Q. P. Code: 20670

2 ½ Hours **Total Marks: 75**

Note:

1. Attempt **all** questions.
2. **All questions carry equal marks.**
3. Draw **neat labelled diagrams** wherever necessary.
4. 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. A _____ is a pre-existing polynucleotide chain in DNA replication to which new nucleotides can be added.
2. In DNA replication, _____ exonuclease activity is a proof reading mechanism.
3. The segments of untwisted single strands upon which the new strands are made are called the _____ strands.
4. In DNA replication, the _____ proteins bind to the parental molecule at the origin of replication and wrap the DNA around them.
5. Primase activated by DNA helicases synthesizes a short _____ required for initiation of DNA synthesis.
6. The RNA primers themselves do not remain as a part of the new DNA chain, they are removed and replaced with DNA by the action of _____
7. In eukaryotes, the enzyme _____ serves a DNA repair function.
8. Define: Mutation.
9. Give one example of an intercalating agent.
10. A _____ mutation is a specific type of base pair substitution mutation involving a change from one purine- pyrimidine base pair to other purine – pyrimidine base pair.
11. What are reverse mutations?
12. State the role of Rec A protein.
13. Name any one gene involved in Mismatch Repair
14. The acronym pUC stands for _____ .
15. State True or false: Terminal transferase is used in homopolymer tailing.
16. State True or false: Transduction is transfer of genetic material between bacterial cells via a phage.
17. Name any one plant virus used as vector.
18. Name the radioactive isotope of phosphorus used by Hershy and Chase..
19. Give any one role of enzyme polynucleotide kinase.
20. One Eukaryote used for cloning.

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Q 2 A	Discuss Meselson and Stahl's experiment to prove semiconservative nature of DNA replication in prokaryotes.	**08**
Q 2 B	Explain Semidiscontinuous DNA replication in prokaryotes.	**07**
	OR	
Q 2 C	Explain with a suitable diagram model of reciprocal recombination.	**08**
Q 2 D	Explain the initiation of DNA replication in eukaryotes.	**07**
Q 3 A	Define mutagen. Explain mutations caused by physical mutagens.	**08**
Q 3 B	Explain photoreversal DNA repair.	**07**
	OR	
Q 3 C	Give the general classification of Mutation.	**08**
Q 3 D	Discuss Base excision DNA repair mechanism.	**07**
Q 4 A	Describe Griffith's experiment to prove that DNA is the genetic material.	**08**
Q 4 B	How did scientists prove that RNA is the genetic material?	**07**
	OR	
Q 4 C	Write a note on various types of DNA polymerases.	**08**
Q 4 D	Discuss identification of recombinant clones by direct screening	**07**
Q.5	**Write Short notes on: (Any three)**	**15**
a.	Rolling circle model of DNA replication.	
b.	Base analogs.	
c.	Biological mutagen.	
d.	Expression vectors.	
e.	Reverse Transcriptase.	

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