3. Inheritance and Variation

1) Which one is a dominant trait amongst seven Pea traits chosen by Mendel-
(a) Seed shape-wrinkled
(b) Pod colour-yellow
(c) Flower location-axial
(d) Seed colour-green

2) When a plant with YYRR-yellow round seeds is crossed with a plant yyrr-green wrinkled seeds, then the phenotype of YyRR?
(a) Yellow round (b) Green wrinkled
(c) Yellow round (d) Green round

3) Which mechanism is responsible, when brown spotted deer are produced on cross breeding the black and white spotted deer?
(a) Pleiotropy (b) Incomplete dominance
(c) Multiple alleles (d) Epistasis

4) Which of the following is not an example of X-linked trait disorder?
(a) Red-green colour blindness
(b) Haemophilia
(c) Myopia
(d) Ichthyosis

5) Crossing over occurs in which stage of meiosis.
(a) Diplotene of prophase I
(b) Pachytene of prophase I
(c) Zygotene of prophase I
(d) Leptotene of prophase I

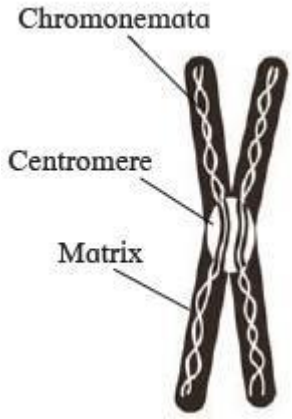
6) When the organism has either male or female reproductive organs, it is described as
(a) Bisexual (b) Hermaphrodite
(c) Unisexual (d) Monoecious

7) Who proposed the chromosomal theory of inheritance?
(a) Mendel (b) Punnet
(c) Morgan (d) Sutton and Boveri

8) Holandric genes are transmitted from male to male, occurs through
(a) Autosomes (b) X-chromosome
(c) Y-chromosome (d) None of these

9) Phenotypic ratio of incomplete dominance in Mirabilis jalapa.
(a) 2 : 1 : 1 (b) 1 : 2 : 1
(c) 3 : 1 (d) 2 : 2

10) The figure represents a _____.



(a) DNA (b) Chromosome
(c) Kinetochore (d) Crossing over

11) The mentioned syndrome is caused due to extra copy of chromosome number. Identify the disease.

(a) Down's syndrome
(b) Turner's Syndrome
(c) Sex-linked inheritance
(d) Haemophilia

12) What will be the genotype in the following cross-
Tt x tt
(a) All dominant
(b) 50% dominant and 50% recessive
(c) All recessive
(d) 75% dominant and 25% recessive

13) If purple colour flowers are crossed with white colour flowers, what will the phenotypes of F_1 generation:
(a) 100% purple
(b) 50% purple and 50% white
(c) 75% purple and 25% white
(d) None of these

14) The genotypic and phenotypic ratios are identical in-
(a) Incomplete dominance (b) Epistasis
(c) Pleiotropy (d) Co-dominance

15) A colourblind man marries a woman, who is homozygous for normal colour vision, the probability of their son being colourblind is –
(a) 0% (b) 25% (c) 50% (d) 100%

16) A, B, O blood group in gin human beings is an example of-
(a) Multiple alleles (b) Pleiotropy
(c) Co-dominance (d) Incomplete dominance

17) What is the scientific name of pea?
(a) Lathyrus odoratus (b) Mirabilis jalapa
(c) Pisum sativum (d) Zea mays

18) A cross between an individual with unknown genotype for a trait with recessive plant for that trait is .....
(a) back cross (b) reciprocal cross
(c) monohybrid cross (d) test cross

19) When phenotypic and genotypic ratios are the same, then it is an example of .....
(a) incomplete dominance
(b) complete dominance
(c) Multiple alleles
(d) cytoplasmic inheritance

20) If the centromere is situated near the end of the chromosome, the chromosome is called .....
(a) Metacentric (b) Acrocentric
(c) Sub-Metacentric (d) Telocentric

21) Chromosomal theory of inheritance was proposed by .....
(a) Sutton and Boveri (b) Watson and Crick
(c) Miller and Urey (d) Oparin and Halden

22) Which disorder affects brain development and causes mental retardation?
(a) Haemophilia (b) Cystic fibrosis
(c) Sickle cell anaemia (d) Phenylketonuria

23) When the colour-blind man marries a normal female, their daughters will be
(a) 50% normal (b) 25% carrier
(c) 25% normal (d) 50% carrier

24) Select the incorrect sentence for phenylketonuria.
(a) Traits appear in both sexes with equal frequency.
(b) Artificial selection is the metho(d)
(c) Phenylalanine is not converted into threonine
(d) Caused due to recessive autosomal genes.

