

Exam.Code:0906

Sub. Code: 6664

1048

B.E. (Biotechnology) Second Semester  
BIO-202: Fundamentals of Bio-Technology and Bio-Engineering

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Beer Lambert law states that \_\_\_\_\_.
- b) What is Avogadro's Number?
- c) pH stands for \_\_\_\_\_
- d) Why is shaking of liquid culture media important when placed in an incubator?
- e) \_\_\_\_\_ is used in electrophoresis to visualize DNA under UV light.
- f) \_\_\_\_\_ is used to stain protein gel.
- g) EEG is usually done when a patient complains that he has a chest pain (T/F).
- h) What are biochips?
- i) Name a sequence database.
- j) \_\_\_\_\_ is a field of study that uses computation to extract knowledge from biological data.

UNIT - I

- II.
  - a) Name the different types of microscopes. Describe two key features about each type.
  - b) What is stacking gel? Briefly discuss its function in PAGE.
  - c) Describe isopycnic point and how it is used in density gradient centrifugation.  
(5,3,2)
- III.
  - a) Explain different systems of Units. Why it is important to have consistent units worldwide?
  - b) Briefly describe applications of radionuclides in healthcare.
  - c) Mention any four precautions that one should take while using an autoclave.  
(5,3,2)

P.T.O.



(2)

IV. a) Explain different steps in the process of lyophilization process and mention any three applications of lyophilization.

b) Chromatography is a powerful analytical tool. Justify. (5,5)

UNIT – II

V. a) What is a biosensor? Explain different components of biosensors using a diagram. Write a note on any one type of biosensor.

b) Elaborate T1 and T2 relaxations in MRI with the help of a diagram. (5,5)

VI. a) Explain Einthoven's triangle using a diagram. What types of waves you get in ECG.

b) Write a short note on application of nanobiotechnology in medicine and healthcare. (5,5)

VII. a) Write a detailed note on principle and functioning of ultrasound.

b) Draw a labeled diagram of a bioreactor and mention all its parts. (5,5)

x-x-x