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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) :

4×2=8

(a) Wobble hypothesis

(b) Genetic code

(c) Gene silencing

3. Explain the following (any two) :

4×2=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

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