

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**Subject : Botany****Course : DSE-1****(Techniques in Plant Science)****Time : 2 Hours****Full Marks : 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***1. Answer any five from the following: 2×5=10**

- Mention the importance of critically dried specimens in TEM.
- What is the role of β -mercaptoethanol in SDS-PAGE?
- Define iso-electric focusing.
- Name one carrier gas used in Gas chromatography.
- Cite two applications of HPLC.
- What is Beer-Lambert law?
- Why phase contrast microscopy is a better option for studying living microorganism than bright field microscopy?
- What is shadow casting?

2. Answer any two from the following: 5×2=10

- Describe the principle of centrifugation. Mention the importance of marker enzymes. 3+2=5
- With diagram compare SEM and TEM. Describe the process of biological sample preparation in SEM study. 2+3=5
- Write a short note on chromosome banding. 5
- Calculate the arithmetic mean from the frequency table.

Marks obtained	30	40	50	60	70	80	90
No. of students	15	20	20	10	15	12	8

3. Answer any two from the following: 10×2=20

- State the basic principle of Mass-spectrometry. Write down the major components of a X-ray crystallography system. Mention its importance in protein characterization. 3+3+4=10
- Name two radioisotopes commonly used in biological experiments. Briefly discuss various applications of autoradiography. 2+8=10
- What is partition co-efficient? Describe the applications of Paper chromatography. 3+7=10

- (d) A random sample of 500 students was classified according to economic condition of their family and also according to merit. Test whether the two attributes Merit and Economic Condition are associated or not? (Provided $X^2_{0.05} = 5.99$ & $X^2_{0.01} = 9.21$ $df = 2$).

Merit	Economic Condition		
	Rich	Middle Class	Poor
Meritorious	42	137	61
Not Meritorious	58	113	89

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**Subject : Botany****Course : DSE-1 (Reproductive Biology of Angiosperms)****Time : 2 Hours****Full Marks : 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as applicable.*

1. Answer *any five* questions: 2×5=10
 - (a) What is Cybrid?
 - (b) Differentiate between Uni-floral Honey and Multifloral Honey.
 - (c) Mention two organic solvents in which pollen grains can be stored without losing their viability.
 - (d) Differentiate between Autogamy and geitonogamy.
 - (e) Differentiate between monosporic and tetrasporic megasporogenesis.
 - (f) Draw a labelled diagram of a typical orthotropous Ovule.
 - (g) Write the significance of callose deposition.
 - (h) What is Pollinia? Where do you find it?

2. Answer *any two* questions from the following: 5×2=10
 - (a) Write the genetic aspect of flower development. 5
 - (b) Briefly discuss on the wall structure of an Angiosperm pollen grain with diagram. 5
 - (c) What are the components of a polygonum type of Embryo-sac? Draw proper diagram of polygonum type of Embryo-sac. 2+3=5
 - (d) What is self-incompatibility? Briefly describe any two methods to overcome it. 1+4=5

3. Answer *any two* of the following questions: 10×2=20
 - (a) What is Polyembryony? What are the causes and applications of Polyembryony.
 - (b) Explain the process of double fertilization in Angiosperms. Write the ploidy level of gymnospermic endosperm. 9+1=10
 - (c) Describe with suitable diagram the development of dicot embryo. Write two differences of it with monocot embryo development. 8+2=10
 - (d) Write in details the NPC system of palynology with proper diagram. 10

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**Subject : Botany****Course : DSE-1 (Silviculture & Forest Management)****Time : 2 Hours****Full Marks : 40**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as applicable.

1. Answer *any five* from the following: 2×5=10
 - (a) Define autecology and synecology.
 - (b) Name two algal biofertilizers.
 - (c) Define phytoremediation with suitable example.
 - (d) Name two plant derived insecticides.
 - (e) What do you mean by litter?
 - (f) Name two important weed species.
 - (g) Define agroforestry.
 - (h) Name two national policies that are implied in our country.

2. Answer *any two* questions from the following: 5×2=10
 - (a) What is green manure? Describe the role of vermicompost in silviculture.
 - (b) Give a brief note on plant animal interaction.
 - (c) Classify the tree on the basis of wood properties with suitable example.
 - (d) What do you mean by production ecology? Describe the tree improvement programmes and its implication.

3. Answer *any two* of the following questions: 10×2=20
 - (a) What do you mean by Pollinator? Describe the mechanism of pollinator by different pollinators. 2+8=10
 - (b) Give a detailed account on the major and minor forest products with suitable example. 10
 - (c) Define vegetation mapping. Describe the different types of Forest and its importance. 2+8=10
 - (d) What do you mean by chemical defense? Describe the process of biological control with suitable example. 2+8=10