(Pages : 4) **P – 6092**

Reg. No. : .....

Name : .....

Third Semester M.Sc. Degree Examination, January 2023

Botany

BO 232 : BIOCHEMISTRY, PLANT PHYSIOLOGY AND RESEARCH METHODOLOGY

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 75

I. Answer the following questions.

1. SPAC.
2. lsoenzymes.
3. Characteristics of C_4 plants.
4. Role of compatible solute in stress.
5. Role of ethylene in plants.
6. Comment on ATP synthase
7. Active transport.
8. Photoinhibition
9. Comment on the amphibolic nature of citric acid cycle.
10. Differentiate between source and sink.

(10 × 1 = 10 Marks)

P.T.O.

II. Answer the following questions not more than 50 words.

11. (a) Comment on RUBISCO.

OR

(b) Comment on water potential.

12. (a) Comment on synthetic hormones.

OR

(b) Differentiate the functions of Guttation and Transpiration.

13. (a) Comment on Active transport.

OR

(b) Comment on the antioxidation in plants.

14. (a) Briefly explain Kranz anatomy.

OR

(b) Briefly explain cryptochrome.

15. (a) Explain Self Plagiarism.

OR

(b) What is TURNITIN.

(5 × 2 = 10 Marks)

III. Answer the following questions not more than in 150 words.

16. (a) Describe any one of the mechanisms for opening and closing of stomata

OR

(b) Explain Red drop and Emerson's enhancement effects.

17. (a) Give an account of the carbon dioxide fixation in succulent species.

OR

(b) Give an account on plant hormones involved in seed germination.

18. (a) Write a note on the regulation of citric acid cycle.

OR

(b) Role of secondary metabolites in plants.

19. (a) Explain the process of ammonium assimilation in plants.

OR

(b) Give an account on salt stress and salt stress resistance in plants.

20. (a) Explain action spectrum and the absorption spectrum of photosynthesis.

OR

(b) Explain Ramachandran plot and explain its uses.

21. (a) Write a note on seed dormancy breaking.

OR

(b) What are the various mechanisms of resistance shown by plants during biotic stress?

22. (a) Research approaches are classified as qualitative or quantitative: explain what these approaches are and what research purposes they serve?

OR

(b) Distinguish between primary and secondary data.

(7 × 5 = 35 Marks)

IV. Answer the following questions in not more than 250 words.

23. (a) Explain the metabolic fate of pyruvic acid in aerobic respiration.

OR

(b) Differentiate between cyclic and non-cyclic photophosphorylation.

24. (a) With relevance to biological research comment on the methods to measure central tendencies and dispersion.

OR

(b) With reference to it application, explain any three of the five software programes that are used when writing a research article.

(2 × 10 = 20 Marks)

(Pages : 4) **P – 6093**

Reg. No. : .....

Name : .....

Third Semester M.Sc. Degree Examination, January 2023

Botany

BO 233 – MOLECULAR BIOLOGY, IMMUNOLOGY AND PLANT BIOTECHNOLOGY

(2019 Admission onwards)

Time : 3 Hours Max. Marks : 75

I. Answer the following questions

1. What is the role of activated charcoal in tissue culture?
2. How will you sterilize thermolabile substances used in plant tissue culture?
3. Distinguish between somaclonal and gametoclonal variations
4. What are dihalpoids?
5. What is biopiracy?
6. What are phagemids?
7. What is a dot blot?
8. What is gene knock out?
9. What is a hapten?
10. What are inflammatory mediators?

(10 × 1 = 10 Marks)

P.T.O.

II. Answer the following questions in not more than **50** words

11. (a) What are cryoprotrectants? Give two examples

OR

(b) Comment on cell immobilization

12. (a) What is the significance of meristem culture?

OR

(b) Elaborate on protoplast isolation

13. (a) Comment on the major issues raised by genetically modified foods.

OR

(b) Explain the concept of edible vaccines

14. (a) What are MHC Molecules

OR

(b) Distinguish between humoral and cell mediated immunity

15. (a) Give an account on protein sequencing methods

OR

(b) What are the applications of DNA foot printing?

