SHIVAJI UNIVERSITY, KOLHAPUR

Regular/ Repeater Examination March/April - 2022

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B. Sc. (Part I) (Semester: – II) (CBCS) Examination, June 2022

Subject: Zoology

Subject Code:

Genetics (DSC-16B)

Question Bank

Q.I. Multiple choice questions.

1. -------- is the father of genetics.

   A. Mendel B. Darwin C. Lamark D. Robert Hook

2. ---------is the Mendelian phenotypic monohybrid ratio

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

3. Various forms of a given genes are called--------

   A. Genotype B. Phenotype C. Gamete D. Alleles

4. In hybridization technique Mandel had selected two ---------- plants of unlike genetical constitution.

   A. Pisum sativum B. Jawar C. Sunflower D. Rice

5. According to Mendel a character that appear in F1 generation is called ----------

   A. Recessive B. Ancestral C. Dominant D. Maternal

6. The best example of incomplete dominance is.....

   A. Mirabilis Jalapa B. Rose C. Lotus D. Sunflower

7. The roan colour in cattle is an example of---------

   A. Co- dominance B. Incomplete dominance

   C. Multiple dominance D. Dominance

8. ---------blood group is universal accepter (Recipient)

   A. B B. A C. AB D. O

9. The genotype of blood group O is ---------

A. I^AI^B B. I^BI^B C. I^iI^i D. I^AI^A

10. Genes that affect survival of an individual are called--------

A. Lethal genes B. Dominant genes C. Silent genes D. Recessive genes

11.The ratio of complementary interaction of gene is---------

A. 9;3;3;1 B. 9;7 C. 12; 7 D. 9;3;4

12. ABO blood group system is due to---------

A. Multifactor inheritance B. Epistasis

C. Multiple allelism D. Incomplete dominance

13. Sickle cell anaemia is ---------

A. Sex linked inheritance B. Autosomal heritance

C. Infectious disease D. Deficiency disease

14. Allele is -------

A. Segment of gene B. Form of gene C. special kind of gene D. A muton

15. Mechanism of crossing over occurs during……

A. Pachytene of prophase B. Second meiotic division. C. Before synapsis D. Diplotene

16. Pairing of homologous chromosomes is seen during……

A. Leptotene B. Diplotene C. Zygotene D. Pachytene

17. Crossing over in diploid organism is responsible for ……

A. Recombination of linked genes B. Dominance of genes

C. Linkage between genes D. Segregation of alleles

18. In Drosophila and in human, the mechanism of sex determination is of ….....

A. XX, XY type B. XX, XO type C. ZZ, ZW type D. haploid, diploid

19. In which insect among the following, the female is heterogametic ……

A. Queen bee B. Butterfly C. Grasshopper D. Cockroach

20. Linkage in Drosophila was first discovered by…….

A. Bridges B. Mendel C. Morgan D. Bateson and Punnet

21. Crossing over occurs between …….

A. Sister chromatids B. Non-Sister chromatids

C. Non homologous chromosome D. None of the above

22. In which organism among the following, the male has one X chromosome less…….

A. Cockroach B. Fowl C. Drosophila D. Worker honeybee

23. The number of Barr bodies in XXY human are …….

A. Nil B. One C. Two D. Three

24. One of the following is called Protenor type of sex determination…….

A. XX, XO B. XX, XY C. ZZ, ZO D. ZZ, ZW

25. Barr body is nothing but …….

A. Y chromosome B. Inactivated X chromosome

C. Inactivated autosome D. Inactivated Y chromosome

26. Griffith effect is related with …….

A. DNA transcription B. RNA translation

C. Bacterial transformation D. Bacterial transduction

27. Recessive gene can be expressed in …….

A. homozygous condition B. heterozygous condition

C. both of the above condition D. none of these condition

28.The gene I codes for an enzyme ……

A. Isomerase B. Dehydrogenase C. Glycerol transferase D. Maltase

29. In supplementary interaction ratio obtained is ……

A. 9;3;4 B. 9;7 C. 9;3;3;1 D. 3;1

30. Name the scientist who discovered the laws of Heredity.

A. Gregor Mendel B. Newton C. Punnett D. None of the above

31. 3. Who introduced chromosomal theory of inheritance?

