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SARDAR PATEL UNIVERSITY

M.Sc. (H.S.C) I SEMESTER FBT/FN(New CBCS and ATKT)

EXTERNAL THEORY EXAMINATION

FRIDAY, DATE: 07/12/12

TIME: 10.30AM TO 1.30 PM

PH01CFBT03/PH01EFDN01: CELL AND MOLECULAR BIOLOGY

Total Marks: 70

Note: 1) All the questions are compulsory.

2) Figures on the right indicate marks

3) Draw figures where ever necessary.

I. Choose the correct answer from the following

(8)

1. Chargaff determined that DNA from any source contains about the same amount of guanine as _____.
 - a. uracil
 - b. thymine
 - c. adenine
 - d. cytosine
2. Which of the following best describes semiconservative replication?
 - a. The translation of a DNA molecule into a complementary strand of RNA.
 - b. A DNA molecule consists of one parental strand and one new strand.
 - c. The number of DNA molecules is doubled with every other replication.
 - d. The replication
3. Which of the following cause the unwinding of the DNA double helix?
 - a. DNA polymerase
 - b. DNA helicase
 - c. RNA primer
 - d. primosome
4. Which of the following statements concerning nucleotide excision repair is FALSE?
 - a. It is a type of mismatch repair.
 - b. It involves a nuclease.
 - c. It involves a DNA polymerase.
 - d. It involves DNA ligase.

(PTO)

5. RNA synthesis is also known as:
- elongation.
 - termination.
 - translation.
 - transcription.
6. The wobble hypothesis states that:
- more than one ribosome can bind to an mRNA molecule.
 - some amino acids are coded for by more than one codon.
 - a particular amino acid may be linked to more than one type of tRNA molecule.
 - certain tRNA anticodons can pair with more than one codon sequence.
7. Proteins synthesized in prokaryotes have which of the following at their amino terminal end?
- N-formyl-methionine
 - N-acetyl-adenine
 - the AUG codon
 - the UUU codon
8. Retroviruses or RNA tumor viruses use _____ to make DNA:
- DNA polymerase
 - DNA-dependent RNA polymerase
 - RNA polymerase
 - reverse transcriptase

II. Answer briefly (any seven)

(14)

1. What is a genome?
2. What is the function of Topoisomerase I?
3. Explain the synthesis of lagging strand.
4. Why do we use competent cells for transformation?
5. What are HFr strains?
6. Define Transduction.
7. Define point mutation.
8. Name any two chemical mutagens.
9. Which property differentiates DNA polymerase I and DNA polymerase III?

(2)

- III. (A) Explain replication of DNA in prokaryotes. (6)
(B) Write a note on the Structure of DNA. Explain the experiment which proved that DNA replication is semi conservative. (6)

OR

- (B) Write a note on DNA foot printing.
IV. (A) Define promoter and operator. How is transcription initiated in eukaryotes? (6)
(B) What are the differences between replication in prokaryotes and eukaryotes? What is the importance of origin of replication? (6)

OR

- (B) Write a note on termination of transcription in prokaryotes
V. (A) Define inducer and attenuator. Explain the regulation of lactose operon in presence and absence of glucose and lactose. (6)
(B) Why is RNA processed in Eukaryotes? Write a note on processing an mRNA in eukaryotes. (6)

OR

- (B) Write a note on post translational modification. What are the required features of a protein that is transported into nucleus?
VI. (A) Write a note on the protein synthesis in prokaryotes. (6)
(B) What is generalised transduction? Write a note on the lytic cycle of viruses. (6)

OR

- (B) Write a note on types of physical mutagens and Base excision repair.
