QB365 Question Bank Software Study Materials

Botany - Classical Genetics 50 Important 1 Marks Questions With Answers (Book Back and Creative)

12th Standard

Biology

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

1) Extra nuclear inheritance is a consequence of presence of genes in _____.

(a) Mitrochondria and chloroplasts (b) Endoplasmic reticulum and mitrochondria (c) Ribosomes and chloroplast

(d) Lysososmes and ribosomes

2) 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 _____.

(a) aaBB (b) AaBB (c) AABB **(d) aabb**

3) How many different kinds of gametes will be produced by a plant having the genotype AABbCC?

(a) Three (b) Four **(c) Nine** (d) Two

4) Which one of the following is an example of polygenic inheritance?

(a) Flower colour in Mirabilis Jalapa (b) Production of male honey bee (c) Pod shape in garden pea

(d) Skin Colour in humans

5) In Mendel's experiments with garden pea, round seed shape (RR) was dominant over wrinkled seeds (rr), yellow cotyledon (YY) was dominant over green cotyledon (yy). What are the expected phenotypes in the F_2 generation of the cross RRYY x rryy?

(a) Only round seeds with green cotyledons (b) Only wrinkled seeds with yellow cotyledons

(c) Only wrinkled seeds with green cotyledons

(d) Round seeds with yellow cotyledons and wrinkled seeds with yellow cotyledons

6) Test cross involves ____.

(a) Crossing between two genotypes with recessive trait (b) Crossing between two F_1 hybrids

(c) Crossing the F_1 hybrid with a double recessive genotype (d) Crossing between two genotypes with dominant trait

7) In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seed plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in F_1 generation?

(a) 9:1 (b) 1:3 (c) 3:1 **(d) 50:50**

8) Select the correct statement from the ones given below with respect to dihydrid cross.

(a) Tightly linked genes on the same chromosomes show very few combinations

(b) Tightly linked genes on the same chromosomes show higher combinations

(c) Genes farapart on the same chromosomes show very few recombinations

(d) Genes loosely linked on the same chromosomes show similar recombinations as the tightly linked ones

9) Which Mendelian idea is depicted by a cross in which the F_1 generation resembles both the parents.

(a) Incomplete dominance (b) Law of dominance (c) Inheritance of one gene **(d) Co-dominance**

10) Fruit colour in squash is an example of _____.

(a) Recessive epistatsis **(b) Dominant epistasis** (c) Complementary genes (d) Inhibitory genes

11) In his classic experiments on Pea plants, Mendel did not use _____.

(a) Flowering position (b) Seed colour **(c) Pod length** (d) Seed shape

12) The epistatic effect, in which the dihybrid cross 9:3:3:1 between AaBb Aabb is modified as _____.

(a) Dominance of one allele on another allele of both loci **(b) Interaction between two alleles of different loci**

(c) Dominance of one allele to another alleles of same loci (d) Interaction between two alleles of some loci

13) In a test cross involving F_1 dihybrid flies, more parental type offspring were produced than the recombination type offspring. This indicates _____.

(a) The two genes are located on two different chromosomes (b) Chromosomes failed to separate during meiosis

(c) The two genes are linked and present on the some chromosome

(d) Both of the characters are controlled by more than one gene

14) The genes controlling the seven pea characters studied by Mendel are known to be located on how many different chromosomes?

(a) Seven (b) Six (c) Five (d) Four

15) Which of the following explains how progeny can posses the combinations of traits that none of the parent possessed?

(a) Law of segregation (b) Chromosome theory **(c) Law of independent assortment** (d) Polygenic inheritance

16) "Gametes are never hybrid". This is a statement of _____.

(a) Law of dominance (b) Law of independent assortment **(c) Law of segregation** (d) Law of random fertilization

17) Gene which suppresses other genes activity but does not lie on the same locus is called as _____.

(a) Epistatic (b) Supplement only (c) Hypostatic (d) Codominant

18) Pure tall plants are crossed with pure dwarf plants. In the F_1 generation, all plants were tall. These tall plants of F_1 generation were selfed and the ratio of tall to dwarf plants obtained was 3:1. This is called _____.

(a) Dominance (b) Inheritance (c) Codominance (d) Heredity

19) The dominant epistatis ratio is _____.

(a) 9:3:3:1 **(b) 12:3:1** (c) 9:3:4 (d) 9:6:1

20) Select the period for Mendel's hybridization experiments.

(a) 1856 - 1863 (b) 1850 - 1870 (c) 1857 - 1869 (d) 1870 - 1877

21) Among the following characters which one was not considered by Mendel in his experimentation pea?

(a) Stem – Tall or dwarf **(b) Trichomal glandular or non-glandular** (c) Seed – Green or yellow

(d) Pod – Inflated or constricted

22) Which is not a correct statement?

(A) Variations are the raw materials for evolution

(B) Variations provide genetic material for natural selection

(C) It helps the individual to adapt to the changing environment

(D) Variations allow breeders to improve the crop field

(a) A and D (b) B only (c) C and D **(d) none of he above**

23) How many characters studied by Mendel in pisum sativum

(a) Three (b) Five **(c) Seven** (d) Nine

24) In an intergenic interaction, the gene that suppresses the pherotype of a gene is said to be _____

(a) Dominant (b) Inhibitory **(c) Epistatic** (d) Hypostatic

25) Assertion (A): Pleiotropic gene affects multiIple traits

Reason (R): ABO blood group is an example for Pleiotropism

(a) A and R are correct R explains A (b) A and R are incorrect **(c) A is correct R is incorrect**

(d) A is incorrect R is correct

26) Assertion (A): Cytoplasmic male sterility is a Mendelian inheritance
Reason (R): The genes for cytoplasmic male sterility in peal maize is located at mitochondrial DNA

(a) A and R are correct R explains A (b) A and R are incorrect (c) A is correct R is incorrect

(d) A is incorrect R is correct

27) What is the phenotypic ratio in case of incomplete dominance?

