

A

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(20222)

Roll No.

M.Sc. (Bio-Tech.) -I Sem.

NP-3330(CV-III)

M.Sc. (Bio-tech.) Examination, Dec.-2021

Fundamental Of Genetics

(H-101)

M.Sc. (Bio-tech.)

Time : 1½ Hours]

[Maximum Marks : 50

Note : Attempt questions from **all** sections
as per instructions.

Section - A

(Very Short Answer Questions)

Note : Attempt any **two** questions. Each
question carries **05** marks. Answer
should not exceed 100 words.

5×2=10

1. Dosage compensation

P.T.O.

2. Klinefelter's syndrome
3. Linkage mapping
4. Coupling and repulsion hypothesis
5. Chemical mutagen

Section - B

(Short Answer Questions)

Note : Attempt any **one** question. Each question carries **10** marks. Answer should not exceed 250 words.

1×10=10

6. Differentiate between sex linked and sex limited traits. Provide suitable examples for each trait.
7. Describe CLB method for detecting mutations in *Drosophila*.
8. Discuss with the help of a suitable diagram parallelism between Mendel's hypothetical particles (factors) and chromosome during meiosis.

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9. Explain male sterility in plants? Discuss its importance in plant breeding.

Section - C

(Detailed Answer Questions)

Note : Attempt any **two** questions. Each question carries **15** marks. Answer is required in detail. $2 \times 15 = 30$

10. Describe extra-chromosomal inheritance. Discuss Kappa particles in paramecium and coiling in snails.
11. What are multiple alleles? Discuss the example of ABO blood group system in humans.
12. What is Position effect variegation (PEV)? Discuss it providing suitable example.
13. Discuss different type of gene interactions which led to the modification of 9:3:3:1 dihybrid ratio.

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P.T.O.

14. What is heterosis? Discuss its importance in plant breeding.

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Roll No.

M.Sc.(Bio.-Tech.)-I Sem.

NP-3331(CV-III)

M.Sc. (Bio-Tech.)

Examination, Dec.-2021

Cytogenetics and Molecular Genetics

(H-102)

[M.Sc. (Bio-Tech.)]

Time : 1½ Hours]

[Maximum Marks : 50

Note : Attempt questions from **all** Sections
as per instructions.

Section-A

(Very Short Answer Questions)

Note : Attempt any **two** questions. Each
question carries 5 marks. Answer is
required not exceeding 75 words.

2×5=10

1. Write short note on Anaphasic movement.

P.T.O.

2. What is position effect?
3. Write short notes on the following
 - (i) Pseudodominance
 - (ii) Pseudocrying
4. Differentiate between the following
 - (i) Nulliplex & Nullisomics
 - (ii) Simplex & Duplex
5. Comment upon repetitive DNA.

Section-B

(Short Answer Questions)

Note : Attempt any **one** of the following questions out of the following 3 questions. Each question carries 10 marks. Answer is required not exceeding 200 words. $1 \times 10 = 10$

6. Give a brief account on double Reduction.
7. What is Nucleosome? How it was discovered?

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8. Describe briefly the experimental evidence which led to the DNA as hereditary material.

Section-C

(Detailed Answer Questions)

Note : Attempt any **two** questions out of following 5 questions. Each question carries 15 marks. Answer in required in detail. $2 \times 15 = 30$

9. Give a detailed account on DEFICIENCY with reference Meiotic pairing & phenotypic effect.
10. Discuss and draw figure to illustrate the behaviour of Paracentric inversion in the meiotic cycle. Give its role in evolution.
11. What is translocation? Discuss in detail occurrence & origin of multiple translocation by taking the example of **Oenothera lamarckiana**.

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P.T.O.

12. What is Genetic code? Give experiments which helped in deciphering genetic code.
13. Discuss different steps of DNA replication in prokaryotes giving role of various enzymes/proteins.

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M.Sc.(Bio-Tech.)-I Sem.

NP-3332 (CV-III)

M.Sc. (Bio-Tech.) Examination, Dec.-2021

Statistical Methods and Bio-Informatics in

Biology

(H-103)

M.Sc. (Bio-Tech.)

Time : 1½ Hours] [Maximum Marks : 50

Note : Attempt **all** the Sections as per instructions.

Section - A

Note : Attempt any **two** questions. Each question carries 5 marks. Very short answer is required not exceeding 75 words.

1. What are cumulative frequency curves?
2. Define the measures of central tendency.

P.T.O.

3. Differentiate between Randomized Block and Latin Square Design.
4. What are the basic tools of bioinformatics?
5. Differentiate between primary and secondary databases.

Section - B

Note : Attempt any **one** question out of the following three questions. Each question carries 10 marks. Short answer is required not exceeding 200 words.

6. Comment on significance of calculation of Standard Deviation (S.D.) and Coefficient of Variation.
7. Comment on application of Bioinformatics specifying the role of Internet.
8. Comment on TIGR human genome index.

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Section - C

Note : Attempt any **two** questions out of the following five questions. Each question carries 15 marks. Answer is required in detail.

9. With the help of suitable tables and diagrams describe frequency distributions.
10. Discuss chi-square (χ^2) test and its application.
11. Discuss the principle and types of experimental designs giving their significance.
12. What are the various web browsers and networks which provide required information to the man.

13. Discuss techniques of database searching.

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Roll No.

M.Sc.(Biotech.)-I Sem.

NP-3333(CV-III)

M.Sc. (Biotechnology)

Examination, Dec.-2021

Tools & Techniques of Biotechnology

[H-104 (M.Sc. Biotech.)]

Time : 1½ Hours]

[Maximum Marks : 50

Note : Attempt questions from all Sections
as per instructions.

Section-A

(Very Short Answer Questions)

Note : Attempt any **two** questions. Each part
carries 5 marks. Answer is required
not exceeding 100 words. $2 \times 5 = 10$

1. Write notes on-

(a) Detection of radioactivity

P.T.O.

- (b) Types of centrifuge
- (c) Safety In the Laboratory
- (d) Fluorescent probes
- (e) 2D-PAGE

Section-B

(Short Answer Type Questions)

Note : Answer any **one** out of the following each carries 10 marks. Answer is required not exceeding 300 words.

1×10=10

2. Mention the contribution of following workers-
 - (a) A.Tiselius
 - (b) Cerenkov
 - (c) M.Tswett
 - (d) Lambert
3. Enumerate the list of references (10) in the form of books with authors, e-references research papers which you have studied for this paper syllabus.

4. Differentiate the followings-

- (a) Stationary and Mobile phase
- (b) Optical and chemical quenching
- (c) Autoradiography and Fluorography
- (d) γ -rays and x-rays

Section-C

(Detailed Answer Questions)

Note : Answer any **two** questions. Each carries 15 marks. Answer is required in detail. $2 \times 15 = 30$

- 5. What is affinity chromatography. Discuss it with group. Specific ligand used in this experiment.
- 6. Discuss the different safety aspects during the radio-tracer experiments.

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P.T.O.

7. If a solution containing ATP is found to have an absorbance of 0.17 in a 1 cm cuvette and its molar extinction coefficient is 1.54×10^4 ($\text{mol. dm}^{-3} \text{cm}^{-1}$).

What is-

- (a) Concentration of ATP solution.
 - (b) Transmission of the solution in 1 cm cuvette.
 - (c) Absorbance of a 2.5×10^{-1} mm solution of ATP in a 4 cm cuvette.
8. Discuss the principle and applications of confocal microscopy.
9. What are factors affecting Electrophoresis with detail reference to Agarose, PAGE, PFGE.

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