

- (viii) Which of the following solvent is not used in NMR?
- | | |
|----------------------|---------------------|
| a) CHCL ₃ | b) CCL ₄ |
| c) CDCL ₃ | d) D ₂ O |
- (ix) Select the following, By which chemical HPLC calibration and validation takes place.
- | | |
|---------------|---------------|
| a) Caffeine | b) 0.1 N NaCl |
| c) 0.1 N NaOH | d) KCl |
- (x) Select the following, By which chemical pH 7.41 was prepared.
- | | |
|-----------------------------------|---------------|
| a) potassium dihydrogen phosphate | b) 0.1 M KCl |
| c) 0.1 N NaCl | d) 0.1 N NaOH |
- (xi) Which chemical is used during performing calibration of High-performance liquid chromatography?
- | | |
|-------------------|------------------|
| a) Methanol. | b) Acetonitrile. |
| c) Theophylline . | d) Caffeine. |
- (xii) Select during calibration robustness of High performance liquid chromatography which parameter is not used,
- | | |
|--------------------------------|-------------------------|
| a) System to system variation. | b) Flow rate variation. |
| c) Person to person variation. | d) Linearity variation. |
- (xiii) Select troubleshoot of instrument checked by which all parameters.
- | | |
|-------------------|------------------|
| a) Leakage. | b) Lamp error. |
| c) Sampler error. | d) All of these. |
- (xiv) Select at the lowest level the sample start to detection its concentration called as,
- | | |
|---------------|-----------------------------|
| a) Accuracy. | b) limit of quantification. |
| c) Precision. | d) limit of detection. |
- (xv) In NMR spectroscopy, relate in which of the following must irradiate the spinning nuclei in strong magnetic field?
- | | |
|-------------------------------------|-----------------------------------|
| a) Perpendicular and stronger field | b) Parallel and stronger field |
| c) Parallel and weaker field | d) Perpendicular and weaker field |
- (xvi) In NMR spectrum the nuclei in up field resonate operate at,
- | | |
|---|---|
| a) It is constant throughout the spectrum | b) It doesn't depends on chemical shift |
| c) High frequency | d) Low frequency |
- (xvii) Compute delta value if in NMR Spectroscopy chemical moiety at 567Hz value.
- | | |
|----------------------|---------|
| a) 9.449999999999999 | b) 6.26 |
| c) 12.23 | d) 7.11 |
- (xviii) Determine from the following, what is Eluent?
- | | |
|---------------------------------|----------------------------|
| a) liquid use as a mobile phase | b) liquid use as a diluent |
| c) liquid as a waste | d) liquid as a spillage |
- (xix) Determine from the following, TMS is used as an,
- | | |
|-------------------------------|-----------------------------------|
| a) universally accepted gas | b) universally receiver |
| c) universally accepted doner | d) universally accepted reference |
- (xx) Determine in which validation parameter the change of Personnel was observed,
- | | |
|----------------------------|-----------------------|
| a) Limit of quantification | b) Precision |
| c) Robustness | d) Limit of detection |

Group-B

(Short Answer Type Questions)

5 x 7=35

2. Describe how signals are measured in NMR. (5)

3. Describe the significance of ionization in mass spectroscopy and discuss the terms "Soft and Hard ionisation techniques". (5)

4. Describe Chemical Ionization (CI) with a labelled diagram (5)
5. Explain the detailed principle of DSC with neat and labelled sketch. (5)
6. Explain the factors affecting TGA curve? (5)
7. Define validation and explain briefly the importance of validation. (5)

OR

- Write in detail about calibration of the pH meter. (5)
8. Explain in detail about principle of HPTLC-MS. (5)

OR

- Explain in detail about principle of GC-MS/MS. (5)

Group-C

(Long Answer Type Questions)

10 x 2=20

9. What is the definition of desorption, classify desorption ionization and explain any one of it (10)
with schematic diagram.
10. Explain the terms, molecular ion, fragmented ion, quasi molecular ion and mention the
different LASER sources for MALDI. (10)

OR

- Explain the powder method used in XRD. (10)