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18BT651

Sixth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Biology for Engineers

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Write in details on cell reproduction, with mitosis as an example type. (10 Marks)
- b. Describe on the structure of protein and importance of its functions. (10 Marks)

OR

- 2 a. Illustrate on the response of the cell to the external environment at which they are. (10 Marks)
- b. Differentiate on prokaryotic and eukaryotic cells. (10 Marks)

Module-2

- 3 a. Highlight the different types of Biomolecular Bonds and explain on each. (10 Marks)
- b. Explain the process of transcription and translation in protein synthesis. (10 Marks)

OR

- 4 a. Discuss on the importance of restriction enzymes in the field of recombination technology. (10 Marks)
- b. Define the word photosynthesis. Discuss on the carbon cycle and its fixation in details. (10 Marks)

Module-3

- 5 a. What are Enzymes? Discuss on the catalytic activity of any one example enzyme in a pathway. (10 Marks)
- b. Define on stem cells. Explain on their significance in medical field. (10 Marks)

OR

- 6 a. Explain how proteins acts as motors convert chemical energy into mechanical energy. (10 Marks)
- b. Explain with suitable diagram and function of ATPase. (10 Marks)

Module-4

- 7 a. Define metabolism and explain on biological energy production in the form of ATP. (10 Marks)
- b. Justify the role of cytoskeletons in cell structure formation. (10 Marks)

OR

- 8 a. Define Biosensors. Discuss on the application of biosensors in bioremediation. (10 Marks)
- b. Explain on proteins as biological motors and discuss on flagella with Dynein and Myosin. (10 Marks)

Module-5

- 9 a. What are Biomimetics? Explain the properties and function of Biomimetics. (10 Marks)
- b. Explain on the concept of Heart as pump and kidney as a filtering system. (10 Marks)

OR

- 10 a. Explain on Bioremediation and removal of heavy metals degradation. (10 Marks)
- b. Discuss on ECG and EEG in diagnosis and health monitoring system. (10 Marks)