

IGNOU

TERM END EXAMINATION JUNE, 2014

PhD LIFE SCIENCES

Molecular Cell Biology (RLSE-004)

Duration 3 Hours

MM:100

Answer any five questions from question nos: 1 to 8. All Questions carry equal marks. well labeled diagram, wherever necessary to support your answer.

1. Describe the role of DNA methylation in the mechanism of gene silencing and its role in cancer. 20
2. Discuss how the different signaling systems are coordinated during the tetrapod limb development. 20
3. What are the principal classes of cell adhesion molecules? Describe in detail a Ca^{2+} dependent and independent cell adhesion molecule. 20
4. Explain diagrammatically the canonical and non-canonical Wnt signal transduction pathways known by giving one specific example of any one of them. 20
5. Name the three RNA polymerases present in eukaryotic cells and also name the type of genes they transcribe. Describe the initiation of transcription in eukaryotes. 20
6. Fibroblast growth factor (FGF) is important in the development of a tetrapod limb. Explain the statement with specific experiments. 20
7. With the help of a suitable diagram describe the three steps (polymerization, proof reading and mismatch repair) involved in DNA synthesis that gives rise to high-fidelity DNA. 20
8. Diagrammatically explain the cAMP signaling that operates during the aggregation of *Dictyostelium discoideum*. Describe reasons for the observed phenotypes of the mutants of the various adenyl cyclases in this organism. 20