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Msc Sem 2 MCQ

CHN- 504

1. In Raman Spectroscopy, energy of change comes from
   a. Electron (b) photon (c) ion (d) molecule

2. Frequency of Photons shifts electrons from one state to another in
   a. Raman Spectroscopy (b) Spectroscopy (c) Crystalization
   (d) Vaporization

3) Beer Lambert's law gives the relation between which of the following?
   (a) Reflected radiation and concentration
   (b) scattered radiation and concentration
   (c) Energy absorption and reflected radiation
   (d) Energy absorption and concentration

4) Beer's law states that the intensity of light decreases with respect to
   (a) Concentration (b) composition (c) distance (d) volume

5) The elastic scattering of photons is called as
   (a) Atmospheric scattering (b) Rayleigh scattering
   (c) Conserved scattering (d) Raman scattering

6) The inelastically scattered photons are called as
   (a) Raman scattering (b) Rayleigh scattering
   (c) Atmospheric scattering (d) Conserved scattering

7) Which of the following is the principal of atomicabsorption spectroscopy
   (a) Radiation is absorbed by non excited atoms in vapour state and are Excited to higher state
   (b) Medium absorbs radiation and transmitted radiation is measured
   (c) Colour is measured
   (d) Colour is simply observed

8) Which of the following can not be conserved during Raman scattering?
   (a) Total energy (b) momentum (c) kinetic energy (d) electronic energy

9) How many degrees of freedom does a chemical compound of N atoms have?
   (a) 2N (b) 2N+1 (c) 3N (d) 3N+1

10) In Raman spectroscopy, the radiation lies in the
   (a) Microwave region (b) visible region (c) UV region (d) X ray region

11) The Raman shift generally lies between
   (a) 100-1000 cm^{-1} (b) 100-2000 cm^{-1} (c) 100-3000 cm^{-1} (d) 100-4000 cm^{-1}

12) The most commonly used laser for Raman spectroscopy is

(a) He-Hg (b) Ruby laser (c) He-Ne laser (d) semiconductor laser

13) Which of the following lines are intense?

(a) Strokes lines (b) Rayleigh scattered lines (c) anti strokes lines

(d) All have same intensity

14) The absorbed wavelengths in atomic absorption spectrum appear as

(a) Dark background (b) dark lines (c) light background (d) light lines

15) The wave numbers decrease from

(a) Lyman to pfund series (b) pfund to Lyman series

(c) balmer to bracket series (d) none of above

16 In the atomic absorption spectroscopy which the following is the generally used radiation source?

(a) tungsten lamp (b) xenon mercury lamp (c) hydrogen discharge lamp

(d) Hollow cathode lamp

17 During the motion,if the centre of gravity of molecule changes,the molecule possess

(a) electronic energy (b) rotational energy (c) translation energy

(d) vibrational energy

18 paschen series series lie in

a UV region b visible region c infrared region d alpha region

19 the spectrum of hydrogen can be obtained in

A test tube b discharge tube c glass d space

20 in the spectrum of sodium the number of lines obtained are

a two b three c four d five

[Answer -1 b 2 a 3c 4a 5b 6a 7a 8 c 9 c 10 b 11 d 12 c 13 b 14 b 15 a 16 c 17 c 18 c 19 b 20 a]

Unit: 3 Microwave spectroscopy

(1) HCl can be considered as ___ rotor.
(A) linear (B) spherical
(C) (A) & (B) (D) None of above.

(2) NH_3 can be con considered as ___ rotor.
(A) symmetric tops (B) linear
(C) asymmetric tops (D) None of above.

(3) H_2 is ___ nuclear diatomic molecule.
(A) hetero (B) homo
(C) (A) & (B) (D) None of above.

(4) HCl is ___ nuclear diatomic molecule.
(A) hetero (B) homo
(C) (A) & (B) (D) none of above.

