

42. The blood type known as a universal donor is:

A. A
B. B
C. AB
D. O

43. How do tall pea plants produce short pea plants?

A. Mutation
B. Independent assortment
C. Linkage
D. Segregation

44. Genetic drift is the change in allele frequency of small population simply by:

A. Mutation
B. Natural selection
C. Migration
D. Chance

45. The branch of biology, which deals with heredity and _____ is known as genetics.

A. Crossing over
B. Variation
C. Linkage
D. Mutation

46. In pea plants, all of the following are examples of dominant traits except

A. Round seed
B. Yellow seed
C. Tallness
D. Yellow pods

47. Drosophila is useful for all of the following reasons except:

A. It breeds every 10 days
B. It produces many off springs
C. It has no linked character
D. It has four pairs of chromosomes

48. In the Himalayan rabbit, low temperatures cause the growth of:

A. White fur
B. Black fur
C. White paws
D. Black genes

49. A change in genes is called a

A. Genotype
B. Phenotype
C. Cross-over

D. Mutation

50. A test cross is performed:

A. Only with hybrids
B. Only with pure types
C. To determine whether an organism is heterozygous or homozygous dominant
D. Only between recessives

51. If two parents who are hybrid for brown eyes have four children, the eye color of the children may be:

A. all brown
B. 3 brown, 1 blue
C. 2 brown, 2 blue
D. any of the above combination

52. The hemoglobin of people with sickle-cell anemia differs from normal hemoglobin one:

A. Protein
B. Gene
C. Amino acid
D. Monosaccharide

53. All of the following human traits are recessive except:

A. curly hair
B. albinism
C. light hair color
D. attached ear lobe

54. Neurospora has been useful in illustrating:

A. b) RNA action
B. DNA action
C. single gene action
D. test cross

55. The normal color of eye is due to:

A. Recessive alleles
B. Dominant alleles
C. Recessive gene
D. Dominant gene
E. Holographic genesis

56. The gene for eye color is located on;

A. X chromosomes
B. Y chromosomes
C. Both A & B
D. None of them

57. Which process during meiosis causes variation?

A. Formation of 4 daughter calls
B. Synapsis
C. Fertilization of gamete
D. Formation of haploid gamete

58. The law of Dominance is illustrate in the garden pea by:

A. Homozygous tall x heterozygous tall
B. Heterozygous tall x heterozygous tall
C. Homozygous tall x Homozygous tall
D. Pure short x pure short
E. Homozygous tall x pure short

59. In the Hardy-Weinberg principle, $p^2 + 2pq + q^2 = 1$, q^2 represents the frequency of the:

A. Homozygous dominant
B. Heterozygous dominant
C. Heterozygous recessive
D. Homozygous recessive
E. Blended genes

Questions 60-62

Hemophilia is a disorder in which blood fails to clot. Saad, a male hemophiliac, marries Sara, a normal woman and together they have four children, two boys (Ahmed and Ali) and two girls (Alia and Ayesha). None of the children display the symptoms of hemophilia. Ahmed, Ali, Alia, and Ayesha all marry normal individual and have children. Hone of Ahmed's or Ali's children, male or female, display symptoms of hemophilia, but the sons of Alia and Ayesha display symptoms of hemophilia while the daughters of Alia and Ayesha do not

60. Which of the following best explains the reasons that Ahmed, All, Alia, and Ayesha do not display symptoms of hemophilia, even though their father, Saad, is a hemophiliac?

A. Hemophilia is a Y-linked disorder, and Saad can only pass on his Y chromosome.
B. Hemophilia is an X-inked disorder, and even though Alia and Ayesha received a hemophiliac X chromosome from Saad, Sara gave them a normal X chromosome.

C. Hemophilia is a Y-linked disorder, and therefore cannot be displayed in females.
D. Hemophilia is a Y-linked disorder, and Ahmed and All must have received and X-chromosome from Saad.
E. Hemophilia is an X-inked disorder, and even though Ahmed and Ali received a hemophiliac X chromosome from Saad, gave them a normal X chromosome.

61. If one of Ali's daughters marries a normal man, what is the probability that one of their children will display symptoms of hemophilia?

A. 0%
B. 25%
C. 50%
D. 5%
E. 100%

62. Which of the following individuals are heterozygous for hemophilia?

A. Saad, Ahmed and Ali
B. Ahmed, Ali Alia, and Ayesha
C. Saad and Sara
D. Alia and Ayesha
E. Ahmed and Ali

63. Erythroblastosis foetalis occurs when:

A. Mother is Rh positive and baby is Rh negative
B. Mother is Rh negative and baby is Rh positive
C. Both mother and baby are Rh negative
D. Both mother and baby are Rh positive
E. All of the above statements are true

64. In pea plants, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r) and the allele for yellow seeds (Y) is dominant to the allele for green seeds (y). A doubly heterozygous, round, yellow-seeded plant is crossed with a green, wrinkled- seeded plant. What percentage of the F1 generation are recombinants?

