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5 SEM TDC ZOOH (CBCS) C 11

2024

(November)

ZOOLOGY

(Core)

Paper : C-11

(Molecular Biology)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Fill in the blanks : 1×5=5

(a) The enzyme responsible for synthesizing RNA from DNA template is _____.

(b) In eukaryotes, the removal of introns and joining of exons in the pre-mRNA is called _____.

(c) The technique used to separate DNA fragments based on their size is called _____.

(2)

- (d) The phase of the cell cycle where DNA is replicated is known as _____ phase.
- (e) The genetic code consists of _____ different codons.

2. Write briefly about the following (any two) : $4 \times 2 = 8$

- (a) Wobble hypothesis
- (b) Genetic code
- (c) Gene silencing

3. Explain the following (any two) : $4 \times 2 = 8$

- (a) Initiation of transcription in prokaryotes
- (b) RNA editing
- (c) Ribo-switches

4. Describe the mechanism of semi-conservative replication of DNA. How did the Meselson and Stahl experiment provide evidence for this model? $4 + 4 = 8$

Or

What is nucleic acid? Describe the structure and function of different types of RNA. $1 + 7 = 8$

5. What is the role of RNA polymerase in transcription? How does RNA polymerase recognize and bind to the promoter? Explain the process of termination of transcription. $1 + 1 + 6 = 8$

(3)

Or

Explain the difference between transcription in prokaryotes and eukaryotes. Highlight the key enzymes involved in the process. $4 + 4 = 8$

6. What do you mean by transcription? Write about post-transcriptional modifications. $2 + 6 = 8$

Or

List the inhibitors of protein synthesis in prokaryotes. Briefly explain the mechanisms by which these inhibitors inhibit translation. $3 + 5 = 8$

7. What is an operon? Describe the structure and regulation of lac operon. $2 + 6 = 8$

Or

Discuss briefly about the molecular mechanisms involved in the formation of pyrimidine dimers. Explain the mechanism involved in the repair of pyrimidine dimers. $2 + 6 = 8$
