

B. Sc. Part-II

BOTANY

Paper-I (Molecular Biology and Biotechnology)

Multiple choice question

1. The scientist involved in discovery of DNA as chemical basis of heredity were:

- (a) Hershey and Chase
- (b) Griffith and Avery
- (c) Avery, Macleod and Mccarthy
- (d) Watson and Crick

2. Single stranded DNA is present in:

- (a) TMV
- (b) Salmonella
- (c) Bacteria
- (d) ϕ x174

3. Okajaki fragments are:

- (a) Small segment of RNA
- (b) Small peptides
- (c) Small DNA segment formed over template running in (3→5) direction
- (d) None of above

4. Which of the following is not a chemical mutagen:

- (a) Nitrous acid
- (b) Hydroxylamine
- (c) Acridine orange dye
- (d) Sulphonate

5. DNA to RNA, flow of genetic information is:

- (a) Teminism
- (b) Transcription
- (c) Translation
- (d) All

6. Attenuation exerted by following:

- (a) Lac operon
- (b) Trp operon
- (c) Ara operon
- (d) His operon

7. The term totipotency was coined by:

- (a) Robert hook
- (b) Schwann
- (c) Darwin
- (d) Morgan

8. Virus free plants production technique is:

- (a) Ovary culture
- (b) Anther culture
- (c) Meristem tip culture
- (d) Embryo culture

9. Who coined PCR technique first:

- (a) Karl mullis
- (b) Temmin and Baltimore
- (c) F. Collins
- (d) Hemilton Smith

10. Transgenic plants are developed by:

- (a) Gene transfer method
- (b) Grafting
- (c) Budding
- (d) Breeding

11. Protein helping in opening of DNA double helix in front of replication fork is:

- (a) DNA gyrase
- (b) DNA pol I
- (c) DNA ligase
- (d) DNA topoisomerase

12. Histone are rich of following amino acid:

- (a) Arginine
- (b) Lysine and Arginine
- (c) Histidine
- (d) All

13. Repair is caused by which of following:

- (a) SOS repair
- (b) Excision repair
- (c) Mismatch repair
- (d) All of the above

14. Thermolabile compounds are sterilized by:

- (a) Autoclaving
- (b) Surface sterilization
- (c) Flame sterilization
- (d) Ultracentrifugation

15. Polyethylene glycol is commonly used as:

- (a) Antibiotic
- (b) Growth regulator
- (c) Fusogen
- (d) Osmotica

Short answer question

1. What do you understand by DNA-protein interaction? Explain.
2. Write a short note on types of RNA polymerase.
3. Write difference between nucleosides and nucleotides.
4. What is the wobble hypothesis?
5. Difference between induction and repression.
6. Define micropropagation.
7. Write important features of T₄ DNA ligase.
8. What is embryo nurse endosperm?
9. How pathogen free plants are produced by tissue culture techniques?
10. What is organogenesis?

Long answer question

1. Describe the mechanism of DNA replication. What enzymes are necessary during this process?
2. What is induced mutation? Discuss in brief about the role of chemicals in induction of mutation?
3. Write a detailed account of operon model.
4. Give a detailed account of cell suspension culture. Write its applications.
5. What is polymerase chain reaction and how can it be utilized for gene amplification?