



PAQ-1603120102020400 Seat No. _____

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

August / September - 2020

CBC - 4 : Cell Biology and Genetics

Time : **2:30** Hours]

[Total Marks : **70**

1 Answer briefly Any **Seven** of the following questions : **14**

- (1) Which organelle is involved in glycosylation of proteins in plant and animal cells?
- (2) Differentiate between simple v/s facilitated diffusion across the plasma membrane.
- (3) Describe importance of Lysosomes in animal cells.
- (4) Write the mechanism of action of insulin via its plasma membrane receptor.
- (5) What is gastrulation stage in embryonic development?
- (6) How cyclic AMP is inactivated once its action is over ?
- (7) Explain proto-oncogenes and their significance.
- (8) What is the significance of G₀ phase in cell cycle ?
- (9) Why did Mendel select pea plant for his studies? Write advantages of selecting pea plant for genetic studies.
- (10) What do you understand by homologous chromosomes?

2 Answer Any **Two** of the following questions in detail : **14**

- (a) Explain endosymbiosis hypothesis regarding origin of mitochondria and chloroplasts in eukaryotes and write supporting evidence for this hypothesis.
- (b) Describe lateral movement and flip flop movement of molecules in plasma membrane using suitable diagrams. Why flip flop movement of phospholipids and proteins is very slow as compared to their lateral movements?
- (c) Discuss components and organization of microfilaments.

3 (A) Write short note on role of G proteins in the process of signal transduction. 7

(B) Discuss briefly different types of secondary messengers. 7

OR

3 (A) Discuss segmentation genes and homeotic genes. 7

(B) Write a short note on tyrosine kinase based signaling pathway. 7

4 Answer Any **Two** of the following questions in detail : 14

(a) Explain extrinsic pathway of apoptosis.

(b) Describe different check points in cell cycle.

(c) Discuss process of mitosis and write the significance of mitotic cell division in mammals.

5 Answer Any **Two** of the following questions in detail : 14

(a) Discuss the mechanism of homologous recombination and write its importance.

(b) Explain the Laws of Segregation and Independent assortment with suitable examples.

(c) What are multiple alleles? Explain any two examples in detail.

(d) Discuss Epistasis and explain how it affects pigmentation and determine color of the fur in mice?
