NEET : CHAPTER WISE TEST-4

SUBJECT :- BIOLOGY **DATE.....**

CLASS :- 12th **NAME.....**

CHAPTER :- PRINCIPLES OF INHERITANCE & VARITATION **SECTION.....**

(SECTION-A)

1. The graphical representation to calculate the probability of all possible genotypes of off spring in a genetic cross is known as.
(A) Back cross
(B) Pedigree
(C) Punnett square
(D) Central dogma

2. Organisms phenotypically similar but genotypically different are said to be
(A) Homozygous (B) Multizygous
(C) Heterozygous (D) Hemizygous

3. Which of the following cannot be explained on the basis of Mendel's law of dominance?
(A) The discrete unit controlling a particular character is called a factor.
(B) Out of one pair of factors, one is dominant and the other is recessive.
(C) Factors occur in pairs.
(D) Alleles do not show any blending and both the characters recover as such in F_2 generation.

4. The law based on the fact that the alleles do not show blending also proposes that
(i) A gamete receives only one of the two factors.
(ii) Both the characters are recovered as such in F_2 generation.
(A) Both (i) and (ii) are incorrect
(B) (i) is incorrect but (ii) is correct
(C) Both (i) and (ii) are correct
(D) (ii) is incorrect but (i) is correct

5. A true breeding line is one that
(A) Has undergone continuous self-pollination
(B) Has undergone continuous cross pollination
(C) Shows stable trait inheritance and expression for several generations
(D) All except (2)

6. 'Each gamete is pure for a trait', given statement explains
(A) Law of dominance
(B) Law of segregation
(C) Law of independent assortment
(D) Linkage

7. Read the following statements and state true (T) and false (F):
A. Mendel experimented on 14 true breeding pea plant varieties.
B. Mendel conducted hybridization experiments on garden pea from 1856 to 1863.
C. All genes for seven characters studied by Mendel were located on same chromosomes.
D. Mendel's work on inheritance of characters remains unrecognized for 16 years after his death.

	A	B	C	D
(A)	T	T	T	F
(B)	F	F	F	T
(C)	F	T	F	T
(D)	T	T	F	T

8. If F_1 generation resembles both parents, it is known as
(A) Incomplete dominance
(B) Codominance
(C) Pseudodominance
(D) Complete dominance

9. What is the ratio of homozygous and heterozygous traits of snapdragon in F_2 generation of a cross between red and white flowered plant?
(A) 1:2:1 (B) 1:2 (C) 2:1 (D) 1:1

10. What shall be the blood group of father if the mother and baby both are 'O' blood group type?
(A) AB
(B) A, B, O
(C) A with homozygous genotype
(D) B with homozygous genotype

11. Select the incorrect matched pair:
(A) Monohybrid cross-Aa x Aa
(B) Dihybrid cross-AaBB × AaBB
(C) Test cross-AaBb × aabb
(D) Out cross-Aa × AA

12. Which of the following was not the observation that was made by Mendel in his experiment with garden peas?
(A) Every character is controlled by discrete units called factors.
(B) The factors occur in pair.
(C) In a dissimilar pair of factors, only one is able to express, called recessive factors.
(D) Both factors of a pair segregate from each other during gamete formation.

13. Law of independent assortment can be explained by
(A) Monohybrid cross
(B) Reciprocal cross
(C) Dihybrid cross
(D) Test cross

14. How many genotypes are represented only once in Mendelian dihybrid F_2 generation?
(A) 2 (B) 3 (C) 6 (D) 4

15. The Punnett square shown below represents the pattern of inheritance in a dihybrid cross, where Round (R) is dominant over wrinkled (r) seeds and Yellow (Y) is dominant over green (y) seeds.