A. a.0 %
B. b.25 %
C. c.50 %
D. d.75 %
E. e.100 %

65. The genotype of normal male in humans is _____ chromosomes.

A. 44+XX
B. 44+XY
C. 44+XXY
D. 44+XO
E. 44+XXX

66. In cats, the genes controlling coat-color are co-dominant (incompletely dominant) and are carried on the X chromosomes When a black female was mated with a ginger male the resulting litter consisted of black male and tortoise-shell female kittens. What phenotypic ratio would be expected in the F_2 generation?

A. 1 black male: 1 ginger male: 2 tortoise-shell females
B. 1 black male: 1 ginger male: 1 tortoise-shell female: 1 Black female
C. 2 black males: 1 tortoise-shell female: 1 ginger female
D. 1 black male: 1 tortoise-shell female: 1 ginger female: 1 black female
E. 2 black males: 1 tortoise-shell female: 1 black female

67. A pure-breeding plant with the dominant phenotype of character P and the recessive phenotype of character Q was crossed with another pure-breeding plant with the. Recessive phenotype of character P and the dominant phenotype of Q. The offspring of this cross were crossed with a double homozygous recessive for P and Q and the following results obtained:
22 were phenotypically dominant for P and recessive for Q.
5 were phenotypically dominant for both P and Q.
4 were phenotypically recessive for both P and Q.
24 were phenotypically recessive for P and dominant for Q.
Which one of the following types of inheritance is illustrated by these results?

A. gene linkage of P and Q
B. independent segregation of P and Q
C. Mendelian dihybrid inheritance
D. multiple alleles

E. polygenic inheritance

68. Flower color is controlled by a single pair of alleles. The allele for red flowers is dominant to the allele for white flowers.
A plant homozygous for red flowers is crossed with a plant homozygous for white flowers. All the resulting plants have red flowers (F1 generation).
When the F1 generation is crossed with each other, 18 plants are obtained. 12 plants have red.
Flowers and 6 have white flowers (F2 generation)
What ratio is expected in the F2 generation and what ratio has been obtained?

	expected ratio red to white	obtained ratio red to white
A.	1 : 1	2 : 1
B.	1 : 1	3 : 1
C.	3 : 1	2 : 1
D.	3 : 1	3 : 1

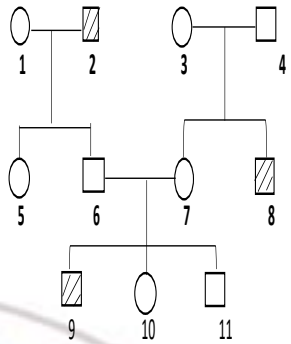
69. In birds the male is the homogametic sex. A male bird showing the recessive trait was mated with a female showing the dominant trait of a characteristic governed by a pair of alleles which are sex linked. What is the probability that the male offspring will show the dominant trait?

A. 0
B. 0.25
C. 0.50
D. 0.75
E. 1.00

70. During the formation of an ovum, non-disjunction of the sex chromosomes occurred. The ovum was then fertilized by a normal, Y-bearing sperm cell. Which one of the following shows the sex chromosome complement of the resulting zygote?

A. XO
B. XY
C. XXY
D. XXXY
E. XXYY

71. The diagram shows the inheritance of haemophilia in a family.



Key to phenotypes **key to chromosome types**
Normal female X^H = normal X chromosome
Haemophilia female X^h = × chromosome carrying allele for haemophilia
Normal male
Haemophilia male Y = normal Y chromosome

What is the genotype of person 7?

A. $X^H X^H$
B. $X^H Y$
C. $X^H X^h$
D. $X^h Y^h$
E. $X^h Y$

72. Red-green colour-blindness is a sex-linked recessive trait. A colour-blind man marries a woman with normal vision, whose father is colour-blind. If they have a daughter, what is the probability that she will be colour-blind?

A. 0
B. 0.25
C. 0.50
D. 0.75

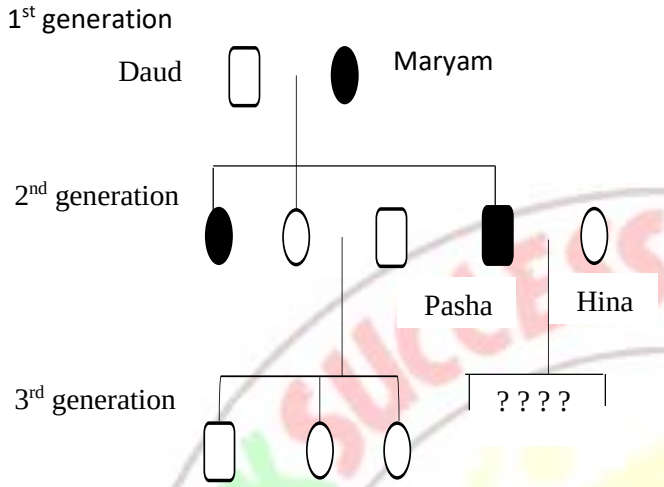
73. Mendel concluded that each organism has two hereditary factors for each trait, now called:

