PG Odd Semester (CBCS) Exam., December—2016

LIFE SCIENCE AND BIOINFORMATICS

(1st Semester)

Course No. : LSBCC–102

(Cell Biology and Immunology)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Lipid bilayer is the universal basis for cell membrane structure. Add a note on membrane protein diffusion mechanism. 7+7=14

OR

2. Differentiate between the following : 7×2=14

(a) Prokaryotic and eukaryotic cell

(b) Schematic representation of ATP-powered pump and intra-cellular ionic environment

3. *(a)* Explain the role of protein phosphorylation in cell cycle regulation. 7

(b) How does stress response affect microbial growth and gene expression? 7

OR

4. Define microtubules with suitable diagram. Explain the involvement of various proteins to regulate microtubule dynamics and cross linkage to other structure. 3+6+5=14

5. *(a)* What do you mean by signal transduction? Add a note on different types of cell surface receptors with specific function. 2+6=8

(b) With suitable diagram/model, explain the mechanism of light signalling in plants. 6

OR

6. *(a)* With a suitable model, describe the events of host and pathogen interaction. 7

(b) What is neurotransmitter? Write the mechanism of signal transduction through neuron. 7

7. Describe the fine structure of IgG. Give schematic sketch of the papain and pepsin digestion fragments of immunoglobulin molecule. 10+4=14

OR

8. Write on the following : 7×2=14

(a) Mechanism of innate immunity and how it triggered adaptive response

(b) Major histocompatibility complex and antigen association

9. Give a comparative note on TCR and BCR activation. Explain downstream signalling network involved in T-cell-mediated cytotoxicity. 10+4=14

OR

10. Write notes on the following : 7×2=14

(a) IL-1 family cytokines and IL-1R mediated signalling

(b) TNF family-mediated signalling for cell survival or death

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