	RY	Ry	rY	ry
RY	A	E	I	M
Ry	B	F	J	N
rY	C	G	K	O
ry	D	H	L	P

Find out the odd one:
(A) E (B) D (C) F (D) M

16. What is the ratio of round green and wrinkled yellow seeds in F_2 generation of Mendelian dihybrid cross?
(A) 9:1 (B) 1:1 (C) 1:3 (D) 1:2

17. The probability of the plants being heterozygous for both the characters in a dihybrid cross of Mendel is
(A) 1/2 (B) 1/3 (C) 1/4 (D) 1/8

18. In a genetic cross having dominant epistasis, F_2 phenotypes ratio would be
(A) 9:3:3:1 (B) 9:3:4 (C) 12:3:1 (D) 9:7

19. Drosophila melanogaster was found to be suitable for experiments by T. H. Morgan due to some of its specific features. These features are all, except
(A) Clear differentiation of sexes
(B) Easy growth on simple synthetic medium in the laboratory
(C) They complete their life cycle within two weeks
(D) Single mating produces small number of progeny flies

20. Experimental verification of the chromosomal theory of inheritance was done by
(A) Sutton (B) T. H. Morgan
(C) Boveri (D) Mendel

21. Linkage and crossing over are
(A) Inversely proportional to each other
(B) Directly proportional to each other
(C) Not related to each other
(D) Same phenomenon

22. The number of linkage groups in a sperm and ovum of human is, respectively
(A) 24, 23 (B) 23,22
(C) 23, 23 (D) 23, 24

23. If skin colour in humans is controlled by three gene pairs,then what is the number of intermediates and parental combinations in F, generation?
(A) 2, 62 (B) 62,2
(C) 2, 14 (D) 14,2

24. A single gene product may produce more than one effect in
(A) Criss cross inheritance
(B) Pleiotropy inheritance
(C) Polygenic inheritance
(D) Quantitative

25. Polygenic inheritance
i. Traits are spread across a gradient
ii. Takes into account the influence of environment
iii. The phenotype reflects the contribution of each allele and the effect of each dominant allele is additive
(A) Only (i) is correct
(B) Only (ii) is correct
(C) Only (ii) and (iii) are correct
(D) All (i), (ii) and (iii) are correct

26. A mulatto man (Aa Bb) is married to a white woman. Find the possible phenotypic ratio in their progeny.
(A) 1:1:1:1 (B) 1:2:1
(C) 7:1:1:7 (D) 9:3:3:1

27. Which of the following is/are an example of pleiotropic?
(A) Haemophilia
(B) Phenylketonuria
(C) Sickle cell anemia
(D) All except (1)

28. The AA + ZW type of chromosome condition is seen in
(A) Male bird
(B) Female bird
(C) Male grasshopper
(D) Male Drosophila

29. The probability of either a male or a female child in each pregnancy is always
(A) 1/2 (B) 3/2 (C) 3/4 (D) 1/4

30. The initial clue about the chromosomal mechanism of sex determination can be traced back to some of experiments carried out on
(A) Man (B) Drosophila
(C) Bird (D) Insects

31. Sex-determination mechanism in honeybee is
(A) ZZ-ZW type
(B) XX-XO type
(C) XX-XY type
(D) Haploid-diploid mechanism

32. Which of the following organisms have similar sex chromosomes?
(i) Female bird
(ii) Male Drosophila
(iii) Female human
(iv) Female grasshopper
(A) (i), (iii) (B) (ii), (iii) and (iv)
(C) (iii) and (iv) (D) (i), (iii) and (iv)

33. Read the following statements:
A. The phenomenon which results in alteration of DNA sequence and consequently results in changes in genotype and the phenotype of an organism.
B. In addition to recombination, it is another phenomenon that leads to variation in DNA.
The phenomenon explained above is
(A) Linkage
(B) Coupling and repulsion of genes
(C) Mutation
(D) Fertilization

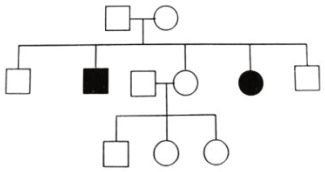
34. Polyploidy is
i. The occurrence of more than two sets of chromosomes.
ii. Resulted due to failure of cytokinesis after telophase stage.
iii. More common in plants.
(A) Only (i) (B) Only (i) and (iii)
(C) Only (i) and (ii) (D) (i), (ii) and (iii)

35. Chromosomal aberrations are commonly observed in_____
(A) Cancer cells
(B) Tapetum cells
(C) Meristematic cells
(D) Quiescent centre of roots

(SECTION-B)

