

Master of Science (M.Sc.) Semester-III (CBCS) (Microbiology) Examination
MOLECULAR BIOLOGY AND GENETICS (MBG)
Compulsory Paper-1
Paper-I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagram wherever necessary.

1. Discuss the mechanism of replication of chromosomal DNA in *E.coli*. 16

OR

Write in detail on DNA repair mechanism and role of various enzymes and proteins in DNA repair. 16

2. Write in detail about various components and mechanism of prokaryotic translation. 16

OR

Discuss mRNA, rRNA and tRNA processing through splicing mechanism in post transcriptional events. 16

3. Give a detailed account of regulation of lac operon. 16

OR

Explain in detail protein degradation control. 16

4. Describe the mechanism of gene mapping by bacterial conjugation. 16

OR

Discuss various types of transposons. 16

5. Write notes on :

(a) Gene conversion. 4

(b) Enhancers and Silencers. 4

(c) Induction of trp operon. 4

(d) Transduction. 4

Master of Science (M.Sc.) Semester—III (Choice Based Credit System) (CBCS)
(Microbiology) Examination
MOLECULAR BIOLOGY AND GENETICS (MBG)
Compulsory Paper–I
Paper–I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw diagram wherever necessary.

1. Describe various steps involved in replication of E.coli. Add a note on enzymes involved in replication. 16

OR

 - (a) Explain various types of error free repair mechanisms. 8
 - (b) Discuss Rec BCD mediated genetic recombination. 8

2. Define transcription. Explain the process of transcription in Prokaryotes. 16

OR

 - (a) Describe various ways of post-translational modification. 8
 - (b) Write a note on : 4
 - (i) Catalytic RNA. 4
 - (ii) Silencers. 4

3. Define operon. Explain Tryptophan operon in detail. 16

OR

Discuss chromosome remodelling. 16

4. Describe various methods of Gene mapping in Bacteria. 16

OR

 - (a) Explain 'P' elements. 8
 - (b) Describe the mechanism of Retroposons. 8

5. (a) Explain gene conversion. 4
- (b) Write a note an antisense RNA. 4
- (c) Explain the regulation of Arabinose operon. 4
- (d) Write a note on insertion sequence elements. 4

Master of Science (M.Sc.) Semester-III (CBCS) (Microbiology) Examination
MOLECULAR BIOLOGY AND GENETICS (MBG)

Compulsory Paper-1

Paper-I

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5. Write notes on : 16
 - (a) Gene conversion. 4
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 - (c) Induction of trp operon. 4
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**Master of Science (M.Sc.) Third Semester (CBCS) (Microbiology) Examination
MOLECULAR BIOLOGY AND GENETICS (MBG)**

Compulsory Paper—1

Paper—I

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) **ALL** questions are compulsory and carry equal marks.

(2) Draw well labelled diagram wherever necessary.

- | | | |
|----|--|----|
| 1. | Describe prokaryotic replication and add a note on the termination mechanism. | 16 |
| | OR | |
| | Discuss the Rec BCD. | 16 |
| 2. | Compare the general and specific transcription factors and describe general transcription process. | 16 |
| | OR | |
| | Describe the post translational modifications in detail. | 16 |
| 3. | Discuss Tryptophan Operon in detail. | 16 |
| | OR | |
| | Give the detail account of protein degradation control. | 16 |
| 4. | Discuss the bacteriophage gene mapping. | 16 |
| | OR | |
| | Describe in detail the gene mapping by conjugation. | 16 |
| 5. | Write notes on : | |
| | (a) Gene Conversion. | 4 |
| | (b) Antisense RNA | 4 |
| | (c) Regulation of Lac-Operon | 4 |
| | (d) P elements. | 4 |

Shri Shivaji Education Society Amravati's Science College.
M.Sc. II Semester-III Preliminary Examination 2019
Paper I: Molecular Biology and Genetics (MBG)

Total Marks: 80

Time: 3 Hours

NOTE: All the questions are compulsory.
Draw diagrams wherever necessary.
Give examples wherever necessary.