A. chromatids
B. alleles
C. chromosomes
D. none of the above

74. Inheritance of acquired characteristics is based on:

A. Genetic role in reproduction
B. Use and disuse of organ
C. Survival of the fittest
D. Mutations

75. The family tree shows the inheritance of the ability to taste a certain substance. The allele for the ability to taste this substance is dominant to the allele for the inability to taste it.



Key
Represents a male 'taster'
Represents a male 'non-taster'
Represents a female 'taster'
Represents a female 'non-taster'

What percentage of children of Pasha and Hina would be 'non tasters'?

A. 25 %
B. 50%
C. 75%
D. 100%

76. Two animals are mated. One is homozygous dominant for one character and homozygous recessive for another. The other animal is heterozygous for both characters. How many phenotypes are expected in the offspring of this cross?

A. 1
B. 2
C. 3
D. 4

77. Part of the amino acid sequences in normal and sickle cell haemoglobin are shown.

normal haemoglobin **sickle cell haemoglobin**

thr - pro - glu - glu **thr - pro - val - glu**

mRNA codons for these amino acids are

glutamine (glu) GAA GAG **proline (pro) CCU CCC**

threonine (thr) ACU ACC **valine (val) GUA GUG**

Which transfer RNA molecule is involved in the formation of this part of the sickle cell haemoglobin?

A. GUG
B. CAU
C. UGC
D. GAG

78. In the Hardy-Weinberg principle, $p^2 + 2pg + q^2$ =?

A. 0
B. 1
C. Infinity
D. Any value between 0 to 1

79. Which statement about dominant and recessive alleles is not correct?

A. A dominant characteristic is seen in the phenotype of a heterozygote.
B. A homozygous genotype may be either dominant or recessive
C. Recessive phenotypes always have two recessive alleles.
D. The phenotype of a homozygote is always dominant.

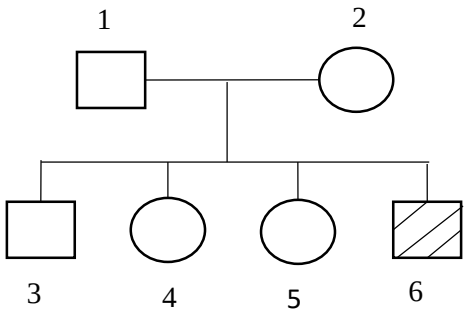
80. An Rh negative woman is married to an Rh positive man whose father was also Rh negative. What are the chances that their child will be affected?

A. 25%
B. 50%
C. 75%
D. 100%

81. The disease, which is caused by defect in a single gene or pair of gene is referred to as:

A. Unifactorial
B. Multifactorial
C. Down syndrome
D. Turner syndrome

82. The diagram shows the inheritance of haemophilia in a family.



Key

Unaffected female

Unaffected male

Affected male

If daughter 4 married a normal male, what is the probability that their first child would suffer from haemophilia?

A. 0
B. 0.125
C. 0.25
D. 0.5

83. An inter-breeding population of finches became separated geographically, forming two isolated groups. Each group then became subject to different selective pressures. One group was then introduced into the habitat of the other.
Which one of the following would determine whether they now formed two distinct species?

A. They had been separated for more than three million years.
B. They failed to produce fertile F, hybrids.
C. They showed marked differences in the shape of their beaks.
D. Their plumage had become markedly different.
E. Several genes now possessed different base sequences.

UNIT NO. (09)

1. The enzyme used to seal the sticky ends of DNA restriction fragment is:

A. Ligase
B. Polymerase
C. Adenosine deaminase
D. Trypsin
E. All of the above

2. Which type of molecule is the end product of translation?

A. amino acid
B. mRNA
C. polypeptide
D. tRNA
E. ATP

3. _____ is used to seal a DNA restriction fragment.

