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Question Paper Code: 93D03

B.E./B.Tech. DEGREE EXAMINATION, DEC 2021

Third Semester

Bio technology

19UBT303- Instrumental methods of analysis

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define noise. CO1- R
2. How instrumental methods were classified on the basis of measurement signal. CO1- R
3. Draw the spectrum of electromagnetic radiation with its wavelength CO1- R
4. How X-rays were produced in Coolidge tube? CO1- R
5. Differentiate Pulse and cyclic voltammetry CO2- R
6. Differentiate anions and cations. CO2-App
7. Suggest a chromatography technique to purify a partially purified protein using salting out technique. Justify your answer. CO4- E
8. A protein with isoelectric point 8.9 is suspended in a buffer solution of pH 6. Now based on these details which ion exchange chromatography technique can be used to separate and purify the protein? Justify your answer CO4- E
9. Draw the block diagram of Mass spectrometry CO1- R
10. Write a short note on TOF CO1- R

PART – B (5 x 16= 80 Marks)

11. (a) Explain in detail how instrumental methods are classified based on different types of signal CO1- U (16)
Or
(b) Explain signal to noise ratio and the ways to enhance it CO1- U (16)

12. (a) Explain in detail on spectroscopy technique based m/z ratio. CO2- App (16)
Or
(b) Elaborate the techniques which work on the principle of detecting scattering of light. CO2- App (16)
13. (a) Explain in detail on SDS – PAGE with any one staining procedure. CO1- U (16)
Or
(b) Explain the principle and procedure for capillary electrophoresis in detail. CO1- U (16)
14. (a) What is Chromatography? Give a detailed overview of various chromatography techniques. CO1- U (16)
Or
(b) In detail illustrate on design and working of HPLC. List its advantages and applications. CO1- U (16)
15. (a) In detail illustrate on design and working of UPLC. List its advantages and applications. CO1- U (16)
Or
(b) Explain the use of radioisotopes in industries and agriculture for analytical purpose in detail. CO1- U (16)