

**FIFTH SEMESTER B.Sc. DEGREE EXAMINATION
NOVEMBER 2013**

(UG – CCSS)

Biotechnology [Core Course]

BT 5B 01— CELL AND MOLECULAR BIOLOGY

Time : Three Hours

Maximum : 30 Weightage

I. Objective Type Questions. Answer all *twelve* questions :

Choose the correct answer :

1. What is the transforming principle in Griffith's experiment?

- (a) DNA. (b) RNA.
(c) Capsular proteins. (d) Capsular polysaccharides.

2. Which among the following correctly depicts central dogma?

- (a) mRNA → DNA → protein. (b) Protein → DNA → mRNA.
(c) DNA → mRNA → protein. (d) mRNA → protein → DNA.

3. Prokaryotic ribosomes are :

- (a) 60S. (b) 70S.
(c) 80S. (d) 28S.

4. CAM plants have a :

- (a) Modified C₃ pathway. (b) Modified C₄ pathway.
(c) Both C₃ and C₄ pathways. (d) None of the above.

5. Okazaki fragments are a proof of :

- (a) Discontinuous replication.
(b) Directional stipulation of DNA replication.
(c) Both (a) and (b).
(d) None of the above.

6. Operon concept was put forward by :

- (a) Jacob and Monad. (b) Hershey and chase.
(c) McCarthy and McLeod. (d) None of the above.

Turn over

7. DNA gyrase catalyse :

- (a) Catenation. (b) Decatenation.
(c) Both (a) and (b). (d) None of the above.

8. Which among the following is true :

- (a) DNA replication is conservative.
(b) DNA replication is continuous.
(c) DNA replication is primer dependent.
(d) All of the above.

Answer the following :

9. Non-coding regions of mRNA is called .
10. Transposable elements found in Drosophila.
11. Lac I gene codes for which protein ?
12. Enzyme involved in supercoiling of DNA.

(12 x 1/4 = 3 weightage)

II. Short Answer Type Questions. Answer all *nine* questions :

13. Cistron.
14. Operon.
15. SOSrepair.
16. Solenoid model.
17. Retroposons.
18. Hogness box.
19. RNA splicing.
20. E.coli RNA polymerase holoenzyme.
21. Endosymbiosis.

(9 x 1 = 9 weightage)

III. Short Essay or Paragraph Questions. Answer any *five* questions :

22. Narrate an experiment, establish the status of DNA as genetic material.
23. How does Khorana elucidated the genetic code ?
24. What are the post translational modification of proteins ?
25. Briefly explain the enzymology of DNA replication.

26. Briefly explain the organization of ~~eukaryotic~~ eukaryotic chromosomes.
27. What are the different types of transposable elements?
28. Briefly explain the organisation of mitochondria.

(5 x 2 = 10 weightage)

IV. Essay questions. Answer any *two* questions :

29. Briefly explain RNA splicing.
30. Compare and contrast ~~eukaryotic~~ eukaryotic and prokaryotic transcription.
31. Explain in detail the carbon assimilation of C₃, C₄ and CAM plants.

(2 x 4 = 8 weightage)