A. Mendel B. Sutton C. Reginald D. Boyen

32. If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is_____

A. autosomal dominant B. autosomal recessive

C. sex-linked dominant D. sex-linked recessive.

33. The plant Mendel used to study inheritance of two genes is_____

A. Apple B. Mango C. Garden pea D. Potato

34. The allele which is unable to express its effect in the presence of another is called_____

A. Co-dominant B. Supplementary C. Complementary D. Recessive

35. Among the following characters, which one was not considered by Mendel in his experiments of pea_____

A. Stem-Tall or Dwarf B. Trichomes - Glandular or non-glandur

C. Seed - Green or Yellow D. Pod - Inflated or constricted

36. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F1 plants were selfed, the resulting genotype were in the ratio of_____

A. 1:2:1: Tall heterozygous: Tall homozygous: Dwarf

B. 3:1: Tall: Dwarf

C. 3:1: Dwarf: Tall

D. 1:2:1: Tall homozygous: Tall heterozygous: Dwarf

37. Which is the most common mechanism of genetic variation in the population of sexually reproducing organism?

A. Transduction B. Chromosomal aberrations

C. Genetic drift D. Recombination

38. The movement of a gene from one linkage group of another is called_____

A. Inversion B. Translocation D. Duplication D. Crossing over

39. A man whose father was colour blind marries a woman who had a colour-blind mother and normal father. What percentage of male children of this couple would be colour blind?

A. 25% B. 50% C. 0% D. 75%

40. A human female with Turner's syndrome_____

A. has 45 chromosomes with XO B. has one additional X chromosome

C. exhibits male characters D. is able to produce children with normal husband

41. If both parents are carriers for thalassemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child?

A. No chance B. 25% C. 50% D. 100%

42. In a monohybrid cross between two heterozygous individuals, percentage of pure homozygous individuals obtained in F1 generation will be_____

A. 25 % B. 50 % C. 75 % D. 100 %

43. A man marries a woman and both do not show any apparent traits of inherited disease. Five sons and two daughters are born, and three of their sons suffer from a disease. However, none of the daughters is affected. The following mode of inheritance for the disease is_____

A. Sex-linked recessive B. ex-linked dominant

C. Autosomal dominant D. None of the above

44. A trait that “overpowers” and hide another trait is called_____

A. Overpowering trait B. Complex trait

C. Recessive trait D. Dominant Trait

45. Mendel’s law can be applicable only when_____

A. Characters are linked

B. Parents are pore breed

C. F1 generation in monohybrid cross show 2 type of individuals

D. One pair of contrasting characters depends on another pair

46. Mendel’s Law of independent assortment holds good for genes situated on the_____

A. non-homologous chromosomes B. homologous chromosomes

C. extra nuclear genetic element D. same chromosome.

47. Which of the following characters was not chosen by Mendel?

A. Pod shape B. Pod colour C. Location of flower D. Location of pod

48. How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments_____

A. Five B. Eight C. Six D. Seven

49. A test cross is carried out to_____

A. Predict whether two trails are linked

B. Assess the number of alleles of a gene

C. Determine the genotype of Fz plant

D. Determine whether two species or verities will breed successfully.

50. F2 generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1:2:1. lt represents a case of_____

A. Monohybrid cross with complete dominance

B. Monohybrid cross with incomplete dominance

C. Codominance

D. Dihybrid cross

Q. II. Answer the following questions.

1. Give an account on law of dominance with suitable example.
2. Explain the law of segregation in detail.
3. Describe in brief co-dominance and incomplete dominance.
4. Explain multiple alleles with reference to coat colour in rabbit.
5. Give an account on multiple alleles and explain it with reference to ABO blood group in man.
6. What are lethal genes? Describe the types of lethal genes with suitable example.
7. Define interaction of genes and explain it with reference to complementary factor.
8. What is linkage? Describe the types of linkages with suitable examples.
9. What is crossing over? Describe the mechanism of crossing over.
10. What do you mean by a mutation? Describe Various types of mutations due to change in the structure of chromosome.
11. Describe different types of sex determination mechanism you have studied.

Q. III. Write short notes.

1. Monohybrid Cross.
2. Types of genetic variation.
3. Mendel’s hybridization technique.
4. Blood group.
5. Codominance.
6. Incomplete dominance.
7. Fully lethal genes

8. Supplementary factor.
9. Semilethal genes.
10. Incomplete linkage.
11. Complete linkage.
12. Significance of linkage and crossing over.
13. Sterns experiment.
14. Factors affecting crossing over.
15. Dihybrid cross.
16. Law of independent assortment.
17. Write a note on polyploid.
18. Write a note on duplication.
19. Write a note on physical mutagens.
20. Mechanism of sex determination in human.
21. Mechanism of sex determination in Drosophila.