A. Vector
B. Restriction enzyme
C. Ligase
D. Polymerase
E. Plasmids

4. Process of transferring bacterium from a donor bacterium to a receive bacterium

A. Conjugation
B. Transduction
C. Transformation
D. Regressive Mutation

5. Formation of mRNA from DNA is called:

A. Translation
B. Transcription
C. Genetics
D. Mutation

6. The photogenic bacteria transfer DNA material to another bacteria by:

A. Transduction
B. Transformation
C. Conjugation
D. Fragmentation

7. Bacteria takes rDNA in the presence of:

A. NaOH
B. HCL
C. Calcium Chloride
D. NaCl

8. Which enzyme is used to cut DNA into small pieces?

A. ONA polymerase
B. Vector
C. Restriction enzyme

D. DNA Ligase

9. Transcription:
A. Requires tRNA to assemble amino acids
B. Requires DNA polymerase to assemble nucleotides
C. Results in the synthesis of a peptide
D. Requires the nucleotide containing uracil

10. The process of transferring coded information from DNA to messenger RNA is known as:
A. Translocation
B. Transpiration
C. Transcription
D. Translation

11. All of the following are examples of genetic engineering except the:
A. Production of a synthetic vaccine hepatitis B by yeast cell
B. Development of a strain of bacteria to break down oil spills
C. Production of human antibodies in tobacco plants
D. Development of frog embryo outside female body

12. Radioactive, short deoxy oligonucleotide sequence based on N-terminal amino acid sequence of a protein is called:
A. Gene probe
B. Gene clone
C. Type II
D. Complementary DNA
E. None of the above

13. The total number of Alleles in a population in one time is called _____.
A. Gene Pool
B. Gene Constant
C. Allele Pool
D. Allele Constant

14. The coding part of gene is called _____.
A. Exon
B. Intron
C. Interferon
D. Exoferon

15. The process of replacing or supplementing the defective allele with a functional, normal allele is known as _____.
A. allele transplant
B. physiotherapy
C. gene therapy
D. mutation
E. cloning

16. In the commercial manufacture of insulin, a human gene is inserted into which of these?
A. a chromosome of a human cell
B. a protein molecule in a yeast cell
C. the DNA of a bacterium
D. the nucleic acid in a virus

17. The enzyme used to seal the DNA is:
A. Restriction enzymes
B. Ligase
C. Polymerase

Lipase

UNIT NO. (10)

1. Which of the following ideas was not part of Charles Darwin's theory of evolution by natural selection?
A. Organisms produce more offspring than the environment can support
B. Variation between individuals arises by gene mutation
C. Only those individuals best adapted to the environment survive and reproduce
D. Individuals compete for scarce resources
E. Adaptive variation is inherited

2. Which of the following men might have explained the auk's less of the ability to fly with the following hypothesis?
"Since the auk stopped using its wings, the wings became smaller and this acquired trait was passed on to the offspring."
A. Darwin
B. Mendel
C. De Vrles
D. Lamarck
E. Morgan

3. Darwin's theory of evolution by natural selection incorporated all of the following EXCEPT

A. hereditary variation
B. high reproductive potential
C. inheritance of acquired characteristics
D. struggle for existence
E. different survival

4. Which of the following statements is FALSE based on Darwin's theory of evolution?

A. Natural selection is the driving force of evolution.
B. Favorable genetic variations become more and more common in individuals throughout their lives.
C. There is always a tendency of overproduction in a species.
D. All individuals of a species are not 100% alike.
E. None of the above.

5. The weakness in Darwin's theory of how evolution occurs was his inability to explain the

A. mechanisms that produce variations
B. reasons for overproduction
C. role played by natural selection
D. adaptations of living organisms for survival
E. inheritance of acquired characteristics

6. Darwin's Theory was based on all of the following points except:

A. Over reproduction
B. Struggle for existence
C. Variations and heredity
D. Survival of the fittest
E. Use and disuse of organs

7. Coccyx a reduced tail bone in man is the best example of

A. Embryology
B. Vestigial organs
C. Homology
D. Habitat
E. Deme

8. All of the following are factors in the development of new species EXCEPT:

A. use and disuse of organs
B. asexual reproduction
C. sexual reproduction
D. variations
E. natural selection

9. Which of the following negates Lamarck's Theory?

A. Elongated fore-limbs and neck of giraffe
B. Custom of Circumcision
C. Evolution of snake
D. foot of modern horse
E. Webbed feet of duck

10. Lamarck Identified evolution as:

A. Natural selection
B. Acquired characters
C. Disuse / use of organs
D. Mutation Theory

11. The theory of inheritance of acquired characters was proposed by:

A. Devaries
B. Darwin
C. Lamarck
D. Weisman

12. All of the following provide evidence for evolution except:

A. eugenics
B. heredity
C. fossils
D. vestigial

13. The first scientist to present a theory of evolution was:

A. Empedocles
B. Anakaminder
C. Lamarck
D. Darwin

14. Most scientists today believe that species have changed as the result of:

A. use and disuse
B. inheritance of character
C. minor variations
D. mutation

15. All of the following are factors in the development of new species except

A. variation
B. asexual reproduction
C. sexual reproduction
D. both B and C

16. Identify the incorrect statement about Charles Darwin's Theory:

A. The individuals of species have variations among them
B. There is always a tendency of over reproduction in a species
C. Vast gradual changes result in the origin of a new species
D. Favorable variations survive and unfavorable will be exterminated
E. Intra specific competition occurs between different species and inter-specific competition occurs among the individuals in a species

