Printed Pages : 2

EBT-504

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : **154504**

Roll No.

B. Tech.

(SEM. V) (ODD SEM.) THEORY EXAMINATION, 2014-15

MODERN ANALYTICAL TECHNIQUES

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions. All questions carry equal marks.

1 Attempt any four parts of the following : **4×5=20**

A. What are Good Laboratory Practice and Quality Management ?

B. Briefly describe the steps of analysis.

C. Explain steps of qualitative analysis using appropriate example.

D. What is the minimum requirement for a GLP certified laboratory ?

E. Write a short note on laboratory safety and discipline.

2 Attempt any four parts of the following : **4×5=20**

A. Describe the principle and working of mass spectroscopy.

B. What is atomic absorption? Explain advantages and disadvantages

C. What is Raman spectrum? Draw the diagrammatic structure of Raman spectrometer.

D. What is the basic principle of infrared spectroscopy? Explain.

E. What are the different changes occur when electromagnetic radiation interacted with matter?

3 Attempt any two of the following : **2×10=20**

A. Explain the principle and working of Electron microscopy using appropriate diagram.

B. What is the basic principle of centrifugation? Explain differential and density gradient centrifugation.

C. What is the rate of flow? Write the name of chromatography in which the rate of flow is calculated and why? If the component A and B traveled distant 6.5cm and 8.5cm respectively, and the solvent traveled is 11.5cm. What will be rate of flow of both components? Also explain adsorption chromatography.

4 Attempt any two of the following : **2×10=20**

A. What is chromatography? Explain the instrumentation and working of HPLC.

B. What is electrophoresis? Explain principle and application of SDS-PAGE.

C. A fixed-angle rotor exhibits radius, r_{min}, at the top of the centrifugation tube of 5.5 cm, and a maximum radius, r_{max}, at the bottom of the tube of 8.5cm. If the rotor is operated at a speed of 10000 rpm. What is the RCF at the top and bottom of the centrifuge tube?

5 Attempt any two of the following : **2×10=20**

A. What are biosensors? Explain the ideal characteristics of a biosensor.

B. What is the enzyme based biocatalyst sensors? Explain with suitable examples.

C. What is the AFM? What types of forces are measured? Explain the modes of operations.
