



MS – 343

IV Semester B.Sc. Examination, May 2016

(Semester Scheme)

(Fresh) (CBCS – 2015 – 16 & Onwards)

BIOTECHNOLOGY – IV

Molecular Biology

(Repeater 70 Marks – 2012 – 13 and Onwards/Repeater 60 Marks – Prior to 2012 – 13)

Time : 3 Hours

Max. Marks : 70/60

- Instructions :**
- 1) Draw diagrams **wherever** necessary.
 - 2) Section 'D' is **compulsory** for **2012 – 13** batch student Onwards.
 - 3) **70** marks for Fresh students of **2012 – 13** Onwards.
 - 4) **60** marks for Repeaters students prior to **2012 – 13** batch.

SECTION – A

I. Write short notes on the following : (5×2=10)

- 1) F⁺ and F⁻ mating types.
- 2) Ribozymes.
- 3) Helicase.
- 4) P elements.
- 5) Shine Dalgarno sequence.

SECTION – B

II. Answer **any four** of the following : (4×5=20)

- 6) Explain the structure and function of tRNA.
- 7) Describe mismatch repair mechanism.
- 8) Describe the gene organization in mitochondria.
- 9) Differentiate between prokaryotes and eukaryotic promoters. Add a note on RNA polymerase.
- 10) Explain the negative regulation of Trp operon.

SECTION – C

III. Answer **any three** of the following : (3×10=30)

- 11) With the help of a neat labelled diagram, explain the mechanism of DNA replication. Add a note on the Theta mode of replication.
- 12) Write a detailed account on the process of transduction in bacteria.

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- 13) a) Write an account on Griffiths experiment to prove DNA as genetic material.
b) Write an account on the alternate forms of DNA. (6+4)
- 14) Describe the various post transcriptional modifications of eukaryotic mRNA.
- 15) Write an account on the transposable elements found in bacteria. Add a note on the mechanism of transposition.

SECTION – D

(For 2012 – 13 batch onwards students and CBCS Scheme students)

IV. Answer the following :

(10×1=10)

- 16) Name any two nucleosides of RNA.
- 17) In the lagging strand the DNA replication is in the _____ direction.
- 18) In conjugation, when the F factor excises from the chromosome along with a segment of the chromosome, it is called _____
- 19) During replication if 5' AATGGCT – 3' is the template strand, then the daughter strand will be
a) 5' – TTACCGA – 3' b) 3' – TTACCGA – 5'
c) 5' AATGGCT – 3' d) 3' UUACCGA – 5'
- 20) _____ is the initiation codon, coding for the amino acid _____
- 21) The eukaryotic pre-mRNA reduces in size after synthesis, due to which of the following processing steps ?
a) capping b) removal of introns
c) removal of exons d) removal of poly A-tail
- 22) Lac operon is switched on when
a) Only glucose is there in the medium
b) Only lactose is there in the medium
c) When both glucose and lactose are there in the medium
d) None of the above
- 23) In AC/DS elements in maize, _____ are the non-autonomous elements.
- 24) The 5' cap in eukaryotes is made of _____
- 25) In translation, during the elongation step, the charged tRNA enters the _____ site on the ribosome.