17. Lamarck theory is based on all of the following points EXCEPT:
I. Effects of environments
II. Use and disuse of organs
II. Natural selection
IV. Inheritance of acquired character

A. I only
B. II only
C. III only
D. IV only
E. I, II, and IV

18. Many scientists believe that one of the following is/are evolutionary origin(s) of animals, plants and fungi?

A. Protists
B. Algae
C. Bacteria
D. Protozoans

19. The following observations refer to evolution:
I. Inherited variations which are 'favoured' in particular environment are passed on.
II. There is a struggle for existence.
III. In time, 'favoured' inherited variations may accumulate causing gradual changes in the organism.
IV. Although populations tend to overproduce, they remain more or less constant in numbers from generation to generation.
In what sequence should the statements be placed to support. Darwin's theory of evolution?

A. I, II, III, IV
B. II, I, III, IV
C. III, I, IV, II
D. IV, II, I, III

20. At what point are two populations descending from the same ancestral stock considered separate species?

A. When they can no longer produce viable, fertile offspring
B. when they look significantly different from each other
C. When they can interbreed successfully and produce offspring
D. When their habitats are separated by a significantly large distance so that they cannot meet
E. Both B & C

21. The following observations refer to evolution:
I. Inherited variations which are 'favoured' in particular environment are passed on
II. There is a struggle for existence.
III. In time, 'favoured' inherited variations may accumulate causing gradual changes in the organism.
IV. Although populations tend to overproduce, they remain more or less constant in numbers from generation to generation.
In what sequence should the statements be placed to support Darwin's theory of evolution?

A. I, II, III, IV
B. II, I, III, IV
C. III, I, IV, II
D. IV, I, II, III
E. IV, II, I, III

UNIT NO. (11)

1. Living things that convert nitrogen-containing molecules into nitrates are:

A. Decomposers (e.g. bacteria and fungi)
B. Producers (e.g. green plants)
C. Primary consumers (e.g. mice)
D. Secondary consumers (e.g. snakes)
E. Tertiary consumers (e.g. hawks)

2. The best definition of species is

A. A group of organisms that occupy the same niche
B. A population that works together to defend itself from predators
C. A group of organisms that can mate with each other
D. A population that preys on other populations
E. A population where all members benefit from the association in some way

3. A bird that feeds on both insects ant berries would be classified as a
I. Primary consumer
II. Secondary consumer
III. Tertiary consumer

A. I only
B. II only
C. III only
D. I and III only
E. II and III only

4. In the given food chain of grass → squirrel → snake → owl, the secondary consumer would be

A. grass
B. squirrel
C. snake
D. owl
E. microbes of decay

5. Nitrogen cycle is facilitated by _____.

A. Algae
B. Fungi
C. Bacteria
D. Virus
E. Earth-quacks

6. All of the following are primary consumers except:

A. Grass hopper
B. Frog
C. Sheep
D. Cow
E. Rabbit

7. The decomposers of an ecosystem are:

A. Parasites only
B. Bacteria only
C. Fungi only
D. Bacteria and Fungi
E. Producers only

8. The habitat of a population is the:

A. set of conditions and resources it uses
B. place where it lives
C. geographic area it covers
D. set of interactions it has with other populations

9. What is the ecological definition of the term community?

A. all the food webs in an ecosystem
B. all the individuals of one species in an area
C. all the organisms in an area
D. the living organisms and their non-living environment

10. Which of the following is the correct sequence of the levels of organism

A. organism → population → community → ecosystem → biosphere
B. community → ecosystem → organism → population → biosphere
C. ecosystem → organism → population → community → biosphere
D. organism → community → population → ecosystem → biosphere
E. organism → community → ecosystem → population → biosphere

11. Higher altitudes have

A. High temperatures
B. Less rain
C. High atmospheric pressure
D. Increased wind velocity
E. All of the above

12. In a pyramid of energy, which level represents the greatest amount of energy?

A. Producers
B. First-order consumers
C. Second-order consumers
D. Third-order consumers
E. Decomposers

13. The plants and animals of an area which live successfully and reproduce particular surrounding constitute:

A. Community
B. Population
C. Ecology
D. Biosphere

14. The drastic change in climate over a past century has been illustrated

A. Increase in rainfall
B. Decrease in rainfall
C. Colder winter
D. Warmer winter

15. An ecosystem is:

A. Population living together
B. Species living together
C. A community with its nonliving components
D. A community with its living & nonliving components

16. Different Food Chains interact with each other to form:

A. Food Pyramid
B. Energy Graph
C. Food Web
D. Energy Pyramid
E. Food Chain Complex

17. Oxygen reacts with RuBP in the absence of CO_2 to form:

A. PGA
B. PGA and phosphoglycerate
C. Oxalo acetate
D. ATP

18. The following is a food chain:
Maple tree → Aphid → Ladybird beetle
Frog → Garter snake → Hawk
Which of the above organisms is a primary consumer?

