

Exam. Code : 210001
Subject Code : 4848

M.Sc. Botany Semester—I
BOTC-516 : THEORETICAL BIOLOGY

Time Allowed—3 Hours] [Maximum Marks—50

Note :— Attempt all the parts of question 1 of Section A, any **seven** questions from Section B and **three** questions from Section C. Draw neatly labeled diagram wherever required. Marks for each question are indicated in the paper.

SECTION-A

1. Write very briefly about each of the following :

- (i) Line graph
- (ii) Hyperbola
- (iii) Abscissa
- (iv) Normal curve
- (v) Arithmetic mean
- (vi) Exponents
- (vii) Data set
- (viii) Minima.

1×8=8

SECTION-B

2. What are linear functions ? Illustrate with hypothetical data.
3. What is a periodic function ? Illustrate the concept of sine function.

4. Illustrate the concept and application of semilog plots.
5. What is 'chance of occurrence' of a statistical event ? Illustrate with examples.
6. What do you mean by permutations of objects ? Illustrate the concept with an example.
7. Illustrate the addition law of probability and its application.
8. What is integration ? How would you find the integral of $1/x$?
9. What do you mean by instantaneous rate of change ? How can it be calculated ?
10. What do you mean by standard deviation ? Give its figurative representation.
11. What is linear correlation ? Give the formula and the notation.
 $3 \times 7 = 21$

SECTION-C

12. What are power functions ? Give the formula for the quadratic function and illustrate its application in biological science.
13. Write the basic equation of exponential function and give its graphic representation.
14. Illustrate the concept of statistical experiments. How are they different from ordinary laboratory experiments ?
15. What is differentiation ? Give the basic procedure with one application in biology.
16. What is 't' test ? Illustrate its application with an hypothetical example from biology.
 $7 \times 3 = 21$