(5 × 2 = 10 Marks)

III. Answer the following questions in not more than **150** words**.**

16. (a) Give an account on the enzymes involved in DNA replication

OR

(b) What are molecular chaprones? Explain their role in protein folding

17. (a) What are restriction endonucleases? Classify.

OR

(b) Comment on (i) YAC, (ii) BAC

18. (a) Write a brief account on microarray technique.

OR

(b) Write an account on southern blotting.

19. (a) Give an account on antigen processing and presentation

OR

(b) Explain monoclonal antibody production.

20. (a) Give an account on various gene cloning methods.

OR

(b) Describe the process of somatic hybridization

21. (a) Explain the process of somatic embryogenesis.

OR

(b) Discuss *Agrobacterium as* a genetic engineering tool.

22. (a) Elaborate on gene editing.

OR

(b) What is molecular farming? Explain

(7 × 5 = 35 Marks)

IV. Answer the following questions in not more than **250** words.

23. (a) Give an account on direct gene transfer methods in plants

OR

(b) What is a haploid culture? Explain and mention its advantages.

24. (a) Give an account of the cells involved in the immune response

OR

(b) What are molecular markers? Explain in detail.

($2 \times 10 = 20$ Marks)

(Pages : 4) **P – 6091**

Reg. No. : .....

Name : .....

Third Semester M.Sc. Degree Examination, January 2023

Botany

BO 231 : PLANT BREEDING, HORTICULTURE AND BIOSTATISTICS

(2019 Admission Onwards)

Time : Three Hours Max. Marks : 75

I. Answer the following questions.

1. What is green super rice?
2. What are the functions of ICAR-NBPGR?
3. Give the importance of floral biology in plant breeding.
4. How do you develop a synthetic variety?
5. Where can you find gene-for-gene relationships?
6. Describe the significance of biodiversity policy.
7. What is Olericulture?
8. Describe the advantages of in door garden.
9. What is Students's t-test?
10. Explain Ogive graph.

(10 × 1 = 10 Marks)

P.T.O.

II. Answer the following questions in not more than 50 words.

11. (a) Explain hybridization and mention it's procedure.

OR

(b) Write short notes on the concept of centers of origin proposed by Vavilov.

12. (a) Describe cytoplasmic male sterility and its uses.

OR

(b) Explain the role of interspecific and intergeneric hybridization.

13. (a) What is seed certification? How is it done?

OR

(b) Describe split-plot design.

14. (a) Give a short account on organic fertilisers.

OR

(b) What is garden design and who does it?

15. (a) Describe briefly regression analysis.

OR

(b) Compare broad sense heritability and narrow sense heritability.

(5 × 2 = 10 Marks)

III. Answer the following questions in not more than 150 words.

16. (a) Compare the back cross and multiple cross methods of hybridization of self-fertilized crops.

OR

(b) Distinguish between mass selection and pureline selection.

17. (a) Describe primary, secondary and microcenters of genetic diversity.

OR

(b) Explain the salient features of heterosis. Add notes on heterobeltiosis.

18. (a) Compare pedigree and bulk methods of breeding. Mention their merits and demerits.

OR

(b) Describe chromosome manipulation techniques used in plant breeding and its significance.

19. (a) Write notes on mutation breeding and its applications.

OR

(b) Distinguish between single-gene resistance and many-gene resistance.

20. (a) Give an account of floriculture and floral industry.

OR

(b) Describe the common types of vegetative propagation techniques used in plants.

21. (a) Discuss on the types of green houses and the equipments used in it.

OR

(b) Describe various hand tools used in horticulture. Mention their uses.

22. (a) Give a general account of the measures of dispersion. Add notes on their coefficients.

OR

(b) Give an account on chi square test and its applications.

(7 × 5 = 35 Marks)

IV. Answer the following questions in not more than 250 words.

23. (a) Give a detailed account of male sterility in crop plants.

OR

(b) Discuss on the types, methods, merits and demerits of selection as a breeding method.

24. (a) Describe the various post planting practices followed upto harvest.

OR

(b) Give a general account of probability distributions. Add notes on binomial and poisson distributions.

(2 × 10 = 20 Marks)

———————