2 ½ Hours **Total Marks : 60**

Note : 1) All questions are compulsory.

2) Draw neat labelled diagram wherever necessary.

3) Figures to the right indicate full marks

4) All questions carry equal marks.

Q1 Answer the following (Any Two) **12**

a) Give a brief account on transcription in eukaryotic cells.
b) Enlist different types of proteins associated with cell membranes and explain any three in detail.
c) How does the process of initiation differ in bacterial and eukaryotic cells with respect to translation?
d) Give a brief account on chemical organization of cells.

Q2 Answer the following (Any two) **12**

a) Explain the molecular mechanism of transport vesicle formation for membrane transport.
b) Diagrammatically explain transport of molecules between nucleus and cytosol.
c) Describe the propagation of action potential across the nerve membrane.
d) Enlist and Explain any three types of neurotransmitters.

Q3 Give an account of the following (Any two) **12**

a) Checkpoints in the cell cycle.
b) Structure of Collagen and its role as Matrix Structural proteins.
c) Adhesion junctions and their role in cell-cell interactions.
d) Structure of Cilia and Flagella.

Q4 Answer the following (Any two) **12**

a) Define the term Mutation. Explain Frame-shift mutations and Base pair substitution mutations with one example each.
b) What do you understand about Oncogenes? Elaborate on Retroviruses as the cause of the cancer induction.
c) Define Transposons. Discuss in detail any two types of the prokaryotic transposable elements.
d) What are proto-oncogenes? Discuss in detail the causes of the changes of proto-oncogenes into oncogenes.

Q5 Write short notes on (Any Three) **12**

a) Give a brief account on the elongation step of translation in bacteria.
b) Chromatin remodeling complexes.
c) Synaptic transmission through chemical synapse
d) Medical applications of Stem cells.
e) Spontaneous mutations
f) AC-DC elements in plants.

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