

**2020-21**

**Time - 3 hours**

**Full Marks - 60**

*Answer all groups as per instructions.*

*Figures in the right hand margin indicate marks.*

*Draw labelled diagrams wherever necessary.*

**GROUP – A**

1. Answer all questions. / Fill in the blanks as required. [1 × 8]
- (a) The study of relationship of a single population to its environment is called \_\_\_\_\_.
- (b) What are edaphic factors ?
- (c) The concept of an ecosystem was proposed by \_\_\_\_\_.
- (d) What is epilimnion ?
- (e) The bottom area of a pond, where respiration is greater than production is termed as \_\_\_\_\_ zone.
- (f) Why eutrophication occurs ?
- (g) What is Gross Primary Productivity ?
- (h) What is the formula for Chi-square test ?

[ 2 ]

**GROUP – B**

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

- (a) What is demography ?
- (b) What is Simpson's diversity index ?
- (c) Define Degree of Freedom.
- (d) What is frequency polygon ?
- (e) What is pyramid of biomass ?
- (f) What is detritus food chain ?
- (g) Which bacteria are involved in biological nitrogen fixation ?
- (h) What are the different stages of Hydrosere ?
- (i) What is Liebig law of the minimum ?
- (j) Define synecology.

**GROUP – C**

3. Answer any eight of the following questions within 75 words each. [2 × 8

- (a) What are life tables ?
- (b) What is ecological efficiency ?
- (c) What is photoperiodism ?

- (d) Differentiate between pyramid of numbers and age pyramid.
- (e) Write about pond ecosystem.
- (f) Write about survivorship curve.
- (g) What is altruism ?
- (h) What is standard deviation ? How it is calculated ?
- (i) Distinguish between Null hypothesis and Alternative hypothesis.
- (j) Find the median of the set (11, 22, 33, 55, 66, 99).

**GROUP – D**

*Answer **any four** questions within 500 words each.*

- 4. Discuss temperature as an ecological factor. [6]
- 5. What is biogeochemical cycle ? Describe Nitrogen cycle. [6]
- 6. What is community ? Discuss various theories pertaining to climax community. [6]
- 7. Write about various attributes of population. [6]
- 8. What is biotic interaction ? Describe the positive interaction among species. [6]
- 9. In a monohybrid test, it was observed that out of 500 rice plants of  $F_2$  generation there were 293 awned seed plants and 207 awnless seed plants. Test the hypothesis that the plants are in 3 : 1 ratio at 5% level of significance. [6]

[ 4 ]

10. The total numbers of eggs laid by insects of a species in a single batch were as follows. Calculate the standard deviation from this data : [6

No. of eggs	7	8	9	10	11	12	13	14
No. of insects	2	3	3	3	4	2	2	1