(5) CH_3CN is ___ rotor.
(A) Asymmetric top (B) symmetric top
(C) (A) & (B) (D) none of above.

(6) Linear momentum p = ___
(A) mV (B) m (C) V (D) none of above.

(7) SF_6 is ___ tops rotor.
(A) Spherical (B) linear
(C) (A) & (B) (D) none of above.

(8) H_2O is ___ tops rotor.
(A) asymmetric (B) symmetric (C) linear
(D) None of above.

(9) Cl_2 is ____ nuclear molecule.
(A) hetero (B) homo (C) (A) & (B)
(D) none of above.

(10) which is hetero nuclear diatomic molecule ?

(A) H_2 (B) O_2 (C) Cl_2 (D) HCl

(11) SiH_4 is ____ tops rotor.
(A) symmetrical (B) spherical
(C) (A) & (B) (D) none of above.

(12) CH_3OH is ____ tops rotor.
(A) symmetric (B) Asymmetric
(C) (A) & (B) (D) none of above.

(13) HF is ____

(A) polar (B) non polar
(C) (A) & (B)
(D) none of above.

Unit - 4 NMR Spectroscopy

1. How many NMR signals are formed for 2-chloro propene.

   a. 2 **b. 3** c. 1 d. none

2. Tell the of NMR signals in case of 1, 2 dichloropropane.

   a. 2 b. 3 **c. 4** d. 5

3. Write the multiplicity of the signals in $CH_3\ CH_2\ O\ CH_2\ CH_3$ in NMR spectrum

   a. Two triplets **b. a triplet and a quartet**

   c. two singlets d. two singlets and two triplets

4. Write the multiplicity of the signals in $CH_3\ CH_2\ OH$ in NMR spectroscopy.

   a. singlet, triplet and quartet b. a triplet and a quartet

   c. three singlets d. none of these

5. In on organic compound, the proton linked to sp^2 hybridised carbonation is more deshielded than that linked to

   a. sp hybridised carbon b. sp^3 hybridised carbon

   c. Both of these d. none of these

6. In ethyl benzene ($C_6H_5\ CH_2\ CH_3$) the tau value for CH_2 proton will be_____ than those of CH_3 protons.

   a. lower b. higher c. much higher d. not sure

7. Out of the olefinic, aldehydic and aromatic protons, the decreasing deshielding has the order.

   a. olefinic > aldehydic > aromatic **b. aldehydic > olefinic > aromatic**

   c. aromatic > olefinic > aldehydic d. olefinic > aromatic > aldehydic

8. Which of the following solvents cannot be used in NMR spectroscopy ?

   a. CCl_4 b. CS_2 **c. $CHCl_3$** d. $(CCl_3)_2\ C = O$

9. The spin is an integer 1, 2, 3, ….. for a nucleus having

a. even number of protons and neutrons

b. odd mass number

c. even mass number and odd number of protons d. none of these

10. NMR spectra are observed in ……region

a. radio frequency b. microwave c. uv/vis d. X-ray

11. Write the number of signals and their multiplicities for the NMR spectrum of the compound, Cl F_2C-CH_2 Cl.

a. one, triplet b. two, singlet c. two, triplets d. none of these

12. For two sets of protons for CH_3 CH_2 CO-, part of an organic compound, the value of J for these two sets will be

a. different **b. same** c. may be same or different

13. The signal (s) for compound like A-CH_2- CH_2 B will be :

a. two, triplets b. two, singlets c. one singlet d. one triplet

14. The pair of compounds which can be distinguished by NMR spectroscopy are

a. CH_3CH_2OH and CH_3 O CH_3 b. CH_3 CH_2 CH_2 OH and CH_3 CH (OH) CH_3

c. CH_3 CH_2 CHO and CH_3 CO CH_3 **d. all of these**

15. The NMR spectroscopy is useful for the detection of

a. hydrogen bonding b. aromaticity

c. geometrical isomers **d. all of these**