



WEST BENGAL STATE UNIVERSITY

B.Sc. Honours PART-II Examinations, 2018

BOTANY-HONOURS

PAPER-BOTA-IV

Time Allotted: 4 Hours

Full Marks: 100

The figures in the margin indicate full marks.

Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer **all** questions from the following:
 - (a) What is spathe? Name a family where it is found. 2
 - (b) What is a multiple fruit? Give an example. 2
 - (c) Define aeropalynology. 1
 - (d) State the nature of stipule and placentation in Rubiaceae. 2
 - (e) Differentiate between cladogram and phenogram. 2
 - (f) What is meant by synapomorphy and synplesiomorphy? 2
 - (g) Write the full form of OTU and OEU. 2
 - (h) What is superfluous name? 1
 - (i) What is Later homonym? 1
 - (j) Differentiate between ecotype and ecad. 2
 - (k) What is unitary organism? 1
 - (l) How does primary succession differ from secondary succession? 2
2. Answer any **three** questions from the following: 5×3 = 15
 - (a) What is simple fruit? Name the different types of indehiscent fruits with one example in each case. 1+4
 - (b) Compare cyathium and hypanthodium inflorescence with diagrams and examples. 5
 - (c) Diagrammatically represent the different types of aestivation of petals with examples. 5
 - (d) Write a note on the cohesion of stamens with examples and labelled sketches. 5
 - (e) Distinguish between spore and pollen. Comment on the chemical nature of sporopollenin. 2+3
 - (f) Write a short note on the NPC classification of pollen grains. 5
3. Answer any **four** questions from the following: 5×4 = 20
 - (a) Comment on the primitive characters of Magnoliaceae. Name two economically important genus of this family. 3+2
 - (b) Write the diagnostic characters of Alismataceae. State its systematic position according to Cronquist's (1988) system. 3+2

- (c) Write a note on effective and valid publication. 5
- (d) Distinguish between monograph and manual and write their significance in taxonomic study. 2+3
- (e) Explain with examples, the role of phytochemical informations in solving taxonomic problems. 5
- (f) Name the sub-classes of dicotyledonous as per the system of Cronquist (1988). Mention the type family for each of these sub-classes. 3+2
- (g) What is author citation? Mention different types of multiple author citation. 1+4
4. Answer any **three** questions from the following: 5×3 = 15
- (a) Explain the concept of alpha, beta and gamma diversity. 5
- (b) Explain the concept of Geographical Information System (GIS) and write down its applications. 3+2
- (c) Define *in-situ* conservation. Write a note on its merits and demerits. 1+4
- (d) Write a note on the concept of multi-dimensional niche. Differentiate between fundamental and realized niche. 3+2
- (e) Write down the different altitudinal zones of Eastern Himalaya and mention their forest types with two characteristic plants for each zone. 5
- (f) What is plant geography? Indicate the different phytogeographical regions of India in correct sequence (after D. Chatterjee, 1960) with the help of a map. 1+4
5. Answer any **two** questions from the following: 10×2 = 20
- (a) Mention the principles of ICBN. Write a note on principles of Priority. 5+5
- (b) Schematically represent the Bentham and Hooker's system of classification of flowering plants (upto series) and mention its two demerits. Name the most advanced monocot and dicot families according to this system. 6+2+2
- (c) Distinguish between the following pairs of families on the basis of features mentioned in the parentheses. 2.5×4
- (i) Asteraceae and Lamiaceae (Inflorescence)
- (ii) Solanceae and Scrophulariaceae (Corolla)
- (iii) Malvaceae and Orchidaceae (Androecium)
- (iv) Poaceae and Arecaceae (Fruit)
- (d) Name two monocotyledonous families belonging to different orders having epigynous flowers. Compare the diagnostic features of these two families and draw their floral diagrams. 2+6+2
6. Answer any **one** question from the following: 10×1 = 10
- (a) Characterise with example, the different types of population age pyramids. Give an account on the density dependent and density independent population growth. 5+5
- (b) Write a concise account on the different types of endemics and factors associated with the same. Name two endemic plant species of India. 5+3+2



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PAPER-BOTA-V

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.*

Use separate Answer Scripts for each Group and mention Group on Answer Scripts

Group-A

1. Answer the following questions:
 - (a) Define plastochrone and mention its significance. 2
 - (b) Mention the characteristic features of helobial type of endosperm development. 2
 - (c) What is leaf trace? 1

2. Answer any *two* questions from the following: 5×2 = 10
 - (a) Classify the stomatal types according to Stebbins and Khush with examples. 5
 - (b) Briefly describe the process of megagametogenesis with suitable sketches. 3+2
 - (c) Describe with suitable illustrations the anomalous secondary growth in the stem of *Boerhaavia*. 2+3
 - (d) Write a note on the process of microsporogenesis with suitable sketches. 3+2

3. What do you understand by bisporic and tetrasporic embryo sac? Describe the development of *Polygonum* type of embryo sac. 2+8

OR

- (a) Describe the organization of root apex in the light of Korper-Kappe theory. 5
- (b) Write a brief note on ontogeny of floral parts. 5

Group-B

4. Answer the following questions:
- (a) What do you mean when a fatty acid is abbreviated as 18: 1(Δ^9)? 2
 - (b) Name a sugar derivative and mention its biochemical significance. 2
 - (c) What is isoelectric point? 1
5. Write briefly any *two* questions from the following: 5×2 = 10
- (a) Draw and describe α helix and β pleated structures of protein. 5
 - (b) Illustrate the molecular structure of water. What do you mean by van der Waals interactions? 3+2
 - (c) Give the name and chemical structure of purine and a pyrimidine base. Distinguish between ribonucleotide and deoxyribonucleotide. 3+2
 - (d) Explain the mechanism of competitive inhibition of enzyme with suitable diagram. 5
6. Give an outline of enzyme classification as proposed by IUBMB citing chemical reaction from each class. Describe “induced fit” model to explain mechanism of enzyme action. What do you understand by steady state of enzyme catalyzed reaction? 6+2+2

OR

- (a) Classify amino acids with chemical structure on the basis of chemical properties. 5
- (b) Why are membrane lipids called amphipathic molecules? Describe the structure of phospholipid with special emphasis on its biological function. 1+4