EXERCISE-I (Conceptual Questions)

MENDELISM

1. On which plant Mendal had carried out his investigation:-
   (1) Garden-pea   (2) Wild-pea   (3) Cow-pea   (4) Pigeon –pea

2. During breeding the removal of anthers from a flower is called:-
   (1) Anthesis   (2) Pollination   (3) Emasculation   (4) Vasectomy

3. Mendel formulated the law of purity of gametes on the basis of :-
   (1) Dihybrid cross   (2) Monohybrid cross
   (3) Back cross   (4) Test cross

4. A cross between AaBB X aa BB yields a genotypic ratio of :-
   (1) 1 AaBB : 1 aaBB   (2) 1 AaBB : 3 aaBB
   (3) 3 AaBB : 1 aaBB   (4) All AaBb

5. In monohybrid cross what is the ratio of homozygous dominant and homozygous recessive individuals in F_2- generation:-
   (1) 1 : 2 : 1   (2) 2 : 1 / 1 : 2   (3) 3 : 1 / 1 : 3   (4) 1 : 1

6. The cross between 4recessive to it's hybrid or its's F_1 plant is called:-
   (1) Back cross   (2) Test cross
   (3) Monohybrid cross   (4) Dihybrid cross

7. What is the genotypic and phenotypic ratio of monohybrid test cross:-
   (1) 1 : 2   (2) 1 : 2   (3) 3 : 1   (4) 1 : 2 : 1

8. Dihybrid cross proves the law of :-
   (1) Segregation   (2) Purity of gametes   (3) Dominance   (4) Independent assortment

9. How many tpes & in what ratio the gametes are produced by a dihybrid heterozygous :-
   (1) 4 types in the ratio of 9 : 3 : 3 : 1
   (2) 2 types in the ratio of 3 : 1
   (3) 3 types in the ratio of 1 : 2 : 1
   (4) 4 types in the ratio of 1 : 1 : 1 : 1

10. How many gametes are produced in F_1 generation of a trihybrid:-
    (1) 3   (2) 4   (3) 8   (4) 16

11. Which genotype represents a true dihybrid condition
    (1) tt rr   (2) Tt rr   (3) Tt Rr   (4) TT Rr

12. Mendelian ratio 9 : 3 : 3 : 1 is due to:-
    (1) Law of segregation   (2) Law of purity of gametes
    (3) Law of independent assortment   (4) Law of unit characters

13. In a cross between a pure tall plant with green pod & a pure short plant with yellow pod. How many short plants are produced in F_2 generation out f 16:-
(1) 1　　　　　(2) 3　　　　　(3) 4　　　　　(4) 9

14. In a dihybrid cross between AABB and aabb the ratio of AABB, AABb, aaBb, aabb in F_2 generation is:-
(1) 9 : 3 : 3 : 1　　(2) 1 : 1 : 1 : 1　　(3) 1 : 2 : 2 : 1　　(4) 1 : 1 : 2 : 2

15. AABbCc genotype forms how many types of gametes:-
(1) 4　　　　　(2) 8　　　　　(3) 2　　　　　(4) 6

16. Who rediscovered the results of Mendel's experiments :-
(1) DeVries, Tschemark, Correns　　　　(2) DeVries, Tscgenark, Morgan
(3) Tschemark, Morgan, Correns　　　　(4) Tschemark, Bateson, Punnet

17. Crossing AABB & aabb, the probability of AaBb would be in G_2 generation:-
(1) 1/16　　　　(2) 2/16　　　　(3) 8/16　　　　(4) 4/16

18. In Mendel's experiments, colour of seed, nature of flower, position of flower, colour of pod height of stem, are called:-
(1) Alleles　　(2) Genotype　　(3) Phenotype　　(4) All of the above

19. If 120 Plants are produced on crossing pure red and pure white flowered pea plants, than the ratio of off springs will be:-
(1) 90 Red : 30 White　　　　(2) 30 Red : 90 White
(3) 60 Red : 60 White　　　　(4) All Red

20. An individual with two identical members of a pair of genetic factors is called:-
(1) Heteromorphic　　　　(2) Heterozygote
(3) Homomoorphic　　　　(4) Homozygote

21. Two allelic genes are located on:
(1) The same chromosome　　　　(2) Two homologous chromosomes
(3) Two non-homologous chromosomes　　(4) Any two chromosomes

22. The percentage of ab gametes produced by AaBb parent will be:-
(1) 12.5　　(2) 25　　(3) 50　　(4) 75

23. How many character of pea pod were chosen by Mendel:-
(1) 7　　　　(2) 5　　　　(3) 4　　　　(4) 2

24. Mendel's law of segregation is based on separation of alleles during :-
(1) Gamete formation　　　　(2) Seed formation
(3) Pollination　　　　(4) Embryonic development

25. When two hybrids Ttrr & Rrtt are crossed, the phenotypic ratio of offspring shell be:-

(1) 3 : 1   (2) 1 : 1 : 1 : 1   (3) 1 : 1   (4) 9 : 3 : 3 : 1

26. The allele which is unable to express its effect in the presence of another is called:-
(1) Co-dominant   (2) Supplementary
(3) Complementary   (4) Recessive

27. Which technique is used by Mendel for hybridisation
(1) Emasculation   (2) Bagging
(3) Protoplast fusion   (4) 1 & 2 both

28. When flowers are unisexual then emasculation is done in:-
(1) Female   (2) Male   (3) 1 & 2 both   (4) None of these

29. How many plants are dihybrid in F_2 generation of dihybrid cross:-
(1) One   (2) Two   (3) Four   (4) Sixteen

30. Heterozygous tall plants were crossed with dwarf plants. What will be the ratio of dwarf plants in the progeny:-
(1) Homozygous   (2) Dioecious
(3) Heterozygous   (4) Monoecious

31. Heterozygous tall plants were crossed with dwarf plants. What will be the ratio of dwarf plants in the progeny:-
(1) 50%   (2)25%   (3) 75%   (4) 100%

32. A pure tall plant can be differentiated from a hybrid tall plant:-
(1) By measuring length of plant   (2) By spraying gibberalins
(3) If all plants are tall after self-pollination (4) If all plants are dwarf after self-pollination

33. Genetic constitution of an individual is represented by:-
(1) Genome   (2) Genotype   (3) Phenotype   (4) Karyotype

34. Genes do not occur in pairs in:-
(1) Zygote   (2) Somatic cell   (3) Embryo   (4) Gametes

35. "Like begets like" an important and universal phenomenon of life, is due to:-
(1) Eugenics   (2) Inheritance   (3) dominance   (4) Crossing-over

36. How many types of gametes are expected from the organism with genotype AABBCC:-
(1) One   (2) Two   (3) Four   (4) Eight

37. One of the following did not constitute the seven contrasting pairs of characters noticed by Mendel
(1) Height of the plants   (2) Shape of the leaves
(3) Shape of pod   (4) Colour of pod

38. According to Mendelism which character is showing dominance-
(1) Terminal position of flower   (2) Green colour in seed coat
(3) Wrinkled seeds   (4) Green pod colour

39. Due to the cross between TTRr × ttrr the resultant progenies showed how many percent plants would be, tall, red flowered:-
(1) 50%   (2) 75%   (3) 25%   (4) 100%

40. Mendel obtained wrinkled seeds in pea due to deposition of sugars instead of starch. It was due to which enzyme:-
(1) Amylase   (2) Invertase
(3) Diastase   (4) Absence of starch branching enzyme

41. A gene said to be dominant if:-
(1) It express it's effect only in homozygous stage.
(2) It expressed only in heterozygous condition
(3) It expressed both in homozygous and heterozygous condition
(4) It never expressed in any condition.

