REV-01
BSZ/06/12

2024/07

SET A

B.Sc. ZOOLOGY
FIFTH SEMESTER [SPECIAL REPEAT]
PRINCIPLES OF GENETICS
BSZ-502

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. The sugar molecule present in nucleotide is:
   a. Triose b. Tetrose
   c. Pentose d. Hexose
2. The killer chemical secreted by Kappa particles:
   a. Secretin b. Paramecin
   c. Plasmon d. Hemoglobin
3. The cell in which the F factor carries along with it some chromosomal genes are known as:
   a. F^+ cell b. F^- cell
   c. F/ cell d. F///cell
4. Significance of 'heat shock' method in bacterial transformationis to facilitate:
   a. Binding of DNA to the cell wall b. Uptake of DNA through transient pores in the bacterial cell wall
   c. Uptake of DNA through membrane transport proteins d. Expression of antibiotic resistant gene
5. Extra chromosomal inheritance involves genes passed on by the mother's:
   a. Smooth ER b. Cytoplasm
   c. Mitochondria d. Chromosome
6. Which of the following role is performed by a bacteriophage in transduction?
   a. Vector b. Donor
   c. Recipient d. Episome
7. Which of the following is also known as the removal of one or more bases from the nucleotide chain?
   a. Insertion b. Deletion
   c. Transition d. Transversion
8. In the chromosomal mutation, translocation involves two chromosomes that are not:
   a. Heterologous b. Heterozygous
   c. Homologous d. All of above
9. How many structural genes are present in a lac operon?
   a. One b. Three
   c. Five d. Seven

10. Transposons were first discovered in:
    a. Rice
    b. Bacteria
    c. Mice
    d. Maize

11. In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness (t). If a plant with RRTT genotype is crossed with a plant that is rrtt, then in F1 generation:
    a. 25% will be tall with red fruit
    b. 50% will be tall with red fruit
    c. 75% will be tall with red fruit
    d. All will be tall with red fruit

12. The alleles of a gene do not show any overlapping and both the characters are recovered as such in the F_2 generation. This statement is:
    a. Law of Dominance
    b. Law of Segregation
    c. Law of Independent Assortment
    d. All of the above

13. If a patient with blood group B requires an immediate blood transfusion, which of these types can be given?
    a. AB and B
    b. AB and A
    c. AB and O
    d. B and O

14. Which of the following geneticist reported on inheritance of mouse body colour?
    a. L. Cuenot
    b. C.H. Morgan
    c. E. Baur
    d. Bateson

15. Two or more genes are linked together because they are located on the same:
    a. Cell
    b. Nucleus
    c. Ribosome
    d. Chromosome

16. The crossing over in which one chromosome receives an extra gene, and the other gets one less is:
    a. Unequal crossing over
    b. Single crossing over
    c. Double crossing over
    d. Multiple crossing over

17. XX-XO system of sex determination is found in which of the following?
    a. Drosophila
    b. Bonellia
    c. Grasshoppers
    d. Ants

18. A genic ratio of AA+XXX will produce a:
    a. Male
    b. Female
    c. Super male
    d. Super female

19. In which of the structural chromosomal abnormalities, a segment of a chromosome breaks away and reattaches itself with another chromosome?
    a. Inversion
    b. Translocation
    c. Deletion
    d. Inversion

20. Cystic fibrosis is an example of:
    a. Chromosomal disorder
    b. Complex disorder
    c. Monogenic disorder
    d. None of the above

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Descriptive

Time : 2 hr. 30 mins. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1.	What is mutation? Write about gene mutation.	10
2.	What is extrachromosomal inheritance? Explain extrachromosomal inheritance with a suitable example.	2+8=10
3.	Explain about bacterial recombination processes.	10
4.	Describe about prokaryotic gene regulation.	10
5.	What do you mean by sex determination and what are the different types? Discuss the chromosomal sex determination long with necessary examples.	2+8=10
6.	Why did Mendel select pea plant as an experimental material? Explain the different Mendelian laws with necessary examples.	2+8=10
7.	What are the characteristics of linkage? Explain the different types of linkage.	3+7=10
8.	Write short notes: a) Transposable genetic elements b) t-RNA	5+5=10

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