A (Printed Pages 3)

(20622) Roll No. 2.1.0.6.2.2.2.7003

M.Sc. - II Sem.

NP-3337

M.Sc. (Biotechnology) Examination, June-2022

RECOMBINANT DNA TECHNOLOGY AND GENETIC ENGINEERING

(H-204)

[M.Sc.(Biotech.)]

Time : Three Hours] *[Maximum Marks : 50*

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

Section-A

(Very Short Answer Type Questions)

Note : Attempt all the **five** questions. Each question carries 2 marks. Very Short answer is required not exceeding 50-75 words.

P.T.O.

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1. Define genetic engineering.
2. What is the scope of genetic engineering.
3. Define Primers.
4. Explain modifying enzymes.
5. What is electronic PCR (e-PCR).

Section-B

(Short Answer Type Questions)

Note : Attempt any **two** questions out of the following three questions. Each question carries 5 marks. Short answer is required not exceeding 200 words.

6. Explain the recombinant DNA technology in Eukaryotes.
7. Discuss in detail about genomic library.
8. Discuss in detail the method of gene isolation.

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Section-C

(Long Answer Type Questions)

Note : Attempt any **three** questions out of the following five questions. Each question carries 10 marks. Answer is required in detail.

9. Explain different kinds of Vectors.

10. Describe in detail the Sanger's dideoxy method of gene sequencing.

11. Write detail notes on the following:

    (a) Chromosome jumping

    (b) Yeast artificial chromosome (YAC)

12. Write down the different schemes and uses of PCR.

13. Discuss in detail the method of Southern blotting technique.

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A (Printed Pages 4)

(20622) Roll No. 21D.A.6.2.2.2.7003

M.Sc. - II Sem.

NP-3336

M.Sc. (Bio-Tech.) Examination, June-2022

BIOTECHNOLOGY IN CROP IMPROVEMENT

(H-203)

(M.Sc. Biotech.)

Time : Three Hours] *[Maximum Marks : 50*

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

Section-A

(Very Short Answer Type Questions)

Note : Attempt all the **five** questions of this section. Each question carries **2** marks. Very Short answer is required not exceeding 75 words.

1. Explain gene tagging.
2. Write a short note on transgene silencing.

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3. Explain In-vitro pollination.

4. Write detailed note on Petro plants.

5. Write a note on Legislation for transgenic plants.

Section-B

(Short Answer Type Questions)

Note : Attempt any **two** questions out of the following three questions. Each question carries **5** marks. Short answer is required not exceeding 200 words.

6. What are the methodologies for identifying transgenic plants?

7. Discuss in brief PEG mediated somatic hybridization.

8. Differentiate between Clonal propagation and micro propagation.

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Section-C

(Long Answer Type Questions)

Note : Attempt any **three** questions out of the following five questions. Each question carries **10** marks. Answer is required in detail.

9. What is genetic engineering? Explain Agrobacterium mediated gene transfer with the help of a diagram. How many type of differentiations can be induced through Agrobacterium? Describe briefly any other two methods of direct delivery of gene transfer.

10. Elaborate the significance and application of micropropagation techniques in the forestry and horticulture.

11. Describe different methods used for improvement of nutritional quality of crop

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plants. Explain with particular emphasis on transgenic crops with improvement in vitamins and seed storage proteins.

12. What are symmetric and asymmetric somatric hybrids. How can these be used for transfer of genes from alien species into cultivated species?

13. Write short notes on any **two** of the following:

    (a) Discuss the utility of transgenic plants for production of antibiotics and biopharmaceuticals using suitable examples.

    (b) Biosafety for growing transgenic crops.

    (c) Regulations on field testing of transgenic crops

    (d) Anther culture and its use in hybridization programmes.

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A (Printed Pages 4)

(20622) Roll No. .....

M.Sc.-II Sem.

NP-3335

M.Sc. (Bio-Tech.) Exainination, June-2022

PLANT GENETIC RESOURCE CONSERVATION AND SUSTAINABLE USE

(H-202)

M.Sc. (Bio-Tech.)

Time : Three Hours] *[Maximum Marks : 50*

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

Section-A

(Very Short Answer Type Questions)

Note : Attempt **all** parts. Each part carries 2 marks. Very short answer is required not exceeding 75 words.

P.T.O.

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1. Write short notes on **all** the following :

   (a) Plant quarantine

   (b) NBPGR

   (c) Cryobanks

   (d) Biodiversity Bill 2002

   (e) TRIPs

Section-B

(Short Answer Type Questions)

Note : Attempt any **two** questions out of the following **three** questions. Each question carries 5 marks. Short answer is required not exceeding 200 words.

2. Describe in brief the terminator and traitor techniques.

3. Explain the rate of loss of biodiversity along with the causes for the loss of the diversity.

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4. What is Red Data Book? Explain in brief.

Section-C

(Long Answer Type Questions)

Note : Attempt any **three** questions out of the following **five** questions. Each question carries 10 marks. Answer is required in detail.

5. Describe in detail the evolution of rapeseed and mustard and its genetic improvement program in India.

6. What in cryopreservation? Explain this technique and describe its importance in the conservation of plant germplasm.

7. Give a detailed account of Plant Breeders Rights and Farmers Rights.

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8. Discuss about the derived and molecular bases of taxonomic classification of Plant Genetic Resources.

9. Define biodiversity and genetic resources. Explain alpha vs. beta biodiversity and methods of their study.

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(20622) Roll No. 2100622...7003

M.Sc.-II Sem.

NP-3334

M.Sc. (Biotechnology) Examination,

June-2022

FUNDAMENTAL OF BIOCHEMISTRY

[H-201 (M.Sc.-Biotech.)]

Time : Three Hours] *[Maximum Marks : 50*

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

Section-A

(Very Short Answer Type Questions)

Note : Attempt all **five** questions. 2×5=10

1. What is allosteric enzyme?

P.T.O.

27-3

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2. Differentiate between essential and non-essential amino acids. Give examples.

3. What are functions of proteins?

4. Define Chargoff's rule.

5. What are secondary metabolites?

Section-B

(Short Answer Type Questions)

Note : Attempt any **two** questions. $5 \times 2 = 10$

6. Explain the effect of heat on α, β, γ and δ-amino acids.

7. Describe the components of nucleic acids.

8. Give characteristics of polypeptide bonds. What is iso-electric point of amino acid?

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Section-C

(Long Answer Type Questions)

Note : Attempt any **three** questions.

$10 \times 3 = 30$

9. Derive Michaelis Menten Equation and discuss its significance. Draw Lineweaver Burk plot.

10. Explain reversible and irreversible inhibition in enzymes.

11. Explain Fischer's Lock and Key model and Koshland's induced fit hypothesis and their limitations in enzyme catalysed reactions.

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12. Describe the steps involved in Glycolysis.

13. Explain the biosynthesis of cholesterol.

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