



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours Part-III Examination, 2022

BOTANY

PAPER-VIII

Time Allotted: 4 Hours

Full Marks: 80

The figures in the margin indicate full marks.

1. Answer the following questions: 2×8 = 16
 - (a) Name one respiratory inhibitor and one respiratory uncoupler.
 - (b) Define Richmond and Lang effect. Name one synthetic cytokinin.
 - (c) Mention the significance of photorespiration.
 - (d) What are *nif* genes? Give the full form of GOGAT.
 - (e) What are tracer elements?
 - (f) Distinguish between osmosis and imbibition.
 - (g) What do you understand by 'degree of freedom' (df) ?
 - (h) What is goodness of fit?

2. Answer any *two* of the following questions: 16×2 = 32
 - (a) Discuss the different theories regarding the mechanism of opening and closing of stomata. Mention their merits and demerits. 10+6 = 16
 - (b) Enumerate the plant pigments involved in light energy harnessing. What is Emerson Enhancement effect? Explain how electrons from water ultimately produce ATP and NADPH through photosystems. Describe C₃ cycle with special reference to Rubisco. 3+2+5+6 = 16
 - (c) Define photoperiodism. Enumerate different photoperiodic classes of plants in relation to flowering behaviour. Describe the mechanism of photoperiodic induction and state the role of phytochrome. 2+4+10 = 16
 - (d) What is variance and how can you explain it statistically? Explain coefficient of variation and correlation coefficient. Write a note on goodness of fit by Chi-Square analysis. 4+4+8 = 16

3. Answer any *four* of the following questions: 8×4 = 32
 - (a) Distinguish between dormancy and quiescence. Discuss the different types of seed dormancy found in higher plants. 2+6 = 8
 - (b) Define root pressure. Explain the mechanism of ascent of sap in case of trees. 2+6 = 8

- (c) Enumerate the commercial applications of auxin and cytokinin. 4+4 = 8
- (d) Mention the enzymes and cofactors for conversion of pyruvate to acetyl CoA. 2+6 = 8
Explain stepwise how carbon flows through Krebs Cycle to produce redox molecules.
- (e) Discuss the biochemical mechanism of nitrate assimilation in plants with special reference to nitrate reductase. 8
- (f) Distinguish between: 4+4 = 8
- (i) Mode and Median
- (ii) Standard deviation and standard error.

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