BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MSC **SEMESTER : III**
BRANCH: BT **SESSION : MO/18**

SUBJECT: SBT3019-BIOANALYTICAL TECHNIQUES

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Describe the different types of rotors used in centrifugation with proper figures and mention the applications of each types. [6]

(b) Calculate the RCFmin, RCFav and RCFmax for a centrifuge tube rotating at 40000 rpm and in which the distance between the rotation axis and the meniscus is 16 cm and that between rotation axis and the bottom of the tube is 28 cm. [6]

Q.2(a) Define chromatography. Explain the different types of chromatography based on mechanism of separation. [6]

(b) Explain the principle of ion exchange chromatography. Give examples of cationic and anionic resins used in ion exchange chromatography. [6]

Q.3(a) Why Tswett's experiments is pioneer in the field of chromatography? Support your answer with a schematic of a proper modern chromatographic equipment. [6]

(b) Write in brief about i) Resolution ii) Selectivity [6]

Q.4(a) How you will describe that characteristic (composition, concentration and pH) of buffer affects the electrophoresis process? [6]

(b) Describe the various steps involved in SDS- PAGE starting from sample preparation. [6]

Q.5(a) Derive Beers Lambert law with proper equations and also mention three limitations of this law. [6]

(b) With a schematic diagram briefly describe dual beam UV spectrophotometer also mention the differences and advantages over single beam spectrophotometer. [6]

Q.6(a) Explain the instrumentation and applications of ICP. [6]

(b) What are the different steps in mass spectrometric analysis? Explain your answer with the help of a schematic diagram of a mass spectrometer. [6]

Q.7(a) Describe the instrumentation of TGA. Give any example of thermogravimetric measurement. [6]

(b) What is Curie point? Explain the calibration of TGA instrument using Curie point method. [6]

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