

B.Sc. Semester - 6 (CBCS) Examination
March/April-2025 (NEW COURSE)
Physiology, Biochemi, Biostat. (Core (New))

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 Answer the following questions as per instruction.**(A) Answer in very short:****(04)**

- 1) At what temperature are moist plant cells destroyed? Up to what temperature can dry cells tolerate heat?
- 2) What is IDPs plants?
- 3) True or False: Stomata open when guard cells are flaccid and close when they become turgid.
- 4) Explain the term: stomatal march.

(B) Answer in brief (any one):**(03)**

- 1) What is ascent of sap? Explain root pressure theory.
- 2) Discuss the significance of transpiration in plants.

(C) Answer in detail (any one):**(07)**

- 1) Explain the role of photoperiodism in flowering and classify plants based on their photoperiodic response.
- 2) Describe the physiological and biochemical responses in plants to drought stress.

Que-2 Answer the following questions as per instruction.**(A) Answer in very short:****(04)**

- 1) Define the term: Biochemistry.
- 2) Which monosaccharide is commonly known as grape sugar?
- 3) Name the bond responsible for maintaining the secondary structure of a protein
- 4) Write the chemical formula only: triglyceride

(B) Answer in brief (any one):**(03)**

- 1) Write notes on: Properties and biological function of alkaloids.
- 2) Compare and contrast the properties of monosaccharide, oligosaccharide, and polysaccharide

(C) Answer in detail (any one):**(07)**

- 1) Give classification of protein with examples.
- 2) Differentiate between competitive and non-competitive enzyme inhibition with suitable examples.

Que-3 Answer the following questions as per instruction.**(A) Answer in very short:****(04)**

- 1) Find coefficient of variation, if variance and mean are 25 and 20 respectively.
- 2) What statistical test is used to determine if there is a significant difference between observed and expected frequencies in categorical data?
- 3) If a dataset has two modes, what is it called?
- 4) If the standard deviation is zero, what does it indicate?

(B) Answer in brief (any one): (03)

- 1) Calculate the mode for following data.

Weight (Kg)	30-34	35-39	40-44	45-49	50-54	55-59	60-64
No of students	3	5	12	18	14	6	2

- 2) Differentiate between mean and mode.

(C) Answer in detail (any one): (07)

- 1) Calculate the mean, median, SD and variance of the following data.

Hight in inches	95-105	105-115	115-125	125-135	135-145
No of children	19	23	36	70	52

- 2) In a cross between black and white coat-coloured mice, the F_2 individual segregated into 787 black and 277 white coat-coloured individuals. If you have to test that these results agree with the expected ratio 3:1. Then apply chi- square $P = 5\%$. (Table value is 3.84).

Que-4 Answer the following questions as per instruction.

(A) Answer in very short: (04)

- 1) What is the shape of a bacteriophage?
- 2) How are glassware sterilized in laboratories?
- 3) Identify the primary raw material used in citric acid production.
- 4) True or False: filtration alone be relied upon to kill harmful bacteria in a liquid.

(B) Answer in brief (any one): (03)

- 1) Differentiate between natural and synthetic culture media.
- 2) Explain the industrial applications of microbes in the production of Single-Cell Protein (SCP).

(C) Answer in detail (any one): (07)

- 1) Describe the structure of the COVID-19 virus, including the function of its different components. Explain its mechanism of infection.
- 2) Describe in detail the ultrastructure of E. coli, highlighting the function of each component.

Que-5 Answer the following questions as per instruction.

(A) Answer in very short: (04)

- 1) True or False: Red Rot of sugarcane (*Saccharum officinarum*) is a fungal disease marked by wrinkled cane, red pith, and dark red leaf patches.
- 2) Sexual stage of *Colletotrichum falcatum* is called?
- 3) What is the term for an agent that causes disease?
- 4) Death of cells, tissue or organ of host tissue due to parasitic infection known as?

(B) Answer in brief (any one): (03)

- 1) Write a short note on: The control measures of Tikka disease.
- 2) Describe the symptoms of Red Rot disease in sugarcane.

(C) Answer in detail (any one): (07)

- 1) Give classification of plant diseases based on Severity of infection, geographical distribution and based on Nature of causal organisms
- 2) Give the cultural and biological method of plant diseases control.