42. A plant of F_1-generation with genotype "AABbCC". On selfing of this plant what is the phenotypic ratio in F_2-generation:-
(1) 3 : 1   (2) 1 : 1
(3) 9 : 3 : 3 : 1   (4) 27 : 9 : 9 : 9 : 3 : 3 : 3 : 1

43. Which one of the following traits of garden pea studied by Mendel, was a recessive feature:-
(1) Axial flower position   (2) Green seed colour
(3) Green pod colour   (4) Round seed shape

44. A trihybrid cross is made between two plants with genotypes A/a B/b C/c how many offsprings of such cross will have a genotype a/a b/b c/c-
(1) 1/64   (2) 1/4   (3) 1/16   (4) 1/32

45. How is the arrangement of Mendel's selected seven characters on four chromosomes:-
(1) One in ch.no. 1, 4 in ch.no. 4, one in ch.no. 5, and one in ch.no. 7
(2) 2 in ch.no. 1, 3 in ch.no. 4, one in ch.no. 5, and one in ch.no. 6
(3) 3 in ch.no. 1, 1 in ch.no. 4, 2 in ch.no. 5, and one in ch.no. 7
(4) 2 in ch.no. 1, 3 in ch.no. 4, 1 in ch.no. 5, and 1 in ch.no. 7

46. When two different genotypes produce the same phenotype due to environmental difference, then each one is known as:-
(1) Phenotype   (2) Phenocopy
(3) Progeny   (4) Independent offspring

47. When a red flower homozygous pea plant is crossed with a white flower plant what colour is produced in F_1:-
(1) Red   (2) White   (3) Pink   (4) Red + White

48. If a heterozygous tall plant is crossed with a homozygous dwarf plant then what shall be the percentage of dwarf in offspring:-
(1) 25%   (2) 100%   (3) 75%   (4) 50%

49. If a homozygous tall plant is crossed with a dwarf plant, what shall be the ratio of plants in offsprings:-
(1) All heterozygous tall   (2) Two tall & Two dwarf
(3) 1 : 2 : 1   (4) All homozygous dwarf

50. How many different types of gametes can be formed by F_1 progeny, resulting from the following cross : AA BB CC $\times$ aa bb cc
(1) 3   (2) 8   (3) 27   (4) 64

51. In order to find out the different types of gametes produced by a pea plant having the genotype AaBb, it should be crossed to a plant with the genotype
(1) AaBb   (2) aabb   (3) AABB   (4) aaBB

52. Law of independent assortment of Mendel was proved by:-
(1) Monohybrid cross   (2) Reciprocal cross
(3) dihybrid cross   (4) Back cross

53. Mendel does not select which character in his experiment:-
(1) Plant height   (2) Plant colour
(3) Pod shape   (4) Pod colour

54. Genes controlling seven traits in pea studied by Mendel were actually located on:-
(1) Seven chromosomes   (2) Six chromosomes
(3) Four chromosomes   (4) Five chromosomes

55. Two crosses between the same pair of genotypes or phenotypes in which the sources of the gametes are reversed in one cross, is known as:-
(1) Test cross   (2) Reciprocal cross
(3) Dihybrid cross   (4) Reverse cross

56. If selfing occurs in the plant having genotype RrYy, then ratio of given genotype will be:- RRYY, RrYY. RRYy, RrYy
(1) 1 : 2 : 2 : 4   (2) 1 : 2 : 2 : 1
(3) 1 : 1 : 1 : 1   (4) 2 : 2 : 2 : 1

57. The process of mating between closely related individuals is :-
(1) Out-breeding   (2) Inbreeding
(3) Hybridisation   (4) Heterosis

58. A self-fertilizing trihybrid plant forms:-
(1) 8 different gametes and 32 zygotes   (2) 8 different gametes and 64 zygotes

(3) 4 different gametes and 16 zygotes   (4) 8 different gametes and 16 zygotes

59. Segregation of genes take place during :-
(1) Metaphase   (2) Anaphase   (3) Prophase   (4) Embryo formation

60. A trihybrid cross involve three pair of characters which will give rise to the F_1 hybrids which are heterozygous for three genes. How many types of gametes will be produced in both male and female: -
(1) 2   (2) 4   (3) 6   (4) 8

61. When an F_1 individual is crossed with its either of the two parent. Then it is known as:-
(1) Test cross   (2) Back cross   (3) Reciprocal cross   (4) Monohybrid cross

62. If a homozygous red flowered plant is crossed with white plant, the offspring will be:-
(1) All red flowered   (2) All White flowered
(3) Half red flowered   (4) Half white flowered

63. How many types of genotypes are formed in F_2 progeny obtained from self pollination of a dihybrid F_1:-
(1) 9   (2) 3   (3) 6   (4) 1

64. If a dwarf plant is treated with gibberellins it becomes tall and this plant now crosses with pure tall plant then progeny of first generation (F_1) is
(1) All dwarf   (2) All tall
(3) 75% tall and 25% dwarf   (4) 75% dwarf and 25% tall

65. A test cross is performed :-
(1) by selfing of F_2-generation plants
(2) by selfing of F_1-generation plants
(3) to determine whether F_1- plant is homozygous or heterozygous
(4) between a homozygous dominant and homozygous recessive plant

66. If a cross is made between AA and aa, the nature of F_1 progeny will be :-
(1) genotypically AA, phenotypically a
(2) genotypically Aa, phenotypically a
(3) genotypically Aa, phenotypically A
(4) genotypically aa, phenotypically A

67. When a tall plant wit round seeds (TTRR) is crossed with a dwarf plant with wrinkled seeds (ttrr), the F_1 generation consists of tall plants with rounded seeds. How many types of gametes F_1 plant would produce :-
(1) One   (2) Three   (3) Four   (4) Eight

68. A pure tall and a pure dwarf plant were crossed to produce offsprings. Offsprings were self crossed, then find out the ratio between true breeding tall to true breeding dwarf:-
(1) 1 : 1   (2) 3 : 1   (3) 2 : 1   (4) 1 : 2 : 1

69. If hybrid red flowered plants of pea are crossed back to pure red flowered parent, the progeny will show:-
(1) All red flowered plants
(2) White flowered plants
(3) 50% red and 50% white flowered plants
(4) 3 Red : 1 white flowered plants

70. What result Mendel would have got when he self pollinated a dwarf F_2 plant ?
(1) All tall plants
(2) Tall and dwarf plants in 3:1 ratio
(3) All dwarf plants
(4) Tall and dwarf plants in 1:1 ration

71. Mendel's laws of inheritance are applicable on the plants which:-
(1) Reproduce asexually
(2) Reproduce sexually
(3) Reproduce vegetatively
(4) All of the above plants

72. Dihybrid test cross ratio proposed by Mendel is:-
(1) 9 : 3 : 3 : 1
(2) 1 : 1 : 1 : 1
(3) 1 : 2 : 2 : 4 : 1 : 2 : 1 : 2 : 1
(4) 3 : 1

73. A cross between pure tall pea plant with green pods and dwarf pea with yellow pods will produce tall F_2 plants, out of 16,
(1) 15
(2) 13
(3) 12
(4) 7

74. Mendel's Principle of segregation means that the gamete cells always receive:-
(1) one pair of alleles
(2) one quarter of the genes
(3) one of the paired alleles
(4) any pair of alles

75. How many types of genetically different gametes will be produced by a heterozygous plant having the genotype AABbCc?
(1) Two
(2) Four
(3) Six
(4)Nine

76. The phenotypic ratio in a back cross between a trihybrid and homozygous recessive parent would be:-
(1) 1 : 1
(2) 1 : 1 : 1 : 1
(3) 1 : 1 : 1 : 1 : 1 : 1
(4) 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1

77. Among the seven pairs of contrasting traits in pea plant, studied by Mendel, the number of traits related to flower, pod and seed respectively was:-
(1) 2, 2, 2
(2) 2, 2, 1
(3) 1, 2, 2
(4) 1, 1, 2

78. Some of the dominant traits studied by Mendel were:-
(1) Round seed shape, constricted pod shape and axial flower position
(2) Yellow seed colour, inflated pod shape and axial flower position
(3) Yellow seed colour, violet flower colour and yellow pod colour
(4) Axial flower position, green pod colour and green seed colour

79. The colour based contrasting traits in seven contrasting pairs studied by Mendel in pea were:-
(1) 1
(2) 2
(3) 3
(4) 4

80. Mendel observed that all the F 1 progeny plants.
(1) resembled either one of the parents
(2) resembled neither of the parents
(3) resembled both of the parents
(4) shows 3 : 1 ratio