A. Frog
B. Aphid
C. Ladybird beetle
D. Maple tree

19. All of the following statements about population are true except:

A. A population is made up of individuals of different species
B. Populations respond to favorable conditions by increasing in number
C. Conditions favorable for one population maybe unfavorable for another
D. Individuals of a population interact with each other.

20. In a pyramid of energy, the greatest amount of energy is present in' the level represented by:

A. Producers
B. First-order consumers
C. Second - order consumers
D. Decomposers

21. The expression "Ecological Niche" is defined as

A. A group of individual living together
B. Where an organism lives
C. e) All the population of a specific area
D. The role that an organism plays in an ecosystem

22. Combining the desirable qualities of two different organisms into one is referred to as

A. Inbreeding
B. Self-breeding
C. pure-line breeding
D. Hybridization

23. Progression from simple to complex forms is summarized in the term:

A. Sedimentation
B. putrefaction
C. Evolution
D. catastrophism

24. An ecosystem in made up of

A. Producers

B. Consumers
C. Decomposers
D. All of these

25. A change in the community structure of an ecosystem over a period of time is called:
A. Climax
B. Food chain
C. Succession
D. Food web

26. The succession ends with a diverse and relatively stable
A. Community
B. Biosphere
C. Ecosystem
D. Climax community

27. A disease in living organisms caused by parasites is called
A. Infection
B. Infestation
C. Endosymbiosis
D. Commensalism

28. An association between members of different species in which both get benefit from each other is called:
A. Symbiosis
B. Parasitism
C. Mutation
D. Commensalism

29. Scientific study of soil is called:
A. Topography
B. Penology
C. Geology
D. All of the above

30. The total amount of _____ reaching the producers in the ecosystem is called incident solar radiation:
A. Solar energy
B. Radiant energy
C. Heat
D. Energy
E. None of the above

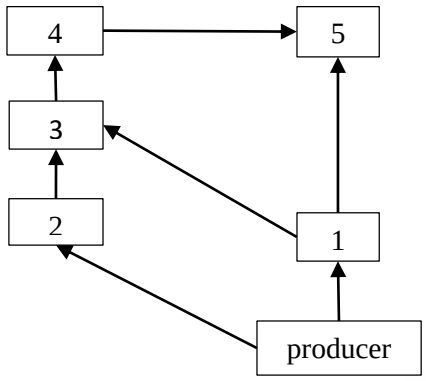
31. Which of the following would be most likely to occur in an ecosystem?
A. As the number of prey decreases, the number of predators increases
B. As the number of predators increases, the number of prey increases.
C. As the number of prey decreases, the number of predators decreases
D. As the number of prey increases, the number of predators decreases.
E. As the number of predators decreases, the number of prey decreases.

32. The secondary and tertiary consumers are also known as:
A. green plants
B. herbivores
C. abiotic factors
D. decomposers
E. carnivores

33. Consider the following statements about biological communities.
I. Their members share a common gene pool.
II. The community remains stable even though some physical aspect of the environment may undergo change.
III. It consists of all the populations living in a particular area.
IV. A community interacts with non-living environment and both function together to form ecosystem.
Which two of the above statements are true?
A. 1 and 2
B. 1 and 3
C. 2 and 4
D. 2 and 3
E. 3 and 4

34. Living things that would be the first to experience adverse effects if large amounts of carbon dioxide were taken out of the biosphere are:
A. Decomposers (e.g. bacteria and fungi)
B. Producers (e.g. green plants)
C. Primary consumers (e.g. mice)
D. Secondary consumers (e.g. snakes)
E. Tertiary consumers (e.g. hawks)

35. The diagram shows a food web.



Which organisms occupy the same trophic level?

A. 3 and 2
B. 4 and 1
C. 5 and 2
D. 5 and 4
E. 1 and 2

36. Which of the following defines an ecological niche?

A. the habitat in which an organism finds its food supply
B. the habitat in which an organism finds the most suitable climate
C. the relationship between an organism and other species
D. the way in which an environment is exploited by an organism

37. Which of the following is not the type(s) of abiotic component?

A. Climatic factors
B. Edaphic factors
C. Topographic factors
D. Phytoplankton

UNIT NO. (12)

1. Which of the following deserts is an example of a cold desert

A. Sahara desert
B. Thar desert
C. Cholistan desert
D. Gobi desert
E. Thal desert

2. What night be the best strategy to prevent ecological damage due to acid rain?

A. Stock the lakes with bigger fish so that they can resist the effects of the acid better
B. Reduce the amount of fossil fuels that are burned
C. Supply plants with excess phosphorus and water
D. Supply fungi with excess sugars and amino acids
E. Only fish when it is sunny

