

Ismail Yusuf College, Jogeshwari (E), Mumbai - 60

M. Sc. Sem - 4 Paper - 3

Multiple choice questions

1. When a molecules irradiated with infrared radiation it undergo transition from -----
 - a) **V=0 to V=1**
 - b) V=1 to V=2
 - c) V=1 to V=3
 - d) V=2 to V=3
2. ----- is the only naturally occurring isotope
 - a) 17f
 - b) 14f
 - c) **19f**
 - d) 15f
3. NMR is the spectroscopy techniques which is based on -----
 - a) reflection
 - b) irradiation
 - c) **absorption**
 - d) transmission
4. Which parameter can saturate the lock signal if it is set too high?
 - a) lock gain
 - b) lock phase
 - c) **lock power**
 - d) lock field
5. $3J_{HH}$ coupling constant are dependent on-----
 - a) magnetic field strength
 - b) **relative orientation of the coupled proton**
 - c) sample concentration

- d) 90° pulse width
6. 1JCH coupling constants may have a value of-----
- a) **140 Hz**
 - b) 35 Hz
 - c) 8Hz
 - d) 70 Hz
7. Which of the following is the spectral range of SIMS?
- a) 0-10 amu
 - b) 0-100 amu
 - c) **0-500 amu**
 - d) 0-1000 amu
8. Which of the following is the x-y resolution of ISS?
- a) 1 μ
 - b) 10 μ
 - c) **100 μ**
 - d) 1000 μ
9. The kinetic energy of the photoelectron energies is dependent on----- of the atom, which makes XPS useful to identify the oxide state.
- a) mass
 - b) charge
 - c) **chemical environment**
 - d) volume
10. Which of the following is denotes the absolute quantitative analysis of SIMS?
- a) 30%
 - b) 70%
 - c) 50%
 - d) **not possible**

11. Which of the following is the energy range of ISS?

- a) **1keV**
- b) 2keV
- c) 4keV
- d) 8keV

12. ESCA gives sufficient chemical information up to a depth about -----armstrong in metals.

- a) **5-20**
- b) 15-40
- c) 40-100
- d) 100-200

13. The biological materials have little intrinsic capability to-----

- a) **scatter electrons**
- b) stain
- c) remain visible
- d) be captured

14.Osmium is a -----

- a) non metal
- b) **heavy metal**
- c) alloy
- d) light metal

15.ESCA gives sufficient chemical information up to a depth about ----- Armstrong in polymers.

- a) 5-20
- b) **40-100**
- c) 15-40
- d) 100-200

16. ESCA can identify elements in the periodic table above which of the following?

- a) carbon
- b) boron
- c) helium**
- d) potassium

17. Mode of operation in AFM-----

- a) 2
- b) 5
- c) 3**
- d) 4

18. The cathode of transmission electron microscope consists of a -----

- a) tungsten wire**
- b) bulb
- c) iron filament
- d) gold wire

19. Differential scanning calorimetry (DSC) is a technique to measure-----

- a) specific heat**
- b) thermal expansion
- c) electrical conductivity
- d) impact energy

20. In DTA method, the sample temperature was recorded on -----

- a) heating
- b) cooling**
- c) gaseous
- d) liquid

21. TGA used to measure -----

- a) change in mass- loss of weight**
- b) change in temperature reaction

c) pressure

d) b and c

22. DTA used to measure-----

a) change in mass- loss of weight

b) change in temperature reaction

c) pressure

d) a and c

23. Heat capacity has units as-----

a) J/kg.K

b) J/mol.K

c) J.ohm/sec.K²

d) W/m.K

24. Thermomechanical analysis (TMA) having mode of operation-----

a) 3

b) 5

c) 4

d) 2

25. In thermomechanical analysis (TMA) tension mode is-----

a) flexure

b) expansion

c) films and fibers

d) dilatometry