81. Accoding to Mendel, "factors" or "genes"
(1) are the units of inheritance
(2) contain information that is required to express a particular trait
(3) Both 1 and 2
(4) None of the above

82. The phenotype of any character will not be affected if the modified allele produces-
(1) Normal enzyme
(2) Non-functional enzyme
(3) No enzyme at all
(4) 2 and 3 both

83. Te recessive characters are-
(1) Only expressed in heterozygous condition
(2) Only expressed in homozygous condition
(3) Blend in heterozygous condition
(4) Always impure

ALLELIC & NON-ALLELIC GENE INTERACTIONS

84. In Mirabilis & Antirrhinum plant the appearance of the pink hybrid (Rr) between cross of a red (RR) and white (rr) flower parent indicates:-
(1) Incomplete dominance
(2) Segregation
(3) Dominance
(4) Heterosis

85. RR (red) is crossed with rr (white). All Rr offsprings are pink. This indicates that R-gene is:-
(1) Hybrid
(2) Incompletely dominant
(3) Recessive
(4) Mutant

86. In case of incomplete dominance the monohybrid ratio of phenotypes in F_2 w generation is:-
(1) 1 : 2 : 1
(2) 3 : 1 : 1
(3) 9 : 3 : 3 : 1
(4) 2 : 3 : 1

87. When the phenotypic and genotypic ratios resemble in the F_2 generation it is an example of:-
(1) Independant assortment
(2) Qualitative inheritance
(3) Segregation of factors
(4) Incomplete dominance

88. In Mirabilis jalapa when homozygous red flowered and white flowered plants are crossed, all F_1 plants have pink coloured flowers. In F_2 produced by selfing of F_1 plants, red, pink, white flowered plants would appear respectively in the ratio of:-
(1) 1 : 1 : 2
(2) 2 : 1 : 1
(3) 1 : 0 : 1
(4) 1 : 2 :1

89. In case of incomplete dominance, F 2 generation has:-
(1) Genotypic ratio equal to phenotypic ratio
(2) Genotypic ratio is 3 : 1

(3) Phenotypic ratio is 3 : 1
(4) None

90. Incomplete dominance occurs in:-
(1) Mirabilis   (2) Antirrhinum   (3) Andulasion fowl   (4) All of the above

91. Which cross yields red, white & pink flowers variety of dog flower:-
(1) RR × Rr   (2) Rr × RR   (3) Rr × Rr   (4) Rr × rr

92. Which of the following is exception to Mendel's laws
(1) Linkage   (2) Incomplete dominance
(3) Co-dominance   (4) All of the above

93. In a dihybrid cross, when one pair of alleles show incomplete dominance, genotypic ratio comes to
(1) 3 : 6 : 3 : 1 : 2 : 1   (2) 1 : 2 : 2 : 4 : 1 : 2 : 1 : 2 : 1
(3) 9 : 3 : 3 : 1   (4) 1 : 2 : 1

94. Which of the following is the example of co-dominance:-
(1) $Hb^A Hb^A, I^A, I^B$ (2) $Hb^s Hb^s, I^A, I^B$
(3) $Hb^A Hb^s, I^A, I^B$ (4) $Hb^s Hb^s, I^A, I^A$

95. Which of the following conditions represent a case of co-dominant genes.
(1) A gene expresses itself, suppressing the phenotypic effect of its alleles
(2) Genes that are similar in phenotypic effect when present separately, but when together interact to produce a different trait
(3) Allele, both of which interact to produce a trait, which may resemble either of the parental type.
(4) Alleles, each of which produces an independent effect in heterozygous condition.

96. The phenomenon of incomplete dominance was observed by:-
(1) De vires   (2) Correns   (3) Tschermak   (4) None

97. Mendel did not propose:-
(1) Dominance   (2) Incomplete dominance
(3) Segregation   (4) Independent assortment

98. The phenomenon if which an allele of one gene suppresses the expression of an allele of another gene is known as :-
(1) Dominance   (2) Inactivation   (3) Epistasis   (4) Suppression

99. When two independentaly assorting dominant genes interact with each other to produce particular phenotype but when they present alone they did not produce phenotype they are called :-
(1) Complementary gene   (2) Supplementary gene
(3) Duplicate gene   (4) Inhibitory gene

100. AB- Blood group shows:
(1) Co-dominance
(2) Complete dominance
(3) Mixed inheritance
(4) Composite inheritance

101. ABO blood group is an example of:-
(1) Epistasis
(2) Multiple allelism
(3) Pleotropism
(4) Complementary genes

102. A child is blood group is '0'. His parents blood group cannot be:-
(1)B&O (2)A&O (3)AB (4)A&B

103. If one parent has blood group A and the other parent has blood group B. The offsprings have which blood group :-"'
(1)AB only (2) O only (3) B only (4) A, B, AB, O

104. Ratio 9:7 is due to:-
(1) Supplementary genes
(2) Lethal genes
(3) complementary genes
(4) Epistatic genes

105. A man of A blood group marries a woman of AB blood group. Which type of progeny would indicate that man is heterozygous A :-
(1)AB (2) A (3) 0 (4) B

106. A child of 0 blood group, has B-blood group father, the genotype of father would be :-
(1) I^OI^O (2) I^BI^B (3) I^AI^B (4) I^BI^O

107. When a red flowered plant was cross pollinated by white flowered one and the offspring were self pollinated to obtain a phenotypic ratio of 1:2:1, it has to be a case of :-
(1) Incomplete dominance
(2) Dominance
(3) Recessive epistasis
(4) Pleurotropic effect of genes

108. Andalucian fowl exhibits:
(1) Phenotypic blending
(2) Mosaic inheritance
(3) Epistasis
(4) Co-dominance

109. A gene that shows it's effect on more than one character is :-
(1) Polygene (2) Pleotropic gene (3) Multifactor gene (4) Multiple gene

110. In multiple allele system a gamete possesses :-
(1) Two alleles (2) Three alleles (3) One allele (4) Several alleles

111. Blood grouping in humans is controlled by:
(1) 4 alleles in which I^A is dominant
(2) 3 alleles in which I^A and I^B are dominant
(3) 2 alleles in which none is dominant
(4) 3 alleles in which I^A is recessive

112. Multiple alleles are present :
(1) In different chromosomes
(2) At different loci on chromosome
(3) At the same locus on homologous chromosomes
(4) At the non homologous chromosome

113. Epistasis differs from dominance because
(1) In epistasis one gene pair mask the expression of another pair of genes.
(2) Epistasis is an allelic interaction.
(3) Many genes collectively controls a particular phenotype.
(4) One gene pair independently controls a particular phenotype.

114. In a genetic cross having recessive epistasis, F_2 phenotypic ratio would be :-
(1) 9 : 6 : 1   (2) 15 : 1   (3) 9 : 3 : 4   (4) 12 : 3 : 1

115. Sickle cell anaemia induces due to :-
(1) Change of Amino Add in α-chain of Haemoglobin
(2) Change of Amino Add in β-chain of Haemoglobin
(3) Change of Amino Acid in both α and β chain of Haemoglobin
(4) Change of Amino acid either α or β chain of Haemoglobin

116. What would be the colour of flower in F_1 progeny as a result of cross between homozygous red and homozygous white flowered Snapdragon:-
(1) Red   (2) White   (3) Red and White   (4) Pink

117. Incomplete dominance is found in :
(1) Pisum sativum
(2) Antrrhinum majus
(3) Both Pisum sativum and Antirrhinum majus
(4) None of these

118. In Mirabilis red (RR) and white (rr) flower produces pink (Rr) flower. A plant with pink flower is crossed with white flower the expected phenotypic ratio is :-
(1) red : pink : white (1 : 2: 1)   (2) pink : white (1 : 1)
(3) red : pink (1 : 1)   (4) red : white (3 : 1)

119. A child with mother of 'A' blood group and father of 'AB' blood group will be :-
(1) O   (2) A   (3) A and O   (4) O and B