3. Savannah is an example of _____ ecosystem:

A. marine water
B. fresh water
C. forest
D. tropical grass land
E. desert

4. The sea zone below 2000 meters is called:

A. Euphotic zone
B. Bathyal zone
C. Abyssal zone
D. Pelagic zone
E. Benthic zone

5. The biome in which an ecologist would expect to find the coldest year-round temperature is the:

A. Taiga
B. Coniferous
C. Deciduous forest
D. Tundra
E. Grassland

6. The frozen soil in Tundra is called _____.

A. Ice-soil
B. Snow soil
C. Frigid soil
D. Perma frost
E. Frosted-soil

7. Which of the following is correct regarding Savannah type of ecosystem?

A. The dry season is very long
B. The temperature ranges upto 45° throughout the year

C. The subsoil is permanently frozen and is called perma frost
D. The forests are characterized by board leaved plants
E. Most common animals are bats, wild cats, wild boars and spiders

8. All of the following statements are true about savannah EXCEPT:

A. Dry season is very long and temperature ranges more than 18 °C throughout the year
B. These are tropical grass lands
C. Rain fall is upto 125 cm per year
D. Fauna includes antelopes, zebras and giraffes
E. Its plants do not shed off their leaves

9. _____ biomes are known as bread basket of the world.

A. Coniferous forest
B. Temperate deciduous forests
C. Tundra
D. Tropical rain forests
E. Grass land

10. Identify the correctly matched pair relating to a term and its meaning/function/example:

A. nitrogen cycle ... Rhizopus
B. denitrifying bacteria ... change protein to ammonia
C. biosphere ... where life exists
D. lithosphere ... water, air and soil on the surface of earth

11. _____ mono consists of deeper layer of water.

A. Letic
B. Littoral
C. Limnetic
D. Profundal

12. Coniferous forests are found at _____.

A. High altitudes & latitudes
B. Low altitudes & latitudes
C. High longitudes & latitudes
D. High altitudes & longitudes

13. The temperature deciduous forest are characterized by plant

A. Maple
B. Pine
C. Fir
D. Spruce

14. In pond ecosystem the macronutrient include:

A. Iron
B. Manganese
C. Copper
D. Magnesium

15. In which region organic material and shells are found:

A. Littoral
B. Abyssal
C. Euphotic
D. Bathyal

16. The biome in which most of the Earth's photosynthesis takes place is:

A. Oceans
B. Deciduous forests
C. Tropical forests
D. Coniferous forests

17. In Grassland ecosystem the average rainfall is _____:

A. 30 to 75cm
B. 100 - 125cm
C. 20 - 40cm
D. 125-150cm

18. In which of the following habitats are we most likely to find and animal with no sweat glands, a thick fur and bulky body?

A. Tundra
B. Grass lands
C. Tropical forest
D. Desert

19. Which biome contains maples, Oaks, and bears?

A. Tundra
B. Tropical rain forest
C. Temperate grasslands
D. Taiga

E. Deciduous forest

20. Identify the incorrect statement about the Bathyal zone:

A. It ranges from surface to depth of about 2000 meters
B. It consists of pelagic and benthic zones
C. It is aphetic
D. It contains producers that prepare food for consumers
E. None of the above

21. The producers of pond ecosystem include:

A. Bacteria
B. Zooplankton
C. Fungi
D. Phytoplankton
E. All of the above

22. Savannah is an example of _____ ecosystem:

A. marine water
B. fresh water
C. forest
D. tropical grass land
E. desert

23. A pure-breeding plant with the dominant phenotype of character P and the recessive phenotype of character Q was crossed with another pure-breeding plant with the. Recessive phenotype of character P and the dominant phenotype of Q. The offspring of this cross were crossed with a double homozygous recessive for P and Q and the following results obtained:
22 were phenotypically dominant for P and recessive for Q.
5 were phenotypically dominant for both P and Q.
4 were phenotypically recessive for both P and Q.
24 were phenotypically recessive for P and dominant for Q.
Which one of the following types of inheritance is illustrated by these results?

F. gene linkage of P and Q
G. independent segregation of P and Q
H. Mendelian dihybrid inheritance
I. multiple alleles
J. polygenic inheritance

24. At the northern hemisphere, a tundra type of growth:

A. A. is impossible
B. occurs only in winter
C. lasts only for two to three months
D. is in the form of a wide land
E. is in the form of patches of land

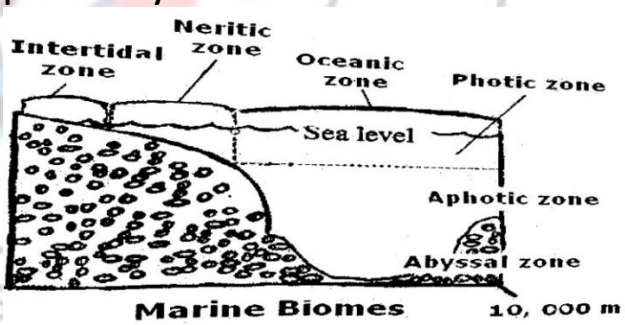
25. Which of the following statements is true about savannah?

