

Duration: 2.5 hours

Total marks: 60

**N.B. All questions are compulsory****Numbers to the right indicate marks****Draw neat labelled diagram wherever necessary****Q.1 Answer any four of the following**

16

- a Explain Miller's experiment with a suitable diagram.
- b Explain the conclusion of Darwin's theory derived from fossil records.
- c Discuss the following with examples:
  - a. Bottleneck effect.
  - b. Founder effect.
- d Write a note on Pasteur's Experiment with a suitable diagram.
- e Explain the theory of Abiogenesis.
- f Write a note on gene flow and genetic drift in brief.
- g Derive the Hardy - Weinberg equation.
- h What are fossils ? Explain their formation.

**Q.2 Answer any four of the following**

16

- a Write the difference between prokaryotic cell and eukaryotic cell.
- b Explain the structure of mitochondria with suitable diagrams.
- c What are ribosomes? Explain its functions.
- d Explain the following:
  - a. Functions of ER.
  - b. Function of Golgi apparatus.
- e What is a Fluid mosaic model ? Explain with the help of a suitable diagram. *Fluid mosaic model of cell membrane. not a simple structure.*
- f Write a note on the plant cell.
- g Write a note on cell theory.
- h Explain in brief about lysosomes and vacuoles.

**Q.3 Answer any four of the following**

16

- a What are tight junctions?
- b Explain the stages of Mitosis using a neat & labelled diagram.
- c Explain apoptosis and elaborate on its types.
- d Describe the Gap junction with a suitable diagram.

**BNBUSBC1T2/02/2022**

- e Give a brief note on axoneme using a neat labelled diagram.
- f Describe cell cycle and its checkpoints.
- g Diagrammatically explain meiosis II.
- h Describe the structure and MTOCs of microtubules.

**Q.4 Answer any six of the following**

**12**

- a What is the geographical isolation of a species? Explain with an example.
- b Define and explain unaltered fossils.
- c Explain random sampling.
- d What are coacervate droplets ?
- e Define a cell and state its functions.
- f What is binary fission?
- g State the role of nuclear envelope and nuclear matrix.
- h What are plastids?
- i Explain the concept of necrosis.
- j Differentiate between Microfilaments and intermediate filaments.
- k Explain the concept of the basal body.
- l Write a note on plasmodesmata.

\*\*\*\*\*