120. Epistasis implies :-
(1) One pair of genes can completely mask the expression of another pair of genes
(2) One pair of genes independently controls a particular phenotype
(3) One pair of genes enhances the phenotypic expression of another pair of genes
(4) Many genes collectively control a particular phenotype

121. The possible blood groups of children born to parents having A and AB groups are :-
(1) O, A   (2) A, B, AB   (3) O, A, B   (4) O, A, B, AB

122. A man with blood group B marries a female with blood group A and their first child is having blood group B. What is the genotype of child :-
(1) $I^A I^B$ (2) $I^A I^O$ (3) $I^B I^O$ (4) $I^B I^B$

123. A child with mother of blood group A and father of blood group AB, will not have which of the following blood group :-
(1) A   (2) B   (3) AB   (4) O

124. If mother has blood group B, father has A group, the offspring will be of :-
(1) A   (2) O   (3) AB   (4) any of the above

125. Two nonallelic genes produces the new phenotype when present together but fail to do so independently then it is called :-
(1) Epistatisis   (2) Polygene
(3) Non complimentary gene   (4) Complimentary gene

126. Sickel cell anemia is the result of _____ mutation in the haemoglobin gene :-
(1) frame shift   (2) deletion   (3) point   (4) none of the above

127. When both alleles of a pair are fully expressed in a heterozygote, theye are called :-
(1) Lethals   (2) Co-dominants   (3) Semi-dominants   (4) Recessive allele

128. In the inheritance of flower colour in dog flower plant, the F_1 had a phenotype that
(1) resembles both of the parents
(2) did not resembles either of the two parents
(3) resembles with only one parent
(4) 1 and 3 both

129. The three different alleles of human ABO blood types will produce how many genotypes & phenotypes respectively—
(1) 4 & 6   (2) 6 & 4   (3) 6 & 6   (4) 4 & 4

130. Other than pea plants it was found that sometimes the F_1 had a phenotype that did not resemble either of the two parents and was in between the two. It is due to
(1) Complete Dominance   (2) Incomplete Dominance
(3) Co-Dominance   (4) Complementary gene interaction

131. Which of the following material is good to understand incomplete dominance
(1) Sweet Pea   (2) Cattle   (3) Snapdragon   (4) Kernel colour in wheat

132. Find out the correct match-
(1) F_1 resembled either of the two parents- Dominance
(2) F_1 resembled in between -incomplete dominance
(3) F_1 resembled both parent - Co-dominance

(4) All are correct

133. Which of the following condition is true for codominance-
(1) Phenotype of F_1 resembled either of the two parents
(2) Phenotype of F1 did not resemble either of two parents
(3) Phenotype of F_1 resembles both parents
(4) None of these

134. Which of the following is a good example of multiple allele-
  (1) ABO blood groups   (2) Size of starch grain in pea
(3) Shape of seed   (4) Flower colour in pea

135. In sickle cell anaemia-
(1) The mutant haemoglobin molecule undergoes polymerisation under low oxygen tension causing the change in the shape of RBC
(2) Substitution of Glutamic acid by valine at the sixth position of the α-chain of haemoglobin
(3) The mutant haemoglobin undergoes polymerization under high oxygen tension causing the change in shape of RBC
(4) α-globin chain is modified

136. In a cross between true red flowered (RR) and true breeding white flowered (rr), snapdragon plant, the F_1 (Rr) was pink. When the F_1 was self pollinated the F_2 resulted in the following ratio 1 (RR) red; 2(Rr) pink; 1(rr) white. Above condition can be explained by-
(1) True dominance   (2) Incomplete dominance
(3) Lethal gene   (4) Independent assortment

137. In case of ABO blood group allele I^A and I^B if present together then -
(1) Ony I^A allele expresses
(2) Only 1^B allele expresses
(3) Both I^A and I^B alleles express
(4) None of these

POLYGENICE AND CYTOPLASMIC INHERITANCE

138. A polygenic inheritance in human beings is
(1) skin colour   (2) sickle cell anaemia
(3) colour blindness   (4) phenylketonuria

139. Which one carries extra nuclear genetic material
(1) Plastids   (2) Ribosomes   (3) Chromosomes   (4) Golgi-complex

140. When certain character is inherited only through the female parent, it probably represents the case of:-
(1) Mendelian nuclear inheritance   (2) Multiple plastid inheritance
(3) Cytoplasmic inheritance   (4) Incomplete dominance

141. Cytoplasmic male sterility is inherited :-

(1) Maternally   (2) Paternally   (3) Both   (4) Bacteriophage multiplication

142. In which type of inheritance the results are affected by reciprocal cross :-
(1) Nuclear   (2) Cytoplasmic   (3) Blending   (4) All the above

143. The scientist who first discovered cytoplasmic - inheritance was :-
(1) Correns   (2) Rhoades   (3) Mendel   (4) Morgan

144. Extranuclear inheritance is a consequence of presence of genes in :-
(1) Lysosomes and ribosomes
(2) Mitochondria and chloroplasts
(3) Endoplasmic reticulum and mitochondria
(4) Ribosomes and chloroplast

145. Inheritance of skin colour in human beings is an example of:-
(1) Complementary gene   (2) Monogenic inheritance
(3) Polygenic inheritance   (4) Mendelian inheritance

146. Polygenic genes show:-
(1) Identical phenotype   (2) Identical biochemistry
(3) Different phenotype   (4) Identical genotype

147. A dihybrid ratio of 1 : 4 : 6 : 4 : 1 is obtained instead of 9: 3 : 3 : 1. This is an example of :
(1) Complementary gene   (2) Supplementary gene
(3) Polygenic inheritance   (4) Incomplete dominance

148. In polygenic inheritance trait which controlled by three pairs of genes. Two individuals which are heterozygous for three alleles, crossed each other. Such type of cross produces what phenotypic ratio :
(1) 1 : 2 : 1   (2) 9 : 3 : 3 : 1   (3) 1 : 4 : 6 : 4 : 1   (4) 1 : 6 : 15 : 20 : 15 : 6 : 1

149. In totmato, genotype aabbcc produces 100g tomatoes and AABBCC produces 160g tomatoes. What is contribution of each polygene in the production of tomatoes:-
(1) 10 g   (2) 20 g   (3) 30 g   (4) 40 g

150. A polygenic trait is controlled by 3 genes A, Band C. In a cross AaBbCc × AaBbCc, the phenotypic ratio of the offsprings was observed as :
1 : 6 : × : 20: × : 6 : 1
what is the possible value of x ?
(1) 3   (2) 9   (3) 15   (4) 25

151. Gene for cytoplasmic male sterility in plants are generally located in the :-
(1) chloroplast genome   (2) mitochondrial genome
(3) nucleaer genome   (4) cytosol

LINKAGE, SEX LINKAGE

152. What is the inheritance of colour blindness of both parents having a normal vision but mother has a recessive gene for colour blindness :-
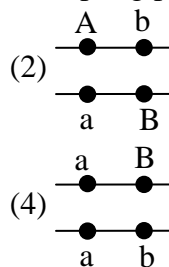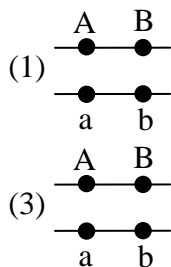
	Son	Doughter
(1)	50%	Nil
(2)	100%	Nil
(3)	Nil	100%
(4)	Nil	Nil

153. What would be the nature of children if a colour blind woman marries a normal man :-
(1) Colourblind daughter & normal sons
(2) Colourblind sons and carrier daughters
(3) Normal sons & carrier daughters
(4) Normal sons & Normal daughters

154. A colourblind man marries a normal lady whose father was colour blind. If it produces two sons & two daughters, how many of them would be suffer
(1) Both sons   (2) Both daughters
(3) One son & one daughter   (4) Both sons & both daughters

155. A colourblind daughter is born when:
(1) Father is colourblind, mother is normal
(2) Mother is colourblind, father is normal
(3) Mother is carrier, father is normal
(4) Mother is carrier, father is colourblind

156. Hypertrichosis is:-
(1) Holandric character   (2) X-Linked character
(3) Diagenic character   (4) Sex-influened character

