Total No. of Printed Pages—3

5 SEM TDC ZOOH (CBCS) C 11

2023

(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) Semiconservative replication of DNA was first demonstrated in _____.

(b) The process of synthesis of RNA from DNA template is called _____.

(c) Eukaryotic cells contain _____ distinct nuclear RNA polymerases that transcribe different classes of genes.

(d) The enzyme involved in amino acid activation is _____.

(e) DNA glycosylase is an enzyme involved in base excision repair. Its function is _____.

2. Write briefly about the following (any *two*) : 4×2=8

(a) Salient features of DNA and RNA

(b) Semiconservative nature of DNA replication

(c) Split gene

3. Explain the following (any *two*) : 4×2=8

(a) RNA interference

(b) Features of genetic code

(c) Watson and Crick model of DNA

4. List the enzymes involved in the process of DNA replication. Mention their functions. Explain the process of synthesis of lagging strand during DNA replication using suitable illustrations. 2+2+4=8

Or

Briefly explain the bidirectional nature of DNA replication. Give a note on DNA repair mechanism. 4+4=8

(Continued)

5. Explain the process of transcription in prokaryotes using suitable illustrations. 6+2=8

Or

Explain the formation of closed and open complex during the initiation of transcription. List the various transcription factors in prokaryotes and eukaryotes and mention their functions. 2+2+2+2=8

6. Explain the process of translation in prokaryotes using suitable illustrations. 8

Or

State the Wobble hypothesis. Describe the stage of initiation of translation in prokaryotes with appropriate illustrations. List the various initiation factors (IFs) involved and mention their functions. 2+4+2=8

7. What is RNA editing? Explain the process of RNA editing of the apolipoprotein B gene. 2+6=8

Or

What are post-transcriptional modifications? Explain the various post-translational modifications. 2+6=8

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