NCD-1603120102020400 Seat No. _____

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

April / May - 2017

CBC-4 : Cell Biology & Genetics

(New Course)

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

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

(1) Write the important functions of Golgi complex in plant and animal cells.

(2) Justify plasma membrane as selectively permeable membrane.

(3) What are induced pluripotent stem cells?

(4) Define gastrulation.

(5) What would be the effect of insulin binding to its plasma membrane receptor on glucose uptake by the cell in presence of tyrosine kinase inhibitor? Justify your answer.

(6) Name the two secondary messengers that can be produced from the phospholipid: phosphatidyl inositol present in the plasma membrane?

(7) What is the importance of Go phase of cell cycle?

(8) Define and write importance of tumor suppressor genes.

(9) What are dominant and recessive alleles?

(10) Describe importance of chromosomal crossing over.

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

(a) Discuss FRAP experiment and explain how it could be used to study lateral movement of proteins in the plasma membrane.

(b) Write a detailed note on endosymbiosis hypothesis regarding origin of mitochondria and chloroplasts in eukaryotes and give supporting evidence for this hypothesis.

(c) Discuss components and organization of microtubules.

3 (a) Write short note on G protein coupled receptor mediated signal transduction. 7

(b) Discuss the role of maternal genes in anterior posterior region formation. 7

OR

3 (a) Justify : why receptors for hormones those are protein in nature are mostly present on the plasma membrane surface? Discuss the molecular mechanism of action of insulin. 7

(b) Write short note on segmentation genes and homeotic genes. 7

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

(a) Write short note on cell cycle checkpoints.

(b) Discuss extrinsic pathway of apoptosis.

(c) Describe using suitable diagrams the process of mitotic type of cell division and write the physiological importance of mitosis in humans.

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

(a) Explain the Law of independent assortment with suitable example.

(b) Write a note on Holliday Junction model for Homologous Recombination,

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

(d) Explain in detail mechanism of Epistasis.
