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B. Sc. (Biotechnology) Part - II Examination, 2018

BIOTECHNOLOGY

Paper : V

(Genetics)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt *all* questions from *Section – A* (Objective type questions), *Seven* questions from *Section – B* (Short answer type questions) and *three* questions from *Section – C* (Long/ Essay type questions).

SECTION – A [Marks : 1 × 10 = 10

Choose one best option among given options :

1. A man of A-blood group marries women of AB blood group. Which type of progeny would indicate that man is heterozygous A ?

   (a) AB (b) A

   (c) O (d) B

2. Those mutations that arise in the absence of known mutagen are known :

   (a) Induced mutations (b) Fused mutations

   (c) Spontaneous mutations (d) None of the above

3. Mendel's last law is :

   (a) segregation (b) dominance

   (c) independent assortment (d) mutulism

4. Segregation of Mendelian factors (no linkage, no crossing over) occurs during :

   (a) anaphase I (b) anaphase II

   (c) diplotene (d) metaphase I.

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5. Who coined the term Linkage ?

(a) Mendel (b) Corren

(c) Morgan (d) De Vries

6. The fundamental genes that bring about expression of particular character.

(a) Lethal genes (b) Basic genes

(c) Multiple gene (d) Cumulative gene

7. Two dominant nonallelic genes are 50 map units apart. The linkage is :

(a) cis type (b) trans type

(c) complete (d) absent/incomplete

8. In Benzer's intragenic mapping experiments, what event was required to allow production of infectious phage from rII mutants ?

(a) rII mutant strains with mutations in different genes.

(b) Homologous recombination between phage.

(c) Crossover within the mutant gene, between the mutations.

(d) Crossover at one end of the mutant gene, outside the mutation.

9. The theory of population genetics and how evolution occurs includes all but which one of the following :

(a) Mating must be random.

(b) The size of the population is small.

(c) There is no influx of genes from other populations.

(d) Genotype has selective advantage over another.

10. The Pneumococcus experiment proves that :

(a) Bacteria do not reproduce sexually

(b) RNA sometime controls the production of DNA and proteins

(c) DNA is the genetic material

(d) Bacteria undergo binary fission

SECTION – B

[Marks : 7 × 5 = 35

Write Short Notes on any *Seven* :

1. Mendal's work on pea plant.
2. Isoalleles.
3. Sex determination in plants.
4. Genetic mapping.
5. Concepts of Gene.
6. Mutation.
7. Kleinfelter.
8. Extra-nuclear inheritance.
9. Hardy Weinburg Law.
10. Genomic frequency.

SECTION – C

[Marks : 3 × 10 = 30

1. Write an essay on Microbial genetics. Explain Conjugation, Transformation and Transduction.
2. Define chromosomal aberration. Describe different types of aberrations caused due to change in chrmosome number.
3. What do you understand by Cytoplasmic or extranuclear Inheritance ? Write various characteristic features of cytplasmic Inheritance and classes. What is its significance in Plant Breeding ?
4. What is gene linkage ? Demonstrate it with examples. How does the process of crossing over affect linkage ?

P. T. O.

5. Write short notes on :

(a) Cistron

(b) Muton

(c) Recon

(d) Pseudoalleles