A. dry season is very long and temperature ranges more than 18°C throughout the year
B. its plants do not shed off their leaves
C. the sub soil is permanently frozen
D. rain fall is upto 200 cm per year
E. evaporation exceeds rainfall

26. A pollen tube serves as to:

A. produce sperms
B. store food for the developing embryo
C. transfer sperms from the stigma to the ovary
D. produce female gametophytes

27. Which of the following is the area of least productivity?



A. Intertidal zone
B. Oceanic zone
C. Photic zone
D. Aphotic zone
E. Neritic zone

28. The continuous decrease in water table and favorable changes in substratum makes the pond suitable for plants, they have much branched rhizome system. The dense growth of plants increases the rate of transpiration, which ultimately exposes the marshy soil. The

nutrients present in pond due to action of oxygen of air are now oxidized to nitrates and sulphates. The representative plant species of this stage are Juneus, Cyperus and Carex. The animals of this stage are snails like Anodonta and Psidium.
The above given lines tell about which of the following stage of hydrosere in a pond?

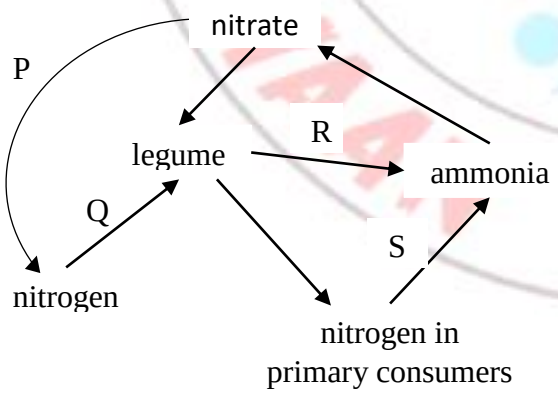
A. Climax stage
B. Wood land stage
C. Sedge meadow stage
D. Reed swamp stage
E. Submerged stage

29. The below given are the characteristics of which of the following ecosystem?
I. I includes tropical grasslands
II. Rainfall is up to 125cm per year.
III. Dry season is very long
IV. Primary consumers include Zebras, giraffes and elephant etc.
V. Euphorbia is an example of its plant life

A. Tropical rain forests
B. Coniferous forests
C. Savannah
D. Tundra

UNIT NO. (13)

1. The diagram shows a simplified nitrogen cycle.



Which row shows the correct labels for P, Q, R and S?

2. Which processes are essential in making nitrogen in dead plant material available to growing plants?
I. ammonification
II. deamination
III. nitrification
IV. nitrogen fixation

A. I, II and III only
B. I, II and IV only

	P	Q	R	S
A.	Denitrification by anaerobic bacteria	Nitrogen fixation by Nitrifying bacteria	Decay of leaf tissue by saprotrophic fungi	Ammonification by saprotrophic fungi
B.	Lightening action on soil nitrates	Nitrogen fixation by nitrogen fixing bacteria	Decomposition using nitrogenase enzyme	Decomposition by root nodule bacteria
C.	nitrification by anaerobic bacteria	Nitrification using nitrogenase enzyme	Decay of leaf tissue by saprotrophic fungi	Assimilation of Organic nitrogen
D.	reduction by anaerobic bacteria	Nitrogen fixation by root nodule bacteria	Decomposition of organic nitrogen	Decay of urea by saprotrophic bacteria

C. I, III and IV only
D. II, III and IV only

3. The first step in nitrogen cycle is:

A. Nitrification
B. Ammonification
C. Oxidation
D. Denitrification

4. Nitrogen is the ultimate product of:

A. Fats
B. Carbohydrates
C. Proteins
D. Organic salts

5. Thick layer of _____ acts like a glass of a green house, which allows the entry of incoming solar radiation, but prevents the emission of the outgoing heat waves:

A. Nitrogen dioxide
B. Sulphur dioxide
C. Nitrogen

D. Carbon dioxide
E. Ozone

6. What phenomenon is causing heating up of the earth's atmosphere?

A. Global warming
B. Pollution
C. Ozone depletion
D. Deforestation

7. Plants absorb it in the form of soluble phosphates. It is present abundantly in growing and storage organs of plants. What is it?

A. H_2O
B. CO_2
C. K
D. P
E. N

8. Nitrogen-cycle is facilitated by _____.

A. Algae
B. Fungi
C. Bacteria
D. Virus
E. Earth-quacks