(a) 9: 7 (b) 3: 1 **(c) 1: 2 : 1** (d) 1: 1 : 1 : 1

28) Statement 1: Intergenic gene interaction occurs between alleles at the same locus
Statement 2: Co-dominance is an example of intergenic gene interaction

(a) Statement 1 is correct & Statement 2 is incorrect (b) Statement 1 is incorrect & Statement 2 is correct

(c) Both Statements 1 & 2 are correct (d) Both Statements 1 & 2 are incorrect

29) Heterozygous Tall mono hybrid is cross with homozygous dwarf. What will be characteristic of offspring?

(a) 25 % recessive 75% dominant (b) 75 % recessive 25% dominant **(c) 50 % recessive 50% dominant**

(d) All are dominants

30) ABO blood group is a classical example for _____

(a) Polygenic inheritance (b) Incomplete dominance (c) Epistasis **(d) Dominance**

31) RR (Red) flower of Mirabilis is crossed with White (WW) flowers. Resultant offspring are pink RW. This is an example of _____

(a) Epistasis (b) Co-dominance **(c) Incomplete dominance** (d) Pleiotropism

32) Ratio of recessive epistasis is _____

(a) 12: 3 : 1 (b) 9: 7 **(c) 9: 3 : 4** (d) 9: 6 : 1

33) _____make some individuals better fitted in the struggle for existence

(a) Variations (b) Heredity (c) Hybridization (d) Environment

34) _____ constitute the raw materials for evolution.

(a) Heredity (b) Breeders (c) Genetic **(d) Variations**

35) _____ are never hybrid.

(a) Heterozygous (b) Hemozygous **(c) Gametes** (d) Genotype

36) Find out the incorrect statement

(a) Test cross is crossing an individual of unknown genotype with a homozygous recesslve.

(b) To determine the genotype of a dwarf plant Mendel crossed the plants from F_2 with the homozygous tall plant

(c) The progenies of the test cross can be easily analysed to predict the genotype of the plant or the test organism

(d) Test cross is used to identify whether an individual is homozygous or heterozygous or dominant character

37) The law of segregation is concerned with alleles of _____but the law of independent assortment deals with the relationship _____

(a) One gene, two genes (b) Two genes, one gene (c) Between genes, one gene **(d) One gene, between genes**

38) _____ inheritance was demonstrated by Swedish Geneticist H. Nilsson-Ehle in wheat kernels.

(a) Lethal **(b) Polygenic** (c) Codominance (d) Inhibitor

39) Find out the correct match.

(a) Gene interaction concept - Johnansen **(b) Incomplete dominance - Carl correns** (c) Lethal genes - Bateson

(d) Law of dominance - Law of purity of gametes

40) _____ the single gene affects multiple traits and in _____several genes combine to affect a single trait

(a) Lethality, Pleiotropy (b) Polrgenic, Lethality (c) Incomplete dominance, codominance **(d) Pleiotropy, Polygenic**

41) Find the mismatch

(a) Codominance - ABO blood group system (b) Recessive epistasis - Flower colour of Antirrhinum sp

(c) Supplementary genes - Grain colour in rice (d) Dominant epistasis - Fruit colour in summer squash

42) _____ is a modification of a biological structure where by an ancestral trait reappears after having been lost through evolutionary changes.

(a) Polygens (b) Pleiotropic **(c) Atavism** (d) Sterile cytoplasm

43) Hieracium pilosella is the best example for _____ in Plants

(a) Nuclear gene (b) Extra nuclear gene (c) Mitochondrial gene **(d) Atavism**

44) Which one of the following is not a correct pair regarding genes of pea plant?

(a) Seed shape - Chromosome number - 6 (b) Pod colour - Chromosome number - 5

(c) Flower position - Chromosome number - 4 (d) Seed colour - Chromosome number - 1

45) Ratio of complementary gene is

(a) 9:3:4 (b) 12:3:1 (c) 9:3:3:4 **(d) 9:7**

46) How many different types of gametes can be formed by F_1 progeny, resulting from the following cross AABBCC x aabbcc?

(a) 3 **(b) 8** (c) 27 (d) 64

47) If 'A' represents the dominant gene and 'a' represents its recessive allele, which of the following would be most likely result in the first generation off spring when Aa is crossed with aa?

(a) All will exhibit dominant phenotype (b) All will exhibit recessive phenotype

(c) Dominant and recessive phenotypes will be 50% each (d) Dominant phenotype will be 75%

48) In Pisum sativum ,there are 14 chromosomes. How many types of homologous pairs can be prepared?

(a) 14 **(b) 7** (c) 2^{14} (d) 2^{10}

49) When a cluster of genes show linkage behaviour they

(a) do not show a chromosome map (b) show recombination during meiosis **(c) do not show independent assortment**

(d) induce cell division

50) Based on the observations of mono hybrid cross Mendel proposed two general rules namely

(a) law of dominance and law of inheritance (b) Law of dominance and principle of inheritance

(c) Law of segregation and law of dominance (d) law of inheritance and principle of inheritance