

M.Sc.-I, Sem-II

Seat No.:

MARCH - 2022 (Summer session) Examination

Subject Code: 84511

(विद्यार्थ्यांनी हा विषय कोड OMR वर लिहावा / Student should fill this code on OMR sheet)

Subject Name: Master Of Science (New CBCS)_84511_61360/71524/79247/84511 - Analytical
Chemistry - II_24.08.2022_04.00 PM

Date: 24-08-2022

Time: 16:00:00 to 17:00:00

QP Code: 10366QP

Total Marks : 50 Each Question 2 Marks, Total 25 Ques, Duration 1 Hr

1. What does IR spectroscopy allow us to determine?

- a. C-H framework of a compound
- b. kinds of bonds in a compound
- c. number of carbons in a compound
- d. molecular formula of a compound

2. Which of the following spectroscopy techniques is associated with molecular emission?

- a. UV-Visible spectroscopy
- b. IR spectroscopy
- c. Fluorescence spectroscopy
- d. X-ray diffraction

3. Unit of chemical shift δ is _____

- a. Hz
- b. ppm
- c. Cps
- d. Unit less

4. Presence of electronegative atom on NMR spectra cause _____

- a. Deshielding and upfield
- b. Deshielding and downfield
- c. Shielding and upfield
- d. Shielding and downfield

5. In thermogravimetric analysis, the result obtained appear as a _____

- a. Continuous chart
- b. Continuous parabola
- c. Continuous circular positions
- d. Discontinuous chart

6. In TGA, which parameter is measured as a function of temperature?

- a. mass
- b. density
- c. volume
- d. heat capacity

7. Which of the following is the principle of Atomic Absorption Spectroscopy?

- a. Radiation is absorbed by non-excited atoms in vapour state and are excited to higher states
- b. Medium absorbs radiation and transmitted radiation is measured
- c. Colour is measured
- d. Colour is simply observed

8. Which of the following is not a fuel in flame photometry?

- a. acetylene
- b. propane
- c. hydrogen
- d. nitrogen

9. As conjugation in compound increases UV absorption value _____
- a. decreases
b. remains constant
c. increases
d. becomes zero
10. Which of the following transitions mainly occur in IR?
- a. electronic only
b. rotational and vibrational
c. rotational only
d. all electronic, rotational, vibrational
11. McLafferty rearrangement is shown by _____
- a. 3-pentanone
b. 2-pentanone
c. 3-methyl-2-butanone
d. propanone
12. Which component of the mass spectrometer separates the ion beams into its components?
- a. sample holding system
b. ion source
c. detector
d. analyser
13. Which of the following is not thermal method?
- a. DTA
b. DPP
c. TGA
d. DSC
14. The instrument used in Thermomechanical analysis is _____
- a. electrometer
b. dilatometer
c. calorimeter
d. thermobalance
15. Which one is used to convert sample into mist or aerosol?
- a. atomizer
b. hollow cathode lamp
c. nebulizer
d. detector
16. In ICP torch, quartz tube contains _____
- a. nitrogen gas
b. hydrogen gas
c. argon gas
d. neon gas
17. $n \rightarrow \pi^*$ can be shown by functional groups.
- a. C=C
b. -C=C-C
c. N=O
d. C-C
18. The molecule HOCH₂CH₂OH will have NMR spectrum consisting of _____
- a. two singlets
b. a triplet and a doublet
c. two doublets
d. a singlet and a doublet
19. Benzene gives _____ NMR signal.
- a. 2
b. 1
c. 3
d. 6

20. The structure of organic compounds can be investigated by Proton NMR because _____

- a. Organic compounds contain carbon atoms
- b. Organic compounds are mostly covalent
- c. Hydrogen atoms are found in nearly all organic compounds
- d. Organic compounds have low boiling points

21. The parameter used in Differential Thermal Analysis is _____

- a. Temperature differences
- b. Change in mass
- c. Change of temperature
- d. Difference in heat content

22. The maximum weight loss occurs at _____ in TGA of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

- a. 1100 degree celsius
- b. 150 degree celsius
- c. 100 degree celsius
- d. 275 degree celsius

23. ICP's principle is similar to which of the following?

- a. Flame Emission Spectroscopy
- b. Fourier Transform Spectroscopy
- c. Atomic Emission Spectroscopy
- d. Absorption Spectroscopy

24. The absorption spectrum of an organic compound has its λ_{max} at 265 nm. This is in which region of electromagnetic spectrum?

- a. IR
- b. UV
- c. Visible
- d. Far IR

25. In conjugated dienes, the $\pi - \pi^*$ transition occurs at longer wavelength. The reason is that as the conjugation extends, the distance between HOMO and LUMO _____

- a. increases
- b. decreases
- c. first increases and then decreases
- d. not certain