KUMARAGURU
college of technology
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Register Number: …….

**B.TECH DEGREE EXAMINATIONS: MAY 2015**

(Regulation 2013)

Fourth Semester

**BIOTECHNOLOGY**

U13BTT401: Instrumental Methods of Analysis

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

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. S/N ratio means ---------- ratio.
   a) Solids to Number b) Signal to Noise
   c) Significance to Noise d) Solids to Noise
2. Oil extraction from oilseeds is done by ----------.
3. The principle underlying spectroscopic studies is ---------- law.
   a) Beer-Lambert's b) Newton's
   c) Raman's d) Einstein's
4. AAS means ----------
5. The substance to be separated during chromatography is ----------.
   a) Stationary phase b) Analyte
   c) Column d) Chromatogram
6. The abbreviation for HPLC is ----------.
7. TGA measures the properties of materials as a function of ---------- &----------.
   a) Time & Temperature b) Mass & Time
   c) Mass & Temperature d) Pressure & Time
8. The complete name of PAGE is ----------
9. ESI stands for ----------.
   a) Electric Spray Ionization b) Electronic Spin Ionization
   c) Eccentric Spray Innoculation d) Electron Spray Ionization
10. The abbreviation of MALDI is ----------.

**PART B (10 x 2 = 20 Marks)**

**(Not more than 40 words)**

11. Relate the principle of solvent extraction.
12. What is meant by SCFE?
13. Give the principle of X-Ray emission spectroscopy.
14. Enlist two applications of X-Ray emission spectroscopy.
15. Classify the types of electrophoresis methods.
16. Enumerate any two applications of GC.
17. Interpret the principle of working of PAGE.
18. Define pH.
19. Outline the meaning of Mass Spectroscopy.
20. Diagrammatically illustrate the working of a scintillation counter.

**PART C (5 x 14 = 70 Marks)**

**(Not more than 400 words)**

**Q.No. 21 is Compulsory**

21. Elaborate on the principle, instrumentation and applications of HPLC.

22. a) Compare and contrast stripping method and counter-current methods of Solvent extraction

**(OR)**

b) Assess SCFE based extraction technique as the best method of solid Extraction.

23. a) Experiment with Beer-Lambert's Law by applying UV-Visible rays in analyzing a food sample.

**(OR)**

b) Demonstrate the working principle and applications of FT-IR.

24. a) (i) Discuss the applications of immuno electrophoresis. (7)

(ii) Explain the working of SDS-PAGE (7)

**(OR)**

b) Would you recommend TGA as an effective method of thermal analysis? Why? Elaborate.

25. a) Develop a soft Ionization mass spectroscopy method that employs laser, for the analysis of organic samples.

**(OR)**

b) "X-Ray Crystallography is a tool for identifying the atomic and molecular structure of a crystal" Defend the statement.

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