## FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

### Fourth Semester B.Sc Degree Examination, March/April 2021

### BBT4B04 – Methodology and Perspectives in Plant Science

(2019 Admission onwards)

Time: 2 hours                                                    Max. Marks: 60

## SECTION A

**(Answer all questions, each question carries 2 marks. Ceiling: 20 Marks)**

1.  What is photomicrography?

2.  What is null hypothesis?

3.  Differentiate between mean deviation and standard deviation.

4.  Define maceration.

5.  Make a note on the advantages of e-PG pathsala?

6.  Differentiate between molarity and normality of a solution.

7.  Mention the importance of refrigerated centrifuge in biological experiments?

8.  What is a standard buffer? Mention its importance.

9.  Define vital staining? Give an example for a vital stain.

10. What is the importance of fluorescent microscopy?

11. What is the significance of impact factor of a scientific journal??

12. Expand NCBI. Name the institute which hosts NCBI.

## SECTION B

**(Answer all questions, each question carries 5 marks. Ceiling: 30 Marks)**

13. Explain the process of killing and fixing in making a permanent micro preparation.

14. Describe the various methods of sampling in data collection.

15. Explain the principle of adsorption chromatography.

16. Describe the principle of working of a centrifuge. Mention its applications

17. Write a short note on the principle of electron microscopy. Add a note on SEM.

18. Write a short note on various modes of presentations.

19. Explain the significance of statistical analysis in biological experiments.

## SECTION C

**(Answer any one question, each question carries 10 marks.  1 x 10 = 10 Marks)**

20. Explain the structure of a scientific project report. Add a note on different styles of citations.

21. What is Beer Lambert's law? Explain the working and applications of a spectrophotometer.

## FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE
### Fourth Semester B.Sc Degree Examination, March/April 2021
### BBT4C04 – Plant Physiology , Ecology & Genetics
(2019 Admission onwards)

Time: 2 hours                                       Max. Marks: 60

## SECTION A
### (Answer all questions, each question carries 2 marks. Ceiling: 20 Marks)

1. What are antitranspirants? Give two examples.
2. Explain the role of Auxin in plants.
3. What are the anatomical peculiarities of C4 plants?
4. Briefly explain water potential and its importance.
5. Explain the role of imbibition in the water relation of plants.
6. What is the role of vernalin on flowering?
7. Differentiate action spectrum and absorption spectrum.
8. Explain photolysis of water.
9. Briefly explain climax community and its significance.
10. Write any four physiological adaptations found in halophytes.
11. List out any four advantages of selecting garden pea as experimental material by Mendel.
12. Differentiate test cross and back cross.

## SECTION B
### (Answer all questions, each question carries 5 marks. Ceiling: 30 Marks)

13. Write a note on the factors causing dormancy and the techniques to break dormancy.
14. Explain cohesion tension theory.
15. Explain the statement "Transpiration is a necessary evil".
16. Explain photophosphorylation.
17. Write an account on morphological adaptations found in xerophytes.
18. Explain 12:3:1 ratio with suitable example.
19. Explain gene interaction with flower colour in *Lathyrus* as an example.

## SECTION C
### (Answer any one question, each question carries 10 marks. 1 x 10 = 10 Marks)

20. What is dark reaction in photosynthesis? How does it take place in C3 plants?
21. What is ecological succession. Explain the process with reference to Hydrosere.

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## FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

### Fourth Semester B.Sc Degree Examination, March/April 2021

### BCH4C04 – Physical and Applied Chemistry

(2019 Admission onwards)

Time: 2 hours                                               Max. Marks: 60

### Section A (Short answers)
### (Answer questions up to 20 marks. Each question carries 2 marks)

1. What is meant by Tyndall effect? Mention one of its applications.

2. List the applications of nanomaterials in optics.

3. Define percentage atom economy of a synthesis.

4. What is meant by coagulation of a colloidal solution? Among $Na^+$, $Al^{3+}$ and $Mg^{2+}$, which ion is having highest coagulating power.

5. What is greenhouse effect? Name two greenhouse gases.

6. What are the possible electronic transitions in molecules? Arrange them in the increasing order of energy.

7. How will you identify propanal and acetone from NMR spectra.

8. What are biodegradable polymers? Give examples.

9. Comment on the statement: Taj Mahal is losing its beauty due to atmospheric pollution.

10. What do you mean by bioaccumulation?

11. Define cetane number.

12. What are the different types of glasses?

[Ceiling of marks: 20]

### Section B (Paragraph)
### (Answer questions up to 30 marks. Each question carries 5 marks)

13. Explain the applications of colloids.

14. Explain the twelve principles of green chemistry.

15. State and explain Beer-Lamberts law. How is it used in the quantitative estimation of substances?

16. What is BOD? How is it determined? What does the BOD value of a sample of water signify?

17. Explain the principle of thin layer chromatography. Evaluate its merits.

18. What are drugs? Write the important classes of drugs with suitable examples.

19. Describe the manufacture and composition of cement.

[Ceiling of marks: 30]

## Section C (Essay)
### (Answer any one. Each question carries 10 marks)

20.  (i) Explain the principle and applications of gas chromatography.

(ii) Discuss the structure and applications of Buna-S, Nylon 6 and Nylon 66.

21.  (i) Draw the high resolution NMR spectrum of ethanol and explain the splitting signals.

(ii) Explain theories of colour and chemical constitution of dyes.

**[1 x 10 = 10 marks]**

52 B

1B4M21561    (Pages : 1)    Reg. No:...........................
    Name: ..........................

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Botany Degree Examination, March/April 2021

BZL4C04 – Genetics & Immunology

(2019 Admission onwards)

Time: 2 hours    Max. Marks : 60

## Section A

### I. Short answer questions. Each question carries 2 marks.

1.  Distinguish between Euthenics and Euphenics.

2.  What are Barr bodies?

3.  What is genic balance theory?

4.  What is meant by hereditary predisposition of cancer?

5.  What are cosmids?

6.  Comment on MALT.

7.  Mention the importance of dendritic cells.

8.  Write the properties of B cell.

9.  What is Di George syndrome?

10. Write down the functions of immunoglobulins.

11. What are toxoid vaccines?

12. Mention the name of major lymphoid organs.

(Ceiling: 20 marks)

## Section B

### II. Paragraph questions. Each question carries 5 marks

13. Write an account on Diabetes mellitus.

14. Describe the chromosomal mechanism of sex determination.

15. What are the characteristics of transposons? .Mention their role.

16. Write brief account on enzymes in genetic engineering.

17. Distinguish between humoral immunity and cellular immunity.

18. Write an account on human immunoglobulin gene families.

19. Explain the theories carcinogenesis.

(Ceiling: 30 marks)

## Section C

### III. Essay questions. Answer any one question.

20. Give an account on autoimmune diseases.

21. Write an essay on recombinant DNA technology.    (1x10 = 10 marks)