157. In which of the following the inheritance takes place only by male:
(1) Nuclear   (2) Cytoplasmic   (3) co-dominance   (4) Holandric inheritance

158. Which of the following is not a sex linked characters
(1) Haemophilia   (2) Colour blindness   (3) Hypertrichosis   (4) Baldness

159. A gene located on Y-chromosome and therefore, transmitted from father to son is known as:-
(1) Supplementary gene   (2)Complementarygene
(3) Duplicate gene   (4) Holandric gene

160. The condition in which only one allele of a pair is present in a diploid organism is known as :-
(1) Homozygous   (2) Heterozygous   (3) Hemizygous   (4) Incomplete dominance

161. Baldness in man is a:
(1) Autosomal character   (2) Sex linked character
(3) Sex influenced character   (4) 1 and 3 both

162. A colourblind man marries a daughter of colourblind father, then in the offsprings :-
(1) All sons are colourblind
(2) All daughters are colourblind
(3) Half sons are colourblind
(4) No daughter is colourblind

163. A woman with normal vision marries a man with normal vision and gives birth to a colourblind son. Her husband dies and she marries a colourblind man. what is the probability of her children having the abnormality :-
(1) 50% colourblind sons + 50% colourblind daughters
(2) All sons colourblind & daughter carrier
(3) All daughter colourblind & sons normal
(4) 50% sons colourblind and all daughters normal

164. A single recessive trait which can express its effect should occur on :-
(1) Any autosome
(2) Any-chromosome
(3) X-chromosome of female
(4) X- chromosome of male

165. Sex-linked disorders are generally:-
(1) Lethal
(2) Recessive
(3) Dominant
(4) Not inherited

166. In Drosophila crossing over occurs in female but not in male. Gene A and Bare 10 map unit apart on chromosome. A female Drosophila with genotype $\dfrac{AB}{ab}$. and male Drosophila with genotype $\dfrac{AB}{ab}$. How many type of gametes are produced by female and male Drosophila respectively
(1) 4 types : 2 types
(2) 2 types : 2 types
(3) 4 types : 4 types
(4) 4 types : one types

167. In a cross between individuals homozygous for (a, b) and wild type(+ +). In this cross 700 out of 1000 individuals were of parental type. Then the distance between a and b is :-
(1) 70 map unit
(2) 35 map unit
(3) 30 map unit
(4) 15 map unit

168. In maize coloured endosperm (C) is dominant over colourless (c) and full endosperm (R) is dominant over shrunken (r). When a dihybrid of F_1-generation was test crossed it produced four phenotypes in the following percentage
Coloured and Full = 45%
Coloured – Shrunken = 5%
Colourless – Full = 4%
Colourless - Shrunken = 46%
From these data what would be distance between the two non allelic genes :-
(1) 48 unit
(2) 9 unit
(3) 4 unit
(4) 12 unit

169. What ratio is expected in offsprings if father is colour blind and mother's father was colour blind :-
(1) 50% daughter - colour blind
(2) All the sons are colour blind
(3) All the daughters colour blind
(4) All the sons are normal

170. There are three genes a, b, c percentage of crossing over between a and b is 20%, b and c is 28% and a and c is 8%. What is the sequence of genes on chromosome

(1) b, a, c   (2) a, b, c   (3) a, c, b   (4) None

171. The linkage map of X-chromosome of fruitfly has 66 units, with yellow body gene (y) at one end and bobbed hair (b) gene at the other end. The recombination frequency between these two genes (y and b) should be:-

(1) 60%   (2) > 50%   (3) > 50%   (4) 100%

172. Mammary glands in female, moustaches and beard in human males are examples of

(1) Sex linked traits   (2) Sex limited traits

(3) Sex differentiating traits   (4) Sex-determining traits

173. When a cluster of genes show linkage behavior they:-

(1) Do not show a chromosome map   (2) Show recombination during meiosis

(3) Do not show independent assortment   (4) Induce cell division

174. Genetic Map is one that :-

(1) Establishes sites of the genes on a chromosome

(2) Establishes the various stages in gene evolution

(3) Shows the stages during the cell division

(4) Shows the distribution of various species in a region ·

175. One of the genes present exclusively on the X-chromosome in humans is concerned with

(1) Baldness   (2) Red green colour blindness.

(3) Facial hair/Moustaches in males.   (4) Night blindness.

176. The recessive genes located on X-chromosome in humans are always :-

(1) Expressed in females   (2) Lethal

(3) Sub-lethal   (4) Expressed in males

177. Lack of independent assortment of two genes A and B in fruit fly is due to :-

(1) Crossing over   (2) Repulsion   (3) Recombination   (4) Linkage

178. A normal woman, whose father was colour-blind is married to a normal man. The sons would be

(1) All colour-blind   (2) 75% colour-blind

(3) 50% colour-blind   (4) All normal

179. If father shows normal genotype and mother shows a carrier trait for haemophelia

(1) All the female children will be carrier

(2) A male child has 50% chances of active disease

(3) Female child has probability of 50% to active disease

(4) All the female children will be colourblind

180. Which of the following show linkage group in coupling phase :-

(1)
```
A   B
●   ●
────────
●   ●
a   b
```

(2)
```
A   b
●   ●
────────
●   ●
a   B
```

(3)
```
A   B
●   ●
────────
●   ●
a   b
```

(4)
```
a   B
●   ●
────────
●   ●
a   b
```

181. The longer the chromosome of an organism, the more genetic variability it gets from :-
(1) Independent assortment   (2) Linkage
(3) Crossing over   (4) Mutation

182. A woman with normal vision, but whose father was colour blind, marries a colour blind man. Suppose that the fourth child of this couple was a boy. This boy-
(1) Must have normal colour vision
(2) May be colour blind or may be normal vision
(3) Will be partially colour blind since he is heterozygous for the colour blind mutant allele
(4) Must be colour blind

183. Haemophilia is more commonly seen in human males than in human females because -
(1) This disease is due to a Y-linked recessive mutation
(2) This disease is due to an X-linked recessive mutation
(3) This disease is due to an X-linked dominant mutation
(4) A greater proportion of girls die in infancy

184. If Mendel has chosen to study traits determined by linked genes he would not have discovered
(1) Law of segregation   (2) Law of dominance
(3) Law of independant assortment (4) Law of unit character .

185. Which law would have been violated if Mendel had chosen eight characters in garden -pea :
(1) Law of dominance   (2) Law of segregation
(3) Law of independant assortment (4) Law of purity of gametes

186. If Mendel might have studies 7 pairs of characters in a plant with 12 chromosomes. instead of 14, then:-
(1) He could not discover independant assortment
(2) He might have not discovered linkage
(3) He might have discovered crossing-over
(4) He might have not observed dominance

187. With increasing age the linkage becomes :
(1) Strong   (2) Weak   (3) Terminates   (4) Remains unchanged

188. If there were only parental combinations in F_2 of a dihybrid cross then Mendel might have discovered :-

(1) Independant assortment   (2)Atavism

(3) Linkage   (4) Repulsion

189. Linkage discovered in Drosophila by:-

(1) Bateson   (2) Morgan   (3) Muller   (4) Correns

190. A dihybrid plant with incomplete linkage on test cross may produce how many types of plants:-

(1) 2   (2) 4   (3) 8   (4) 1

191. How many linkage group are there in bacteria E.coli :-

(1) One   (2) Two   (3) Four   (4) None

192. If distance between gene on chromosome is more, then gene shows :

(1) Weak linkage   (2) Strong linkage   (3) Less crossing   (4) 1 & 3 both

193. Linked gene shows :-

(1) Always parental combination   (2) Sometimes new combinations

(3) Always new combination   (4) New combination more

194. The number of linkage groups in a cell having 10 pairs of chromosomes are :-

(1) 5   (2) 10   (3) 15   (4) 20

195. The association of parental characters combinations in the offsprings of a dihybrid is excess to non-parental combinations is said to be due to:-