Que.1) What is Homologous recombination? Give a detail account on the mechanism of homologous recombination. (16 Marks)

OR

Write notes on:—

- (a) Base Excision repair (08 Marks)
(b) Direct reversal of DNA damage. (08 Marks)

Que.2) Give a detail account on post translational modification of proteins. (16 Marks)

OR

Write notes on:—

- (a) Initiation of Eukaryotic transcription (08 Marks)
(b) RNA splicing. (08 Marks)

Que.3) Give a detail account on Lac Operon. (16 Marks)

OR

Que.3) Write notes on:—

- (a) Explain chromatin remodelling of mRNA (8 Marks)
(b) Protein degradation control (8 Marks)

Que.4) Explain the process of gene mapping in bacteria (16 Marks)

OR

Write notes on:—

- (a) Bacterial transposons (08 Marks)
(b) Mapping of bacteriophage gene by recombination analysis. (08 Marks)

Que.5) Give brief account of:

- (a) Rec BCD action (04 Marks)
(b) Antisense RNA (04 Marks)
(c) Trp operon (04 Marks)
(d) Retroposon. (04 Marks)

Shri Shivaji Education Society Amravati's Science College.
M.Sc. II Semester-III Preliminary Examination 2019-Microbiology
Paper I: Molecular Biology and Genetics (MBG)

Total Marks: 80

Time: 3 Hours

NOTE: All the questions are compulsory.
Draw diagrams wherever necessary.
Give examples wherever necessary.

- Que.1) What is Homologous recombination? Give a detail account on the mechanism of homologous recombination. (16 Marks)
- OR
- Write notes on:—
- (a) Base Excision repair (08 Marks)
- (b) Direct reversal of DNA damage. (08 Marks)
- Que.2) Give a detail account on post translational modification of proteins. (16 Marks)
- OR
- Write notes on:—
- (a) Initiation of Eukaryotic transcription (08 Marks)
- (b) RNA splicing. (08 Marks)
- Que.3) Give a detail account on Lac Operon. (16 Marks)
- OR
- Que.3) Write notes on:—
- (a) Explain chromatin remodelling of mRNA (8 Marks)
- (b) Protein degradation control (8 Marks)
- Que.4) Explain the process of gene mapping in bacteria (16 Marks)
- OR
- Write notes on:—
- (a) Bacterial transposons (08 Marks)
- (b) Mapping of bacteriophage gene by recombination analysis. (08Marks)
- Que.5) Give brief account of:
- (a) Rec BCD action (04 Marks)
- (b) Antisense RNA (04 Marks)
- (c) Trp operon (04 Marks)
- (d) Retroposon. (04 Marks)

Master of Sci. (M.Sc.) Third Semester Choice Based Credit System (CBCS)
(Microbiology) Examination

MOLECULAR BIOLOGY AND GENETICS (MBG)

Compulsory Paper-I

Paper-I

Time : Three Hours]

[Maximum Marks : 80]

N.B. :- All questions are compulsory and carry equal marks.

1. Describe Holoenzyme and progressivity of replication.

OR

Give the mechanism of homologous recombination in detail.

2. Discuss the concept of gene silencing in detail.

OR

Give the detail account on Eukaryotic translation process.

3. Discuss Tryptophan Operon in detail.

OR

Give a detailed account on chromatin remodelling.

4. Discuss the bacteriophage gene mapping.

OR

(a) Write a note on Retroposons.

(b) Explain the concept of deletion mapping.

5. Write notes on :

(a) Direct reversal of DNA damage

(b) Antisense RNA

(c) Structure of lac operon

(d) P elements.

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S.S.E'S Amravati's Science College, Nagpur

PRELIMINARY EXAMINATION

Winter 2023

M Sc Semester – III

MICROBIOLOGY

Paper I- Molecular Biology and Genetics

Time: 3 Hours

Max Marks: 80

Note: a) All the questions are compulsory and carry marks as indicated.
b) Draw neat and well labelled diagrams wherever necessary.

- Q.1 What is homologous recombination? Explain mechanism of homologous recombination in detail. 16
OR 08
a) Write a note on Eukaryotic Replication. 08
b) Give an account on Direct reversal of DNA damage. 16
- Q.2 Explain Initiation Elongation of Eukaryotic transcription in detail. 16
OR 08
a) Write a note on post translation modification of protein. 08
b) Explain Translation mechanism. 16
- Q.3 Explain in detail about Chromatin remodelling of mRNA. 16
OR 08
a) Write a note on lac operon. 08
b) Write a note on trp operon. 16
- Q.4 Explain the process of mapping of bacteriophage gene by recombination analysis. 16
OR 08
a) Write a note on Bacterial Transposons. 08
b) Write a note on gene mapping in bacteria. 16
- Q.5 Give brief account of: 4×4=16
a) Rec BCD action
b) Class I, class II and class III Promoters
c) Trp Operon
d) Retroposon

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[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

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 (d) Write a note on insertion sequence elements. 4