Register Number: ……

B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2010

Fourth Semester

BIO TECHNOLOGY

U07BT404: Instrumental Methods of Analysis

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Thermal noise is otherwise called_____

a) Shot noise b) Flickker noise c) Johans noise d) Johnsons noise

2. _____ amplifiers permit the recovery of signals when S/N is unity oress

a) Lock up b) Lock out c) Ensemble d) Lock on

3. The most common continuous source of the UV region is _____

a) Deuterium lamp b)Argon lamp c) Neon lamp d) Sodium lamp

4. Bunsen monochromator employs a _____ prism

a) 30^0 b) 60^0 c) 90^0 d) 120^0

5. The globar source is composed of _____

a) Mercury arc b)Silicon carbide c) platinum d) Sodium arc

6. _____ is true with respect to absorbance

a) P/P_0 b) $\log P/P_0$ c) $\log P_0/P$ d) P_0/P

7. DTA refers to _____

a) Differential thermal analysis b) Differential thermogram analysis

c) Digital thermal analysis d)Digital thermogram analysis

8. _____ is the phenomenon that is observed initially when polymers are heated.

a) glass transition b) glass crystallization c) glass melting d)glass oxidation

9. The thermionic detector is selective towards organic compounds containing _____

a) sulphur b) phosphorus c) Zinc d) Selenium

10. A serparation technique that employs a single solvent of constant composition is termed as

a) isocycnic elution b) isocratic elution c) isotonic elution d) isometric elution

PART B (10x2= 20 marks)

11. What is a transducer in an analytical instrument?
12. What is called a chemical noise?
13. Write a brief note on fiber – optic detectors
14. What is a vidicon?
15. What is the principle behind the working of a spectrophotometer?
16. What are Stokes shifts?
17. Name 4 applications of thermal methods
18. Give the different components of a thermogram
19. Write the significance of retention time
20. Name the methods included under planar chromatography

PART C (5 x14 = 70 marks)

21. a) Describe the various sources of noise in instrumental analysis. **(OR)**
    b) Discuss on the hardware devices for noise reduction
22. a) What is a monochromator? Write about the performance and characteristics of a monochromator. **(OR)**
    b) Give an account on the LASERs and list out the applications
23. a) Write in detail about Raman spectra and add a note on the mechanism of Fourier transform Raman spectrophotometer **(OR)**
    b) Explain about the Beer's law and its applications and its limitations

24. a) Describe about the principle and the instrumentation of differential thermal analysis method.

(OR)

b) Discuss on the instrumentation and applications of differential canning calorimetry.

25. a) Explain about the principle and instrumentation of HPLC and add a note on its applications.

(OR)

b) Write about the significance of GC as a separation technique and explain about the principle behind GC.

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