

Question Paper

Exam Date & Time: 27-Dec-2023 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Instrumental Methods of Analysis [PQA-BP701T - S3]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) Infrared range in the electromagnetic spectrum is... (1)
- [200-400 nm](#)
[400-700nm](#)
[100-200 nm](#)
[700 nm-1mm](#)
- 2) The excitation wave length for quinine sulphate in dilute sulphuric acid is (1)
- [366 nm](#)
[475 nm](#)
[500 nm](#)
[800 nm](#)
- 3) One of the following reagent is used in the fluorometric estimation Vitamin B1 (1)
- [Potassium Ferro cyanide in hydrochloric acid](#)
[Potassium Ferri cyanide in sodium hydroxide](#)
[Potassium Ferri cyanide in hydrochloric acid](#)
[Potassium](#)
[Ferro cyanide in sodium hydroxide](#)
- 4) The complimentary colour for Red is..... (1)
- [Red](#)
[Orange](#)
[Green](#)
[Yellow](#)
- 5) In the assay of paracetamol tablets IP, the absorption of solution is measured at.....nm (1)
- [257](#)
[377](#)
[202](#)
[475](#)
- 6) Longitudinal diffusion is _____ in V.M equation (1)
- [A Factor](#)
[B Factor](#)
[C Factor](#)

[D](#)
[Factor](#)

7) Wavenumber for the Far IR region is (1)

[14200 cm⁻¹ - 4000 cm⁻¹](#)
[400 cm⁻¹ - 50 cm⁻¹](#)
[4000 cm⁻¹ - 40 cm⁻¹](#)
[4000 cm⁻¹ - 650 cm⁻¹](#)

8) Unit for wave number is (1)

[Meter](#)
[Centimetre](#)
[Inch](#)
[Cm⁻¹](#)

9) Ionization interference of sodium ions is overcome by using (1)

[Organic solvents](#)
[Excess of potassium ions](#)
[Excess of bicarbonate ions](#)
[Excess of chloride ions](#)

10) In the quantitative determination of calcium ions by internal standard method of flame photometry, the internal standard used is (1)

[Sodium](#)
[Magnesium](#)
[Lithium](#)
[Potassium](#)

11) Hollow cathode lamp is the line source in (1)

[Flame emission spectroscopy](#)
[Atomic absorption spectroscopy](#)
[Atomic emission spectroscopy](#)
[Fluorimetry](#)

12) In Nephelometry, the intensity of radiation is measured at° to incident radiation (1)

[90](#)
[180](#)
[35](#)
[60](#)

13) Zerolit is an example of _____ (1)

[Anion exchange resin](#)
[Cation exchange resin](#)
[Ion exchange resin](#)
[Combined ion exchange resin](#)

14) _____ detector used in GC. (1)

[ELSD](#)
[RI](#)
[PDA](#)
[FID](#)

15) In gas chromatography, the separation mechanism is mainly (1)

[Size exclusion](#)

[Ion exchange](#)

[Adsorption](#)

[Partition](#)

16) Which of the following HPLC detector is an example of 'destructive detector'? (1)

[UV-Visible detector](#)

[Fluorescence detector](#)

[Electrochemical detector](#)

[Refractive index](#)

[detector](#)

17) _____ is an example of indicator electrode (1)

[silver silver chloride electrode](#)

[Mercury mercury sulphate electrode](#)

[Quinhydrone electrode](#)

[Mercuric oxide electrode](#)

18) Saturated calomel electrode is _____ (1)

[Silver wire coated with calomel](#)

[Silver wire coated with potassium chloride](#)

[mercury is covered with a paste of mercurous chloride.](#)

[platinum wire coated with silver chloride](#)

19) One of the currents mentioned below is not belongs to current observed in polarography (1)

[Residual](#)

[Diffusion](#)

[Limiting](#)

[Reduced](#)

20) In CV curves, a hump is normally seen in the absence of _____ (1)

[maximum](#)

[suppressors](#)

[Air](#)

[Voltage](#)

[stabilizer](#)

II Long Answers

Answer all the questions.

1) Define chromatography, classify the same based on their separation mechanism with suitable examples, discuss any one chromatographic technique in detail (1M+4M+5M) (10)

2) Discuss the instrumentation of HPLC in detail (10)

III Short Answers

Answer all the questions.

1) Explain the applications of UV visible spectroscopy in brief (5)

2) Explain the structural requirements for a molecule to exhibit the fluorescence (5)

3) Explain the factors affecting column chromatography (5)

4) List and comment briefly on interferences in flame photometry (5)

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|----|---|-----|
| 5) | List the applications of Nephelo-turbidometry | (5) |
| 6) | Explain polarography in brief | (5) |
| 7) | Explain any one of the conductometric titration | (5) |

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