(1) Co-dominance   (2) Blending inheritance

(3) Linkage   (4) Duplicate genes

196. Complete linkage is found in:

(1) Birds   (2)Snakes

(3) Female- Drosophila   (4) Male-Drosophila

197. A phenomenon which works opposite to the linkage is:

(1) Independent assortment   (2) Crossing-over

(3) Segregation   (4) Mutation

198. Cross over value (COV) of gene A and B is 5% while COV of genes Band Cis 15% the possible sequence of these genes on chromosome is :-

(1) A-B-C   (2) C-A-B   (3) B-C-A   (4) Both (1) & (2)

199. TDF gene is a :-

(1) A gene present on X-chromosome   (2) A segment of RNA

(3) A proteinaceous factor   (4) A gene present on Y-chromosome

200. A diseased man marries a normal woman. They get three daughters and five sons. All the daughters were diseased and sons were normal. The gene of this disease is :-

(1) Sex linked dominant   (2) Sex linked recessive

(3) Sex limited character   (4) Autosomal dominant

201. Who postulated the 'Chromosome Theory of Inheritance' :-

(1) De Vries (2) Mendel

(3) Sutton and Boveri (4) Morgan

202. **Drosophila melanogaster** has :-
(1) 2 pairs of autosomes and l pair of. sex
(2) 3 pairs of autosomes and 3 pairs of sex chromosomes
(3) 1 pairs of autosomes and 3 pairs of sex chromosomes
(4) 3 pairs of autosomes and 1 pairs. of sex chromosomes

203. Walter Sutton is famous for his contribution to :
(1) Gentic engineering (2) Totipotency
(3) Qantitative genetics (4) Chromosomal theory of inheritance

204. If a colour blind man marries a girl who is normal (homozygous) for this character, then genotypically :-
(1) sons and daughters will be normal
(2) sons will be colour blind, daughters will be normal
(3) sons will be normal, daughters will be carriers
(4) both sons and daughters will be colour blind

205. Frequency of crossing over will be relatively more if :-
(1) distance between the two genes is less
(2) distance between the two genes is more
(3) linked genes are more
(4) both (2) & (3)

206. Presence of recombinants is due to :
(1) crossing over (2) linkage
(3) lack of independent assortment (4) all of the above

207. Morgan coined the term _____ to describe the physical association of genes on a chromosome & the term to describe the generation of non-parental gene combinations.
(1) Recombination; Linkage
(2) Recombination; Non-recombination
(3) Linkage; Non-recombination
(4) Linkage; Recombination

208. Experimental verification of the chromosomal chromosomes theory of inheritance done by Thomas Hunt Morgan and his colleagues they worked with -
(1) Pea plant (2) Sweet pea plant
(3)Snapdragon (4)Drosophila

209. Which is incorrect for Drosophila melanogaster
(1) They could be grown on simple synthetic medium
(2) Single mating could produce a large number of progeny
(3) They complete their life cycle in about 7 weeks

(4) There was a clear differentiation ofthe sexes.

210. Morgan and his group found that when genes were grouped on the same chromosome, some genes were very tightly linked and showed-
(1) Very low recombination (2) Higher recombination
(3) No recombination (4) 100% parental combination

211. Which statement is not true for Drosophila melanogaster-
(1) They complete their life cycle about two weeks
(2) Single mating prqduce large number of progeny flies
(3) It has few hereditary variation that can be seen with high power microscope
(4) It has clear differentiation of the sex

212. The experimental verification of the chromosomal theory of inheritance by-
(1) Boveri (2) Sutton (3) T.H. Morgan (4) Bateson

SEX DETERMINATION

213. How sex of offsprings determined in humans
(1) Sex chromosome of mother (2) Size of ovum
(3) Size of sperm (4) Sex chromosome of father

214. Which of the following possess homogametic male
(1) Plants (2) Man (3) Insect (4) Birds

215. Which chromosome set is found in male grass hopper:-
(1) 2A + XY (2) 2A + XO (3) 2A + YY (4) 2A + XX

216. Genic balance theory for sex determination in Drosophila was pro~sed by :-
(1) Pro. R.P.Roy (2) H.E.Warmke (3) C.B. Bridges (4) Me. clung

217. No. of Bar Body in XXXX female :-
(1) 1 (2) 2 (3) 3 (4) 4

218. In Drosophila, the sex is determined by :-
(1) The ratio of number of X-chromosomes to the sets of autosomes
(2) X and Y chromosomes
(3) The ratio of pairs of X-chromosomes to the pairs of autosomes
(4) Whether the egg is fertilized or develops parthenogenetically

219. In Drosophila male differentiation is controlled by:
(1) No. of Y-chromosome
(2) No. of X-chromosomes
(3) Ratio between number of X-chromosome and the set of autosome
(4) Sets of autosome

220. Sex determination ratio in an organism is given $\dfrac{X}{A} = 1.5$, then organism will be :-

    (1) male   (2) female   (3) super female   (4) intersex

221. Barr body is associated with :
    (1) sex chromosome of female   (2) sex chromosome of male
    (3) autosome of female   (4) autosome of male

222. In male grass hoppers and moths there are two pairs of autosomes and :-
    (1) X only   (2) X and Y   (3) Y only   (4) none of these

223. Which of the following symbols are used for representing sex chromosome of birds :-
    (1) ZZ – ZW   (2) XX – XY   (3) XO – XX   (4) ZZ - WW

224. If somatic cells of a human male contain single Barrbody, the genetic composition of the person would be :-
    (1) XYY   (2) XXY   (3) XO   (4) XXXY

225. The theory where ratio between the number of X chromosomes and number of complete sets of autosomes will determine the sex is known as :
    (1) Chromosome theory of sex determination
    (2) Genic balance theory of sex determination
    (3) Harmonal balance theory of sex determination
    (4) environmental sex determination

226. Sex determination in human s takes place by:-
    (1) sex chromosomes of father   (2) measurement of sperm
    (3) measurement of ovum   (4) sex chromosomes of mother

227. In Drosophila sex index of super female is :-
    (1) 1   (2) 0.5   (3) 1.5   (4) 0.67

228. If X/A Ratio of two Drosophila is 0. 6 and 0. 33 respectively w}"lat would be their sex :-
    (1) Female & male   (2) Super female & super male
    (3) Inter sex & super male   (4) Inter sex and super female

229. Which of the following genotype represent intersex Drosophila :-
    (1) 2A +XXX   (2) 2A + XXY   (3) 3A + XXY   (4) 2A + XY

230. In which organism female in homogametic & also have one chromosomes more than male.
    (1) Birds   (2) Drosophila   (3) Chicks   (4) Grasshopper

231. Grasshopper is an example of -
    (1) XO type of sex determination   (2) XY type of sex determination
    (3) Environmental sex determination   (4) Genic balance theory

232. Which of the following is responsible for sex determination in chick :-
(1) Sperm (2) Egg (3) Somatic cell (4) Every cell of body

233. In which of the following sex is determined by female ·
(1) Human (2) Drosophila (3) Birds (4) Grasshopper

234. Male heterogamy found in case of
(1) XO type male in Grasshopper (2) XY type male in human .
(3) ZW male in birds (4) land 2 both

HUMAN GENETICS, POPULATION GENETICS

235. There are two alleles (A_1 & A_2) out of which one (A_1) has nil abundance in a population then the abundance of second allele (A_2) is :-
(1) 0.25 (2) 1.00 (3) 0.40 (4) 0.50

236. If a normal woman marries an albino man and their offsprings are half albino, half normal the woman is :-
(1) Homozygous normal (2) Heterozygous normal
(3) Homozygous recessive (4) Homozygous dominant

237. Which is a dominant trait :-
(1) Colour blindness (2) Albinism
(3) Haemophilia (4) Rh factor

238. Parents are carrier for albinism. What will be the first three children :-
(1) Some normal, heterozygous & albino (2) All normal
(3) All heterozygous albino (4) No normal

239. If a cross is made between two individuals each having genotype Bb, two offsprings are obtained. Out of these first has dominant trait. What is the probability that the second offspring will exhibit recessive trait
(1) l/4 (2) 100 (3) Zero (4) 3/4

240. A family has five girls and no son, the probability of the occurance of son in 6th child is:-
(1) 1/2 (2) 1/5 (3) 1 (4) No chance