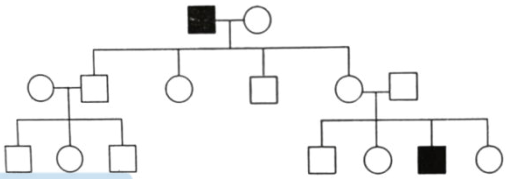
36. All are autosomal recessive disorders, except
(A) Cystic fibrosis (B) Thalassemia
(C) Phenylketonuria (D) Hemophilia

37. Given pedigree belongs to Thalassemia. Which of the following represents parental genotype correctly?



(A) Aa × Aa (B) Aa x aa
(C) AA × aa (D) Aa x AA

38. Considering the following pedigree chart and identify the given trait:



(A) Autosomal dominant
(B) Autosomal recessive
(C) X-linked dominant
(D) X-linked recessive

39. A disease in which a single protein which is a part of cascade of proteins involved in the clotting of blood is affected. This disease is
(A) Hemophilia
(B) X-linked recessive trait
(C) Transmitted from unaffected carrier female to some of the male progeny
(D) More than are option is correct

40. What is percentage of male (A) and female (B) affected by colour blindness in humans?

	A	B
(A)	8%	0.4%
(B)	0.4%	1%
(C)	50%	50%
(D)	8%	20%

41. In a-thalassemia
(i) a-globin chain is produced in less number
(ii) Two closely linked genes HBA1 and HBA2 on chromosome 16 are affected
(iii) Incorrectly functioning globin chain is synthesized Correct statements is/are
(A) Only (i) (B) Only (ii)
(C) Only (i) and (ii) (D) Only (ii) and (iii)

42. The disease phenylketonuria in humans
(A) is an example of polygenic inheritance
(B) is autosomal dominant disorder
(C) is characterized by the absence of liver enzyme that converts the amino acid phenylalanine into tyrosine
(D) More than one option is correct

43. In sickle cell anaemia:
(A) Substitution of glutamic acid by valine at the sixth position of the a-chain of haemoglobin.
(B) The mutant haemoglobin molecule undergoes polymerization under low oxygen tension, causing the change in the shape of RBC.
(C) The mutant haemoglobin molecule undergoes high oxygen tension, causing the change in the shape of RBC.
(D) a-globin chain is modified.

44. Which one of the following pairs is wrongly matched,while remaining three are correct?
(A) Cri-du-chat syndrome-Deletion in long arm of 4^{th} chromosome
(B) Chronic myelogenous leukaemia-Translocation
(C) Criss cross inheritance-Colour blindness
(D) Christmas disease-Haemophilia B

45. Which of the following statement is false w.r.t. phenylketonuria?
(A) Inborn error of metabolism
(B) Autosomal dominant disorder
(C) Affected individual lacks the liver enzyme that converts the amino acid phenylalanine to tyrosine.
(D) Phenylalanine is accumulated and converted into phenylpyruvic acid and other derivatives.

46. Monosomic condition arises with the fusion of gametes.
(A) (n-1)x (n + 1) (B) (n-1) x n
(C) (n+1)× n (D) (n+1)(n+1)

47. An individual shows the following characteristics
i. Sterile females
ii. Rudimentary ovaries
iii. Lack of secondary sexual characters
the individual suffers from
(A) Klinefelter syndrome
(B) Turner's syndrome
(C) Edward's syndrome
(D) Down's syndrome

48. Select the incorrectly matched pair:
(A) Klinefelter syndrome-Gynaecomastia
(B) Turner's syndrome-45 with XO
(C) Down's syndrome-Point mutation
(D) Cri du chat syndrome-Deletion of short arm of 5 chromosomes

49. The individual with karyotype 47; XXY shows
(A) Turner's syndrome
(B) Klinefelter's syndrome
(C) Down's syndrome
(D) Edward's syndrome

50. Down's syndrome is associated with
i. Trisomy of 21st chromosome
ii. Mental retardation
iii. Furrowed tongue
iv. Congenital heart disease
Choose correct option:
(A) (i) and (ii) only
(B) (i), (ii) and (iii) only
(C) (i), (ii) and (iv) only
(D) (i), (ii), (iii) and (iv)