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RPTM-8

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1. What is the atomic number of last member of the seventh period of the extended form of periodic table?

   a) 116 b) 120 c) 118 d) 122

2. The process requiring absorption of energy is

   a) $F \rightarrow F^-$ b) $O \rightarrow O^{2-}$ c) $Cl \rightarrow Cl^-$ d) $H \rightarrow H^-$

3. The correct decreasing order of electropositive character among the following elements is

   Fe, Sc, Rb, Br, Te, F, Ca

   a) Fe > Sc >Rb> Br >Te> F > Ca b) Rb> Ca > Sc > Fe >Te> Be > F

   c) Rb> Ca > Sc > Fe > Br >Te> F d) Ca >Rb> Sc > Fe >Te> F > Br

4. The correct decreasing order of atomic size among the following species is Ar, K^+, Cl^-, S^{2-}, Ca^{2+}

   a) $S^{2-} > Cl^- > Ar > K^+ > Ca^{2+}$ b) $K^+ > Ca^{2+} > Cl^- > Ar > S^{2-}$

   c) $Ca^{2+} > K^+ > Ar > Cl^- > S^{2-}$ d) $S^{2-} > Ar > Cl^- > Ca^{2+} > K^+$

5. A, B and C are elements in the third short period. Oxide of A is ionic, that of B is amphoteric and that of C a giant molecule. A, B and C have atomic number in the order

   a) C < B < A b) A < B < C c) A < C < B d) B < A < C

6. The correct order of relative stability of half – filled and completely filled subshell is

   a) $p^3 > d^5 > d^{10} < p^6$ b) $d^5 < p^3 < d^{10} < p^6$

   c) $d^5 > p^3 < d^{10} < p^6$ d) $p^3 > d^{10} < d^5 < p^6$

7. The correct order of acidic strength of the following is

   a) $Al_2O_3 > SiO_2 > P_2O_3 > SO_2$ b) $P_2O_3 > SO_2 > SiO_2 > Al_2O_3$

   c) $P_2O_3 > Al_2O_3 > SO_2 > SiO_2$ d) $SO_2 > P_2O_3 > SiO_2 > Al_2O_3$

8. In which of the following arrangements the order is NOT according to the property indicated against it

   a) $Al^{3+} < Mg^{2+} < Na^+ < F^-$: Increasing ionic size

   b) Li < Na < K <Rb: Increasing metallic radius

   c) I < Br < F <Cl : Increasing electron gain enthalpy (with negative sign)

   d) B < C < N < O: Increasing first ionization enthalpy

9. Which pair is not correct order of lattice energy?

   a) KCl> MgO b) AlN> MgO c) CaO>BaO d) $MgCO_3$> $CaCO_3$

10. In PO_4^{3-} ion the formal charge on the oxygen atom of P – O bond is

a) +1 b) -1 c) -0.75 d) +0.75

11. The difference of number of σ - bonds and π bonds in 1, 3, 5 – tricyanobenzene is

a) 5 b) 3 c) 6 d) 0

12. Which is not true according to VBT?

a) A covalent bond is formed by the overlapping of orbitals with unpaired electrons of opposite spins.

b) a) A covalent bond is formed by the overlapping of orbitals with unpaired electrons of same spins.

c) The greater the extent of overlapping the stronger is the bond

d) Overlapping takes place only in the direction of maximum electron density of the orbital

13. The hybridization of central metal ion and shape of Wilknson's catalyst is

a) dsp^2 square planar b) sp^3, tetrahedral

c) sp^3d, trigonal bipyramidal d) d^2sp^3, octahedral

14. NCl_3 molecules is pyramidal and BCl_3 molecule is planar because

a) B-Cl bond is more polar than N – Cl bond

b) BCl_3 does not contain unused electron pair while NCl_3 does

c) Boron atom is smaller than nitrogen atom

d) N – Cl bond is more covalent than B – Cl bond

15. How would N – N bond distance or O – O bond distance change when N_2 changes to N_2^+ and O_2 changes of O_2^+?

a) increase, decrease b) decrease, increase

c) increases in both the cases d) decreases in both the cases

16. The species which does not show paramagnetism is

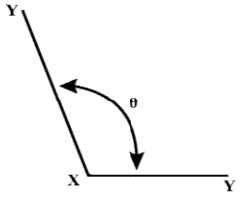
a) O_2 b) O_2^+ c) O_2^{2-} d) H_2^+

17. The C – O bond length increases in the following order in CO, CO_2 and CO_3^{2-}

a) $CO_3^{2-} < CO_2 < CO$ b) $CO_2 < CO_3^{2-} < CO$

c) $CO < CO_3^{2-} < CO_2$ d) $CO < CO_2 < CO_3^{2-}$

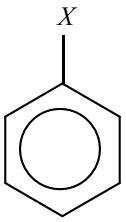
18. Which of the following value θ corresponds to the maximum dipole moment of the triatomic molecule XY_2?



a) $\theta = 90^o$ b) $\theta = 120^o$ c) $\theta = 150^o$ d) $\theta = 180^o$

19. Which of the following does not contain a coordinate bond?

a) H_3O^+ b) BF_4^- c) HF_2^- d) NH_4^+

20. The Dipole Moment of 

is 1.5 D. The dipole moment of pis:

a) 1 D b) 1.5D c) 2.25D d) 3 D

21. Find the total number of cations for which I.P. of cations is lower than corresponding atom.

$K^+, O^+, Ne^+, P^+, Be^+, Na^{2+}, Fe^+, Sn^{2+}$.

22. Find out the sum of all the digits of atomic number of the element "Uuq".

(If your answer is greater than 9 then add all the digits. For example, Ans. 12 then fill 1 + 2 = 3, Ans. 123 then fill 1 + 2 + 3 = 6 and Ans. 20 then fill 2 + 0 = 2.

23. The number of lone pairs of electrons present in OF_2 is

24. A Complex ion $[Fe(H_2O)_6]2^+$ is found to be paramagnetic. Its magnetic moment is 4.89 BM. How many unpaired electrons are present?

25. Find out the number of p-orbitals of Boron atom which participate part in hybridization in B_2H_6. (Number of p-orbitals taking part in hybridization per atom of Boron)

26. How many of the following are biodegradable polymers: Nylon – 6; Nylon -6, 6; Nylon-2-Nylon-6; PHBV; polyglycolic acid; polyactic acid; polyacrylonitrile

27. Total number of π- bonds present in styrene is

28. Copolymers in the following are

Bakelite, melamine, buna-S, Nylon-6,6; PMMA, Teflon, HDPE, terylene

29. Number of polymers containing ester linkages in the following are:

Nylon, Glyptal, Dacron, PVC

30. The number of carbon items present in the monomer of Teflon:

CHEMISTRY

1) C	2) B	3) B	4) A	5) B	6) B
7) D	8) D	9) A	10) C	11) C	12) B
13) A	14) B	15) A	16) C	17) D	18) A
19) C	20) B	21) 0	22) 6	23) 8	24) 4
25) 3	26)	27)	28)	29)	30)