FYBT SEM I

Q.P. Code:

VCD - 28/11/19

2 ½ Hours

Sub:- BioTechnology I.

Total Marks: 75

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labelled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator** is **allowed**.
5. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

Q 1 **Do as directed (Any fifteen)** 15

1. What are the bonds required to build a dsDNA molecule?
2. How glycosidic bond forms between ribose sugar and pyrimidine base.
3. What is the basic requirement of an oligonucleotide to act as a primer?
4. Role of magnesium ions in replication.
5. What is holoenzyme.
6. _____centrifugation was used in Meselson and Stahl's experiment.
7. What is replication?
8. What are mutagens.
9. Role of photolyase in photoreactivation.
10. Name the enzymes involved in methyl-directed Mismatch repair.
11. Photoreactivation occurs when an enzyme called _____ is activated by a photon of light and splits the dimers apart.
12. State true or false. AT → TA is transversion mutation.
13. State true or false. Depurination is the loss of a purine from the DNA when the bond hydrolyses between the base and the deoxyribose sugar.
14. In Avery's transformation experiment, the mixture of DNA and RNA was treated with DNase which caused degradation of _____

    a. Only RNA
    b. DNA and RNA both
    c. DNA and not RNA
    d. None of the above

15. To prove that the phage genetic material was made up of DNA and not protein, Hershey and Chase grew cells of *E. coli* in media containing either a radioactive isotope of _____

    a. ^{32}P or ^{35}S
    b. ^{35}P or ^{32}S
    c. ^{14}N or ^{35}P
    d. ^{14}N or ^{32}S

16. Enlist key characteristic of a material responsible for hereditary information.

17. State feature of R type strain used in Griffith's transformation experiment

18. Give an application of Reverse Transcriptase enzyme in genetic engineering.

19. Give one example of selectable marker present on plasmid vector.

20. Define the term "Star activity" of restriction enzyme.

Q. 2 A Elaborate the experiment of Meselson and Stahl's experiment to prove semi conservative replication. **08**

Q. 2 B What is DNA polymerase, its types and its significance in replication. **07**

OR

Q. 2 C Elaborate notes on semi-discontinuous DNA replication with diagram. **08**

Q. 2 D Explain the mechanism of rolling circle replication. **07**

Q. 3 A Define mutation. Give classification of mutations. **08**

Q. 3 B Describe the action of 5-bromouracil as mutagenic agent. **07**

OR

Q. 3 C Explain Nucleotide Excision repair with suitable diagram. **08**

Q. 3 D Elaborate on the action of intercalating agents. **07**

Q. 4 A Elaborate the experimental details that showed DNA to be the genetic material of T2 bacteriophage. **08**

Q. 4 B Diagrammatically elucidate the experiment that showed RNA is the genetic material in tobacco mosaic virus. **07**

OR

Q. 4 C Explain the features of Phosphatase and Ligases enzyme which are used in genetic engineering. **08**

Q. 4 D Describe the features of restriction endonucleases. **07**

Q. 5 Write Short notes on **any three** of the following **15**

a. Short note on bidirectional replication.

b. Diagrammatically represent conservative, semi-conservative and dispersive type of replication.

c. Recombination repair.

d. Shuttle Vectors

e. Expression Vectors