



UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 3rd Semester Examination, 2020

GE-BOTANY

Full Marks: 40

ASSIGNMENT

*The questions are of equal value.
The figures in the margin indicate full marks.*

The question paper contains Paper-I, Paper-II, Paper-III, Paper-IV, Paper-V and Paper-VI. Candidates are required to answer any *one* from the six Paper and they should mention it clearly on the Answer Book.

PAPER-I

BIODIVERSITY

(MICROBES, ALGAE, FUNGI AND ARCHEGONIATE)

Answer any *four* of the following questions each within 300 words

10×4 = 40

1. Distinguish between
(i) Lytic and lysogenic cycle
(ii) Transformation and Transduction. 10
2. What is triphasic life cycle? Describe post fertilization stages of *Polysiphonia* with suitable sketches. 10
3. Discuss different growth forms and economic importance of lichens. 10
4. Briefly discuss the five spore form and their association in life cycle pattern of *Puccinia graminis-tritici*. 10
5. Describe the external morphology and asexual reproductive structure of *Equisetum*. 10

PAPER-II

PLANT ECOLOGY AND TAXONOMY

Answer any *four* questions from the following (each within 300 words)

10×4 = 40

1. Define ecological pyramid. What is 10 percent law? Explain with an example. Briefly describe the carbon cycle in an ecosystem. 2+3+5=10

2. What do you mean by artificial, natural and phylogenetic system of plant classification? Give a brief outline of Bentham and Hooker's system of plant classification mentioning its merits and demerits. 3+7=10
3. Write notes on – (a) Typification (b) Herbarium techniques. 5+5=10
4. What do you mean by heliophilous and heliophobic plants? Write on the adaptive features of xerophytes. $1\frac{1}{2}+1\frac{1}{2}+7=10$
5. Give the salient features, floral formula and floral diagram of family Solanaceae. Mention the economic importance of the family. 5+1+1+3=10

PAPER-III

PLANT ANATOMY AND EMBRYOLOGY

Answer any four of the following questions each within 300 words 10×4 = 40

1. Compare monocot embryo with dicot embryo. Write a short note on double fertilization. 6+4=10
2. Describe the process of Megagametogenesis with proper diagram. Write a short note on different types of polyembryony. 6+4=10
3. Discuss in detail the different components of phloem tissue. What is quiescent center? 8+2=10
4. Write a note on secondary growth in the intra stellar region of dicotyledonous stem. 10
5. Differentiate between Dicotyledonous stem and Dicotyledonous root. Discuss the adaptive characteristics for cross pollination. 5+5=10

PAPER-IV

PLANT PHYSIOLOGY AND METABOLISM

Answer any four of the following questions each within 300 words 10×4 = 40

1. Outline the pathway of Crassulacean Acid Metabolism (CAM cycle) and point out its differences with C₄ cycle. 5+5=10
2. Give an account of the biochemical reactions involved in Krebs' TCA cycle. 10
3. Discuss the physiological roles of auxin and cytokinin in plants. 5+5=10
4. What is Transpiration? Discuss the different factors affecting transpiration. Write a short note on Guttation. 2+3+5=10
5. Write short notes on: (i) Photoperiodism, (ii) Vernalization. 5+5=10

PAPER-V

ECONOMIC BOTANY AND PLANT BIOTECHNOLOGY

Answer any four questions from the following (each within 300 words) 10×4 = 40

1. Discuss about the origin and uses of wheat. 5+5=10
2. What are beverages? Give a brief account on processing of tea. Mention some uses of tea plant. 2+6+2=10
3. Give the botanical names, families and uses of the following plants: (1+1+3)×2=10
(i) Cotton, (ii) Gram
4. What do you mean by micropropagation? Discuss the method of embryo culture. 2+8=10
5. Give some examples of molecular DNA markers. Write the procedure of Polymerase Chain Reaction. Mention any two applications of PCR technique. 2+6+2=10

PAPER-VI

ENVIRONMENTAL BIOTECHNOLOGY

Answer any four questions from the following (each within 300 words) 10×4 = 40

1. Give a brief account on Kyoto Protocol 1997. 10
2. What is acid rain? Discuss the harmful effects of acid rain on the environment and on human health. 2+8=10
3. Highlight the salient features of Water Pollution Act, 1974. 10
4. Write short notes on- 5+5=10
(i) Forest conservation act, 1980
(ii) Narmada Bachao Andolan.
5. Discuss the bioremediation strategies of xenobiotic compounds. 10

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