

**B. PHARM.
EIGHTH SEMESTER
ADVANCED INSTRUMENTATION TECHNIQUES
BP811ET**

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration : 3 hrs.

Full Marks : 75

(PART-A: Objective)

Time : 30 min.

Marks : 20

Choose the correct answer from the following:

1×20=20

- H₂, CH₄, C₂H₆ and C₆H₆ exhibit which PMR spectra
 - Singlet
 - Triplet
 - Doublet
 - Quintet
- The coupling of the separation technique and an on-line spectroscopic detection technology will lead to a technique.
 - Hyphenated
 - Distillation
 - Separation
 - Extraction
- Inert solvent system generally extract _____ species
 - Non-polar
 - Polar
 - Acidic
 - Basic
- The solvent used for extraction must have _____ viscosity.
 - Moderate
 - Low
 - High
 - Denser
- Liquid-liquid extraction which is the transfer of a solute from one liquid phase to another liquid by contact. This process is also called Partitioning or
 - Extraction
 - Distribution
 - Dissolution
 - Fractionation
- Calibration of UV-Visible spectrophotometer is conducted by using
 - Potassium chromate
 - Potassium Dichromate
 - Sodium Hydroxide
 - Quinine sulphate
- Estimation of the expanded uncertainty is based on
 - Repeatability
 - Resolution
 - Eccentricity
 - All of above
- The closeness of test results to the true value is known as
 - Accuracy
 - Reproducibility
 - Precision
 - Range
- Low energy X-rays longer than 3 Å are readily absorbed in
 - Moisture
 - Air
 - Electromagnetic waves
 - Water

10. X-rays are produced when
- a. Metal gets converted to ion
 - b. High speed electrons or ions collide with metal
 - c. The glass tube gets heated
 - d. All of the above
11. Which mass number of nuclei are NMR active?
- a. Odd
 - b. A&B
 - c. Even
 - d. None
12. More the shielding effect
- a. Lower the chemical shift
 - b. Higher the chemical shift
 - c. No change in chemical shift
 - d. More the peak splitting
13. The possible spin states of a nucleus with spin quantum number $1/2$ are
- a. 2
 - b. 1
 - c. 4
 - d. 5
14. NMR is the study of absorption of _____ by nuclei in a magnetic field?
- a. Radio frequency radiation
 - b. Uv radiation
 - c. IR radiation
 - d. Microwave
15. During calibration of UV spectrophotometer, UV absorbance is checked using which solution
- a. Potassium dichromate
 - b. Sodium chloride
 - c. Ammonium chloride
 - d. Sodium bicarbonate
16. Mobile phase for GC
- a. Gas
 - b. Solid
 - c. Liquid
 - d. Acetone
17. Mobile phase used to calibrate HPLC
- a. Water and Methanol
 - b. Water and hexane
 - c. WATER AND ACETONE
 - d. Water and ethanol
18. Normal range of wavelength set in HPLC
- a. 200-400 nm
 - b. 201-199nm
 - c. 400-800nm
 - d. 200-800nm
19. Calibration interval period for analytical balance
- a. Daily
 - b. Quarterly
 - c. Monthly
 - d. Yearly
20. IQ stands for
- a. Installation qualification
 - b. Input qualification
 - c. Internal qualification
 - d. Intra qualification
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(PART-B : Descriptive)

Time : 2 hrs. 30 min.

Marks : 35

[Answer any seven (7) questions]

- | | |
|---|---|
| 1. Write the definition as per ICH. Why it is important to calibrate instrument frequently. | 5 |
| 2. Explain the procedure involves in solid phase extraction. | 5 |
| 3. Write about the milestone and development of solid phase extraction. | 5 |
| 4. Write the principle, application of TGA. | 5 |
| 5. Write the procedure involves in RIA. Explain the separation techniques of RIA? | 5 |
| 6. Write the instrumentation of DSC. | 5 |
| 7. Write the principle involves in NMR. | 5 |
| 8. Explain the application of x-rays? | 5 |
| 9. Write the definition of validation as per USP. Write a note on equipment validation. | 5 |

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(PART-C: Long type questions)

[Answer any two (2) questions]

1. Explain the procedure for calibration of 10
 - a. UV spectrophotometer
 - Or*
 - b. Electronic balance
2. Write the principle, instrumentation, and application of DTA. 10
3. What is RIA? Write the principle, components involvement in RIA and advantages and disadvantages of RIA 10

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