241. A tobacco plant heterozygous for albinism is self-pollinated and 1200 seeds are subsequently germinated. How many seedlings would have the parental genotype:-
(1) 900 (2) 600 (3) 1200 (4) 300

242. The migration of gene in to a population from other population by· interbreeding is· called
(1) Gene pool (2) Gene flow (3) Genetic drift (4) Gene erosion

243. What is the probability of three daughters to a couple in three children :-

(1) $\dfrac{1}{4}$ (2) $\dfrac{1}{8}$ (3) $\dfrac{1}{16}$ (4) $\dfrac{3}{8}$

244. In human right handedness is dominant over left handedness. What offsprings would be expected from two left handed parents :-
(1) Only left handed   (2) Only right handed
(3) Left handed & right handed both   (4) Neither left handid nor right handed

245. Probability of four son to a couple is :-

(1) $\dfrac{1}{4}$ (2) $\dfrac{1}{8}$ (3) $\dfrac{1}{16}$ (4) $\dfrac{1}{32}$

246. A male human is heterozygous for autosomal genes - A and Band is also hemizygous for hemophilic gene h. What proportion of his sperms will be abh

(1) $\dfrac{1}{4}$ (2) $\dfrac{1}{8}$ (3) $\dfrac{1}{32}$ (4) $\dfrac{1}{16}$

247. Given below is a pedigree chart of a family with five children. It shows the inheritance of attached ear-lobes as opposed to the free ones. The squares represent the male individuals and circles the female individuals

ATTACHED EAR-LOBE ●
            ■

FREE EAR-LOBE ○
        □
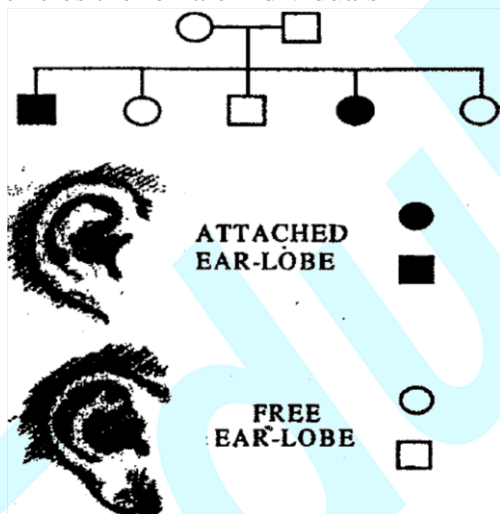
Which one of the following conclusions drawn is correct :-
(1) The parents are homozygous recessive
(2) The trait is Y -linked
(3) The parents are homozygous dominant
(4) The parents are heterozygous

248. Equilibrium of gene frequencies is –

(1) $p^2 \times 2Pq \times q^2 = 1$ (2) $\sigma = \sqrt{\dfrac{Pq}{N}}$

(3) Hardy weinbergh law   (4) Mutation

249. In a Random mating population of 28,800 individuals percentage of dominant homozygous individuals is 49% find out the percentage of heterozygous individual –
(1) 21%   (2) 42%   (3) 32%   (4) 9%

250. Predict from the following chart
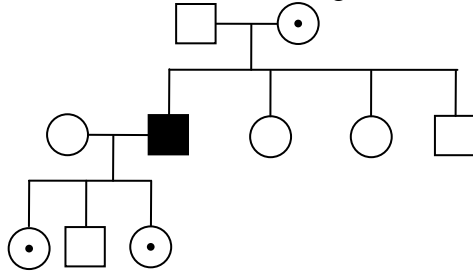
(1) Character is dominant and carried by X chromosome
(2) Character is carried by Y chromosome
(3) Character is sex linked recessive
(4) Character is autosomal recessive

251. In pedigree analysis symbol (•) is used for
(1) Heterozygous for autosomal recessive
(2) Affected individuals.
(3) Death
(4) Carrier for sex linked recessive

252. Study the given pedigree carefully, the trait indicated is :-
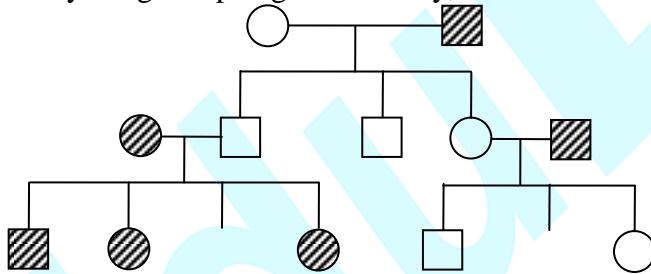
(1) Autosomal recessive
(2) X-linked recessive
(3) Maternal inheritance
(4) Paternal inheritance

253. In a population that is in Hardy Weinberg equilibrium, the frequency of a recessive allele for a certain hereditary trait is 0.20. What percentage of the individual in the next generation would be expected to show the dominant trait :-
(1) 16%   (2) 32%   (3) 64%   (4) 96%

254. Given pedigree shows inheritance of autosomal recessive gene. What is the genotype of given parents:-
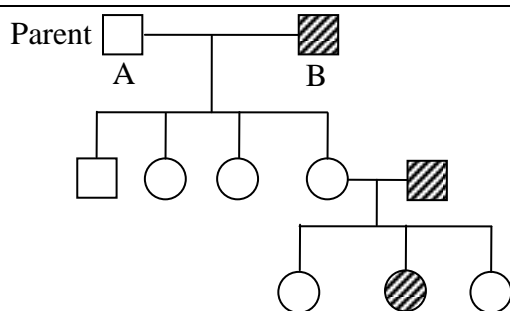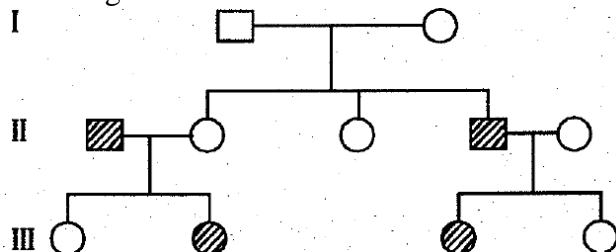
(1) AA, aa   (2) aa, AA   (3) aa, Aa   (4) Aa, Aa

255. A pedigree is shown below for a disease that is autosomal recessive. The genetic make up of the first generation:-

(1) AA, aa   (2) Aa, Aa   (3) Aa, aa   (4) aa, aa

256. In a random mating population frequency of disease causing recessive allele is 80%. What would be the frequency of carrier individual in population :-
(1) 64%   (2) 32%   (3) 16%   (4) 100%

257. In a random mating population frequency of dominant allele is 0; 7. What will be the frequency of recessive phenotype :-
(1) 0.49   (2) 0.09   (3) 0.3   (4) 0.21

258. At a particular locus, frequency of 'A' allele is 0.6 and that of 'a' is 0.4. What would be the frequency of heterozygotes in a random mating population at equilibrium -
(1) 0.24   (2) 0.16   (3) 0.48   (4) 0·36

259. A normal woman whose father was albino, marries an albino man, what proportion of normal and albino are expected among their offsprings :-
(1) All normal   (2) 2 normal : 1 Albino
(3) All albino   (4) 1 normal : 1 Albino

260. Albinism is determined by a recessive gene in man. The presence of albinism in 50% children born to a couple proves that:-
(1) Both parents are heterozygous for albinism
(2) Father is homozygous normal and mother is heterozygous
(3) Father is homozygous for albinism but mother is heterozygous
(4) Both are homozygous

261. Family has 9 girls, Probability of son at 10th birth is :-
(1) 50%   (2) 100%   (3) 25%   (4) 75%
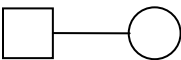
262. Polydactyly in man is due to :
    (1) autosomal dominant gene
    (2) autosomal recessive gene
    (3) sex - linked dominant gene
    (4) sex - linked recessive gene

263. Blue eye colour in human is recessive to brown eye colour. The expected children of a marriage between a blue eyed woman and a brown eyed man who had a blue eyed mother will be-
    (1) All black eyed   (2) All blue eyed
    (3) All brown eyed   (4) One blue eyed and one brown eyed

