

This question paper contains 4 printed pages]

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S. No. of Question Paper : 1674

Unique Paper Code : 107485

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Name of the Course : B.Sc. (Hons.)/(Botany/Biochemistry/Microbiology/  
Bio-Med/Anthropology/Zoology)

Name of the Paper : Molecular Biology —II (MBHT-402)

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately on receipt of this question paper.)*

Answer *Five* questions in all, including

Question No. 1 which is compulsory.

1. (a) Define (any *five*) :

5

(i) Promoter

(ii) Operon

(iii) RNAi

(iv) Isoform

(v) Polysome

(vi) Spliceosome

(vii) Translocation.

P.T.O.

(b) Expand (any five) :

5

- (i) CAP
- (ii) ARS
- (iii) DCE
- (iv) MAPK
- (v) "snurps"
- (vi) FACT
- (vii) TC.

(c) Match the following :

3

Column A	Column B
(i) Ribosome	(a) TATAAT
(ii) Pribnow	(b) $\beta$ -galactosidase
(iii) Split genes	(c) RNA Polymerase
(iv) Structural gene z	(d) Ribozyme
(v) $\alpha$ -amanitin	(e) Pre-mRNA
(vi) E complex	(f) Introns

(d) Fill in the blanks (any six) :

6

- (i) Rho-independent terminators are also called as .....

- (ii) Transcription factors that recognize the TATAAT element is .....
- (iii) The number of ribosomes that binds to an ORF of 1000 bases is .....
- (iv) -35 consensus sequence is .....
- (v) The enzyme that synthesizes snRNA is .....
- (vi) Start codon used in bacteria during translation is .....
- (vii) The charged initiator tRNA in prokaryotes is referred to as .....
2. (a) What are the *three* basic stages of transcription ? How does RNA polymerase carry out its proof-reading function in prokaryotes ? 8
- (b) How are eukaryotic pre-mRNA modified at their 5' and 3' ends ? 6
3. (a) Define RNA editing. How is guide RNA involved in RNA editing ? 9
- (b) Ribosome is a ribozyme. Explain. 5
4. (a) How are promoters regulated by activators ? Explain. 9
- (b) Describe dosage compensation in human females. 5
5. (a) How do riboswitches control the expression of a gene ? 10
- (b) With the help of a diagram show the conserved sequences that delineate the splicing sites. 4
6. (a) Describe how signals control the activities of eukaryotic transcriptional regulators ? 8
- (b) How does RNA polymerase transcribe through nucleosome ? 6

7. Write short notes on (any *four*) :

14

- (i) tRNA
- (ii) Exon shuffling
- (iii) Zn finger motif
- (iv) Release factors
- (v) Rho-dependent transcription termination
- (vi) Inhibitors of protein synthesis.