

IV/ BIO-CHEM (iv)

2015

(4th Semester)

BIOCHEMISTRY

Paper : BC-4

(Molecular Biology)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

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

1. (a) What is replication? Write an account of experimental evidence for semi-conservative replication of DNA. 1+6=7

Or

- (b) Write short notes on : 3½+3½=7

(i) DNA polymerase III

(ii) Hershey and Chase experiment on DNA as genetic material

G15—150/267a

(Turn Over)

2. (a) What is post-transcriptional processing of RNA? Explain the mechanism of capping and methylation process in eukaryotes. 1+3+3=7

Or

- (b) Write short notes on : 3½+3½=7
- (i) Rho-dependent termination
 - (ii) Reverse transcriptase

3. (a) Discuss in detail the mechanism of regulation of Trp operon. 7

Or

- (b) Write short notes on : 3½+3½=7
- (i) Biological significance of degeneracy
 - (ii) Overlapping genes

4. (a) Describe the elongation and termination steps of translation in prokaryotes.

3½+3½=7

Or

- (b) Write short notes on : 3½+3½=7
- (i) Charged tRNA
 - (ii) Formation of 70S initiation complex

5. (a) What is recombinant DNA technology?
Describe the important applications of
rDNA technology. 1+6=7

Or

- (b) Write short notes on :

$3\frac{1}{2}+3\frac{1}{2}=7$

(i) Phages

(ii) Hybridoma technology

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(PART : A—OBJECTIVE)

(Marks : 20)

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Answer **all** questions

SECTION—A

(Marks : 5)

Put a tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. During DNA replication, the enzyme that synthesizes daughter strand is

- (a) DNA polymerase ()
- (b) primase ()
- (c) DNA ligase ()
- (d) helicase ()

2. During the capping process, to which end of the transcript is the cap added?

(a) 3' end ()

(b) 5' end ()

(c) Both (a) and (b) ()

(d) None of the above ()

3. Who proposed the Wobble hypothesis in 1966?

(a) Watson ()

(b) Nirenberg ()

(c) Brenner ()

(d) Crick ()

4. A polypeptide chain of 120 amino acids is coded by

(a) 120 ribonucleotides ()

(b) 60 ribonucleotides ()

(c) 240 ribonucleotides ()

(d) 360 ribonucleotides ()

5. A unique sequence of dsDNA recognized by restriction enzymes is known as

(a) palindrome ()

(b) multiple cloning site ()

(c) Shine-Dalgarno sequence ()

(d) None of the above ()

(4)

SECTION--B

(Marks : 15)

3*5=15

Write short notes on the following :

1. Replication fork

2. Promoter

3. Universality of genetic code

4. Shine-Dalgarno sequence

(8)

5. Multiple cloning sites

G15—150/267

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