264. If the first seven children born to a particular pair of parents are all males, what is the probability that the eighth child will also be a male?
    (1) $\dfrac{1}{2}$ (2) $\dfrac{1}{4}$ (3) $\dfrac{1}{8}$ (4) $\dfrac{1}{16}$

265. The existence within a population of non-beneficial alleles in heterozygous genotype is :-
    (1) genetic load   (2) genetic drift   (3) genetic flow   (4) selection

266. Study the pedigree given below and assign the type of inheritance of the trait.

    □ Normal male
    ■ Affected male

    ○ Normal female
    ● Affected female
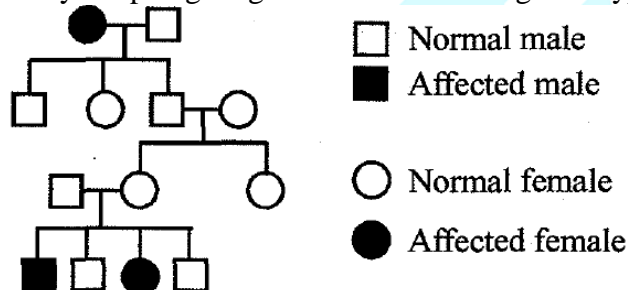
    (1) X-linked recessive   (2) Y -linked
    (3) autosomal recessive   (4) autosomal dominant

267. Given below is the pedigree of sickle cell anaemia, in a family
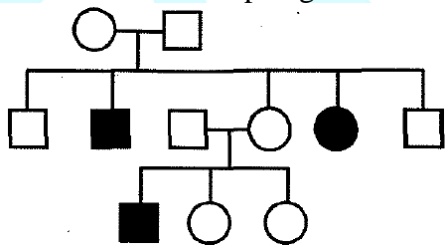
    In this the RBC of both parents will be -
    (1) Normal   (2) Sickle shaped
    (3) Both normal & sickle shaped   (4) Cannot be determined

268. Which of the following symbol is used for mating between relatives (Consangeineous mating)
    (1) ⟨ 5 ⟩   (2) □—○

(3) ▢══◯   (4) ▢─◯
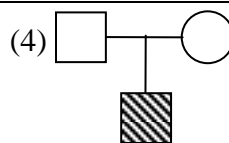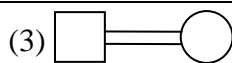
ANSWER KEY

EXERCISE-I (Conceptual Questions)

1.	(1)	**2.**	(3)	**3.**	(2)	**4.**	(1)	**5.**	(4)	**6.**	(2)	**7.**	(1)
8.	(4)	**9.**	(4)	**10.**	(3)	**11.**	(3)	**12.**	(3)	**13.**	(3)	**14.**	(3)
15.	(1)	**16.**	(1)	**17.**	(4)	**18.**	(3)	**19.**	(4)	**20.**	(4)	**21.**	(2)
22.	(2)	**23.**	(4)	**24.**	(1)	**25.**	(2)	**26.**	(4)	**27.**	(4)	**28.**	(4)
29.	(3)	**30.**	(3)	**31.**	(1)	**32.**	(3)	**33.**	(2)	**34.**	(4)	**35.**	(2)
36.	(1)	**37.**	(2)	**38.**	(4)	**39.**	(1)	**40.**	(4)	**41.**	(3)	**42.**	(1)
43.	(2)	**44.**	(1)	**45.**	(4)	**46.**	(2)	**47.**	(1)	**48.**	(4)	**49.**	(1)
50.	(2)	**51.**	(2)	**52.**	(3)	**53.**	(2)	**54.**	(3)	**55.**	(2)	**56.**	(1)
57.	(2)	**58.**	(2)	**59.**	(2)	**60.**	(4)	**61.**	(2)	**62.**	(1)	**63.**	(1)
64.	(2)	**65.**	(3)	**66.**	(3)	**67.**	(3)	**68.**	(1)	**69.**	(1)	**70.**	(3)
71.	(2)	**72.**	(2)	**73.**	(3)	**74.**	(2)	**75.**	(2)	**76.**	(4)	**77.**	(1)
78.	(2)	**79.**	(3)	**80.**	(1)	**81.**	(3)	**82.**	(1)	**83.**	(2)	**84.**	(1)
85.	(2)	**86.**	(1)	**87.**	(4)	**88.**	(4)	**89.**	(1)	**90.**	(4)	**91.**	(3)
92.	(4)	**93.**	(2)	**94.**	(3)	**95.**	(2)	**96.**	(2)	**97.**	(2)	**98.**	(3)
99.	(1)	**100.**	(1)	**101.**	(2)	**102.**	(3)	**103.**	(4)	**104.**	(3)	**105.**	(4)
106.	(4)	**107.**	(1)	**108.**	(1)	**109.**	(2)	**110.**	(3)	**111.**	(2)	**112.**	(3)
113.	(1)	**114.**	(3)	**115.**	(2)	**116.**	(4)	**117.**	(3)	**118.**	(2)	**119.**	(2)
120.	(1)	**121.**	(2)	**122.**	(3)	**123.**	(4)	**124.**	(4)	**125.**	(4)	**126.**	(3)
127.	(2)	**128.**	(2)	**129.**	(2)	**130.**	(2)	**131.**	(3)	**132.**	(4)	**133.**	(3)
134.	(1)	**135.**	(1)	**136.**	(2)	**137.**	(3)	**138.**	(1)	**139.**	(1)	**140.**	(3)
141.	(1)	**142.**	(2)	**143.**	(1)	**144.**	(2)	**145.**	(3)	**146.**	(3)	**147.**	(3)
148.	(4)	**149.**	(1)	**150.**	(3)	**151.**	(2)	**152.**	(1)	**153.**	(2)	**154.**	(3)
155.	(4)	**156.**	(1)	**157.**	(4)	**158.**	(4)	**159.**	(4)	**160.**	(3)	**161.**	(4)
162.	(3)	**163.**	(1)	**164.**	(4)	**165.**	(2)	**166.**	(1)	**167.**	(2)	**168.**	(2)
169.	(1)	**170.**	(1)	**171.**	(3)	**172.**	(2)	**173.**	(3)	**174.**	(1)	**175.**	(2)
176.	(4)	**177.**	(4)	**178.**	(3)	**179.**	(2)	**180.**	(1)	**181.**	(3)	**182.**	(2)
183.	(2)	**184.**	(3)	**185.**	(3)	**186.**	(1)	**187.**	(1)	**188.**	(3)	**189.**	(2)
190.	(2)	**191.**	(1)	**192.**	(1)	**193.**	(2)	**194.**	(2)	**195.**	(3)	**196.**	(4)
197.	(2)	**198.**	(4)	**199.**	(4)	**200.**	(1)	**201.**	(3)	**202.**	(4)	**203.**	(4)
204.	(3)	**205.**	(2)	**206.**	(1)	**207.**	(4)	**208.**	(4)	**209.**	(3)	**210.**	(1)
211.	(3)	**212.**	(3)	**213.**	(4)	**214.**	(4)	**215.**	(2)	**216.**	(3)	**217.**	(3)
218.	(1)	**219.**	(3)	**220.**	(3)	**221.**	(1)	**222.**	(1)	**223.**	(1)	**224.**	(2)
225.	(2)	**226.**	(1)	**227.**	(3)	**228.**	(3)	**229.**	(3)	**230.**	(4)	**231.**	(1)
232.	(2)	**233.**	(3)	**234.**	(4)	**235.**	(2)	**236.**	(2)	**237.**	(4)	**238.**	(1)

239.	(1)	240.	(1)	241.	(2)	242.	(2)	243.	(2)	244.	(1)	245.	(3)
246.	(2)	247.	(4)	248.	(3)	249.	(2)	250.	(3)	251.	(4)	252.	(3)
253.	(4)	254.	(1)	255.	(2)	256.	(2)	257.	(2)	258.	(3)	259.	(4)
260.	(3)	261.	(1)	262.	(1)	263.	(4)	264.	(1)	265.	(1)	266.	(3)
267	(3)	268	(3)										