25) Which of the following is not true in auto so mal recessive traits-?
(a) Appear in both sexes with equal frequency.
(b) Determined by recessive autosomal genes
(c) These traits tend to skip generations.
(d) Widow's peak is an example

26) Down's syndrome is due to extra X chromosome caused by
(a) Non-disjunction during egg formation

(b) Non-disjunction during sperm formation
(c) Mutation
(d) Either a or b

27) Which is chromosomal disorder caused due to extra X chromosome in males.
(a) Down's syndrome
(b) Thalassemia
(c) Turner's syndrome
(d) Klinefelter's syndrome

28) Which disorder has 44 autosomes with XO?
(a) Down's syndrome
(b) Thalassemia
(c) Turner's syndrome
(d) Klinefelter's syndrome

29) Down's syndrome is caused due to which extra copy of chromosome number.
(a) Chromosome 19 (b) Chromosome 21
(c) Chromosome 20 (d) Chromosome 18

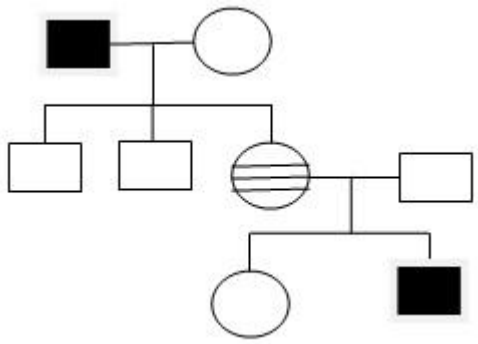
30) Turner's syndrome is represented by
(a) XYY (b) XO (c) XXX (d) XXY

31) Which disease is related to excessive development of hair on pinna of ear?
(a) Haemophilia (b) Hypertrichosis
(c) Colour blindness (d) Myopia

32) Myopia is a trait linked to
(a) X-linked (b) Y-linked
(c) Autosomes (d) None of these

33) In human blood grouping, how many antigens are in a person with O blood group
(a) None (b) Both A and B
(c) Only B (d) Only A

34) What type of disorder is observed in the above pedigree diagram.

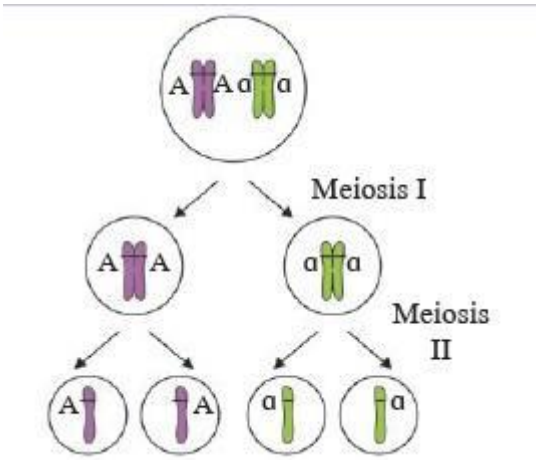


(a) Phenylketonuria
(b) Colour blindness
(c) Huntington's disease
(d) Sickle cell anaemia

35) Find the mismatched pair-

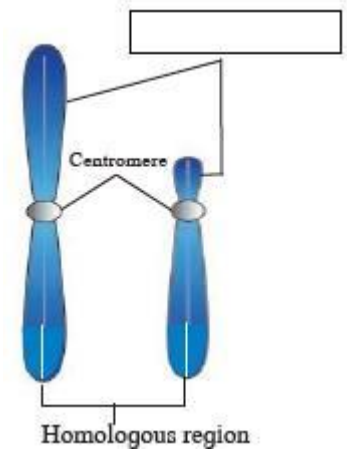
(a) Haemophilia – sex linked recessive
(b) Down's syndrome – Trisomy 21
(c) Klinefelter's syndrome – monosomy of sex chromosome
(d) Incomplete sex linkage - Nephritis

36) Observe the following diagram and fill the blank box.



