



**DBW-1603120102020400** Seat No. \_\_\_\_\_

**M. Sc. (Biochemistry) (Sem. II) (CBCS) Examination**

**July - 2022**

**CBC-4 : Cell Biology & Genetics**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**1 Answer briefly any seven of the following questions : 14**

- (a) Why cholesterol is important in maintaining fluidity of membrane ?
- (b) Validate the statement : Plasma membrane as selectively permeable membrane.
- (c) Explain briefly with figure : Exocytosis.
- (d) Discuss a brief note on Morphogen.
- (e) Short note on G0 phase of mitosis.
- (f) What is gastrulation stage in embryonic development ?
- (g) Define term : Dominance and Co-Dominance.
- (h) Why did Mendel select pea plant for his studies ? Write advantages of selecting pea plant for genetic studies.
- (i) Short note on Organogenesis.
- (j) Write short note on Tumor suppressor genes.

**2 Answer any two of the following questions : 14**

- (a) Write a detailed note on endosymbiosis hypothesis regarding origin of mitochondria and chloroplasts in eukaryotes and give supporting evidence for this hypothesis.
- (b) Define term : cell signaling. Discuss phosphoinositide cascade in detail.
- (c) What are multiple alleles ? Explain any two examples in detail.

**3** (a) Give account on Microtubule functions and Microtubule polymerization. **7**

(b) Explain the law of segregation with suitable examples. **7**

**OR**

(a) Describe about the extrinsic pathway of apoptosis. **7**

(b) Write a note on Holiday Junction model for Homologous Recombination. **7**

**4** Answer the following questions : **14**

(a) Discuss about the fluid mosaic model of cell membrane and membrane proteins.

(b) Write note on Mitotic types of cell division with proper diagrams and write important characteristics of different stages of mitosis.

**5** Answer the following questions : (any two) **14**

(a) Explain the signal transduction mechanism by insulin receptor.

(b) Give explanation about the process of fertilization and cleavage.

(c) Discuss in detail about the Hardy-Weingerg's law.

(d) State differences between eukaryotic cell and prokaryotic cell.

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