

Ismail Yusuf College, Jogeshwari (E) Mumbai-60

M . Sc . Semester IV - Inorganic Chemistry

Paper I - Properties of Inorganic Solids and Group Theory PSCHI 401

Multiple Choice Questions

- 1) Which among of the following is not an example of hydrogen bond ?
 - a) H_2O
 - b) Liquid HCl
 - c) NH_3
 - d) CHCl_3
- 2) Ligand field theory resulted from combining the principles laid out in molecular orbital Theory and -----
 - a) V . B . T .
 - b) T . L . C .
 - c) C . F . T .
 - d) V . S . E . P . R .
- 3) The dipole moment of HF molecule is -----
 - a) is a vector quantity
 - b) is the difference between the Pauling electronegativity value of F and H
 - c) is a scalar quantity
 - d) has units of coulombs
- 4) Which of the following species possesses both C_3 and C_2 axes ?
 - a) SO_3
 - b) NH_3
 - c) PCl_3
 - d) $[\text{H}_3\text{O}]^+$
- 5) The number of degrees of vibrational freedom possessed by CH_4 is -----
 - a) 10

b) 6

c) 4

d) 9

6) Which of the following matches of point group : example is incorrect ?

a) C_{2v} : H_2O_2

b) D_{3h} : BF_3

c) C_{3h} : $B(OH)_3$

d) D_{4d} : S

7) The hysteresis loss in soft magnetic materials must be kept -----

a) High

b) Minimum

c) Zero

d) Unaltered

8) what is the value of residual induction of alnico alloys

a) 0.9

b) 0.95

c) 1.0

d) 0.8 – 1.2

9) Example for magnetic material used in data storage devices is -----

a) 45 Permalloy

b) CrO_2

c) Fe – Pd

d) Alnico

10) The magnetism of a magnet is due to -----

a) Earth

b) Cosmic rays

c) Due to pressure of magnet inside the earth

d) Spin motion of electrons

11) What happens to the magnetic moment if a hole is made at the centre of a bar magnet --

---- a) Decreases

b) Increases

c) No change

d) Constant

12) By adding Silicon to Steel which of the following property is enhanced

a) Resistance to corrosion

b) Electrical characteristics

c) Magnetic property

d) Ductility

13) Solar cell works based on-----

a) Laser technology

b) Photo-conduction

c) Thermal emission

d) Tyndall effect

14) Bouguer's law is related to -----

a) light reflection

b) Light refraction

c) Light transmission

d) Light absorption

15) The response of a material due to the function of heat is known as -----

a) Mechanical property

b) Electrical property

c) Chemical property

d) Thermal property

16) Heat capacity of most materials is approximately equal to -----

- a) R
- b) 2R
- c) 3R
- d) R/2

17) The pumping mechanism used in Ruby rod is -----

- a) Optical pumping
- b) Electrical excitation
- c) Chemical pumping
- d) Thermal puming

18) Which o the following is a unique property of laser -----

- a) Directional
- b) Speed
- c) Coherence
- d) Wavelength

19) Which of the following is true about the structure of C₂H₂ molecule ?

- a) Infinite number of vertical planes
- b) Infinite number of horizontal planes
- c) Non linear structure
- d) C₄ principal axis of rotation

20) Which of the following symmetry elements does cis- N₂F₂ contain ?

- a) C₂ axis
- b) a sigma plane
- c) an inversion centre i
- d) an S₂ axis

21) CO₂ has -----

- a) 3 vibrational mode
- b) 4 vibrational modes, 2 of which are degenerate

c) stretching modes only

d) an IR active symmetric stretch

22) Which of the following species possesses both C₃ and C₂ axes?

a) SO₃

b) NH₃

c) PCl₃

d) [H₃O]⁺

23) Which molecule does not have T_d symmetry?

a) SiF₄

b) P₄

c) CH₄

d) XeF₄

24) Ligand field theory, it represents an application of molecular orbital theory to -----

a) Transition metal complexes

b) post transition metal

c) earth metals

d) non metals

25) Ligand field theory resulted from combining the principles laid out in molecular orbital theory and-----

a) VBT

b) TLC

c) CFT

d) VSPER