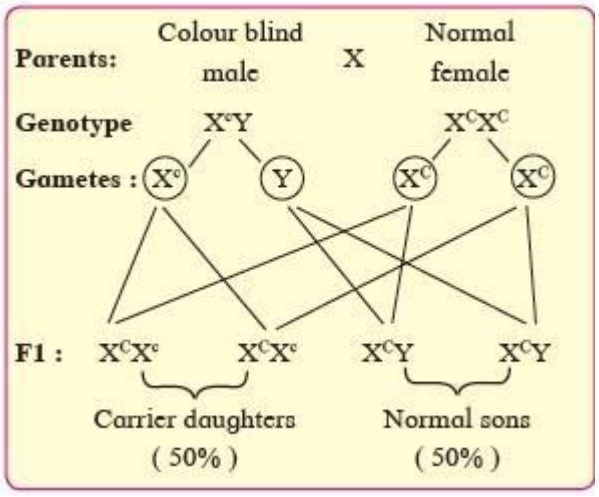
(a) Meiosis (b) Mitosis
(c) Meiosis II (d) None of these

37) Identify the blank portion in the below mentioned figure:



(a) Homologous chromosome
(b) Non-homologous chromosome
(c) Chromonemata
(d) Chromomeres

38) The following figure represents_____.



(a) sex determination
(b) sex-linked inheritance
(c) variation in chromosome number
(d) Linkage

39) How many linkage groups are there in garden pea?
(a) 9 (b) 5 (c) 3 (d) 7

40) Who had proposed chromosomal theory of inheritance?
(a) Hugo de Vries
(b) Sutton and Boveri
(c) Gregor Johann Mendel
(d) Correns and von Tschermak

41) Which of the following are not an example of X-Y linked traits-?
(a) Total colour blindness (b) Nephritis
(c) Retinitis pigmentosa (d) Hypertrichosis

42) The haemophilic carrier female when crossed with haemophilic man, what proportion will be haemophilic boy?
(a) three/fourth (b) one/fourth
(c) two/fourth (d) None

43) If the genes are located in a chromosome as p-q-r-s-t, which of the following gene pairs will have least probability of being inherited together?
(a) p and q (b) r and s
(c) s and t (d) p and s

44) Find the mis match pair :-
(a) Down's syndrome = 44 + XY
(b) Turner's syndrome = 44 + XO
(c) Klinefelter syndrome = 44 + XXY
(d) Super female = 44 + XXX

45) Which animal was experimented on by Morgan?
(a) Caenorhabditis elegans
(b) Drosophila melanogaster
(c) Mus musculus
(d) Escherichia coli

46) In dihybrid cross, F_2 generation offsprings show four different phenotypes while the genotypes are .....
(a) six (b) nine (c) eight (d) sixteen

47) Which one is a recessive trait amongst seven Pea traits chosen by Mendel-
(a) Seed colour-yellow
(b) Flower colour-white
(c) Seed shape-round
(d) Pod shape-inflated

48) A person shows symptoms like anaemia, pale yellow skin, change in size and shape of RBCs. Identify the disease?
(a) Sickle-cell anaemia (b) Thalassemia
(c) Haemophilia (d) Colour blindness

49) When AB blood group male marries B blood group female, what is the proportion of B blood group progeny?
(a) 75% (b) 100% (c) 25% (d) 50%

50) Chromosomes are made of
(a) DNA + RNA (b) DNA + histones
(c) DNA only (d) DNA + pectin

51) Sickle cell anaemia is an example of
(a) Pleiotropy (b) Epistasis
(c) Codominance (d) Incomplete dominance

52) What % of the genotype is dominant?
BB x bb
(a) 100% (b) 25% (c) 50% (d) 75%

-------- All the Best --------

3. Inheritance and Variation Keys

1) Ans. (c)

2) Ans. (a)

3) Ans. (b)

4) Ans. (d)

5) Ans. (b)

6) Ans. (c)

7) Ans. (d)

8) Ans. (c)

9) Ans. (b)

10) Ans. (b)

11) Ans. (a)

12) Ans. (b)

13) Ans. (a)

14) Ans. (d)

15) Ans. (a)

16) Ans. (a)

17) Ans. (c)

18) Ans. (d)

19) Ans. (a)

20) Ans. (b)

21) Ans. (a)

22) Ans. (d)

23) Ans. (d)

24) Ans. (c)

25) Ans. (d)

26) Ans. (d)

27) Ans. (d)

28) Ans. (c)

29) Ans. (b)

30) Ans. (b)

31) Ans. (b)

32) Ans. (a)

33) Ans. (a)

34) Ans. (b)

35) Ans. (c)

36) Ans. (c)

37) Ans. (b)

38) Ans. (b)

39) Ans. (d)

40) Ans. (b)

41) Ans. (d)

42) Ans. (b)

43) Ans. (d)

44) Ans. (a)

45) Ans. (b)

46) Ans. (b)

47) Ans. (b)

48) Ans. (b)

49) Ans. (d)

50) Ans. (b)

51) Ans. (a)

52) Ans. (a)