

# CBCS Scheme

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15NT36

## Third Semester B.E. Degree Examination, June/July 2017 Fundamentals of Bioscience

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing one full question from each module.**

### Module-1

- 1 a. Explain in detail the mitosis type of cell division with appropriate diagrams. (06 Marks)  
b. Write a note on cytoplasm. (05 Marks)  
c. Explain the structure and function of microtubules. (05 Marks)

OR

- 2 a. Explain in detail the stable and transient interaction. (06 Marks)  
b. Write a short note on suicide bags of the cell. (04 Marks)  
c. Explain the cell locomotion. (06 Marks)

### Module-2

- 3 a. Describe the Singer and Nicholson model of biological membrane with a neat labeled diagram. (06 Marks)  
b. Explain passive and active ion transport mechanism. (10 Marks)

OR

- 4 a. Explain the mechanism of amino acid transport with a diagram. (06 Marks)  
b. Write a short note on membrane permeability and fluidity. (04 Marks)  
c. Explain briefly the characteristics, function and the mechanism of transport through blood brain barriers. (06 Marks)

### Module-3

- 5 a. Explain in detail the various steps involved in the process of translation with a diagram. (10 Marks)  
b. What is a gene? Explain the structure of a gene with a diagram. (06 Marks)

OR

- 6 a. Explain the process of replication and mention the function of different enzymes involved in the process of replication. (10 Marks)  
b. How does nucleoside monophosphate kinase enzyme catalyze the phosphoryl group exchange between nucleotide without hydrolysis? (06 Marks)

### Module-4

- 7 a. Explain with a diagram the fine structure of an antibody molecule. (05 Marks)  
b. Write a short note on cellular basis of immune system. (05 Marks)  
c. Explain the multigene organization of immunoglobulin gene. (06 Marks)

OR

- 8 a. Explain in detail the process of antibody diversity generation within the body. (08 Marks)  
b. Explain briefly the adaptive cellular immunity. (04 Marks)  
c. Explain briefly the structure and function of helper T-cell with a diagram. (04 Marks)

### Module-5

- 9 a. With a neat labeled diagram, explain the bio-machine heart as a pump. (10 Marks)  
b. Write short notes on kinetic and dynamic linear motors. (06 Marks)

OR

- 10 a. With a neat labeled diagram, explain the functioning of kidney as a filtration unit. (08 Marks)  
b. Explain briefly the structure of ATP synthases. (04 Marks)  
c. Elucidate pure power stroke. (04 Marks)

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