QB365 Question Bank Software Study Materials

Transition and Inner Transition Elements 50 Important 1 Marks Questions With Answers (Book Back and Creative)

12th Standard

Chemistry

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

1) Sc (Z = 21) is a transition element but Zinc (z = 30) is not because _____.

(a) both Sc^{3+} and Zn^{2+} ions are colourless and form white compounds

(b) In case of Sc, 3d orbital are partially filled but in Zn these are completely filled

(c) last electron as assumed to be added to 4s level in case of zinc (d) both Sc and Zn do not exhibit variable oxidation states

2) Which of the following d block element has half filled penultimate d sub shell as well as half filled valence sub shell?

(a) Cr (b) Pd (c) Pt (d) none of these

3) Among the transition metals of 3d series, the one that has highest negative $\left(\frac{M^{2+}}{M}\right)$ standard electrode potential is _____.

(a) Ti (b) Cu (c) Mn (d) Zn

4) Which one of the following ions has the same number of unpaired electrons as present in V^{3+}?

(a) Ti^{3+} (b) Fe^{3+} **(c) Ni^{2+}** (d) Cr^{3+}

5) The magnetic moment of Mn^{2+} ion is _____.

(a) 5.92BM (b) 2.80BM (c) 8.95BM (d) 3.90BM

6) The catalytic behaviour of transition metals and their compounds is ascribed mainly due to _____.

(a) their magnetic behaviour (b) their unfilled d orbitals **(c) their ability to adopt variable oxidation states**

(d) their chemical reactivity

7) The correct order of increasing oxidizing power in the series _____.

(a) $VO_2^+ < Cr_2O_7^{2-} < MnO_4^-$ (b) $Cr_2O_7^{2-} < VO_2^+ < MnO_4^-$ (c) $Cr_2O_7^{2-} < MnO_4^- < VO_2^+$ (d) $MnO_4^- < Cr_2O_7^{2-} < VO_2^+$

8) In acid medium, potassium permanganate oxidizes oxalic acid to _____.

(a) oxalate **(b) Carbon dioxide** (c) acetate (d) acetic acid

9) Which of the following statements is not true?

(a) on passing H_2S, through acidified $K_2Cr_2O_7$ solution, a milky colour is observed

(b) $Na_2Cr_2O_7$ is preferred over $K_2Cr_2O_7$ in volumetric analysis (c) $K_2Cr_2O_7$ solution in acidic medium is orange in colour

(d) $K_2Cr_2O_7$ solution becomes yellow on increasing the P^H beyond 7

10) Permanganate ion changes to _____ in acidic medium.

(a) MnO_4^{2-} **(b) Mn^{2+}** (c) Mn^{3+} (d) MnO_2

11) How many moles of I_2 are liberated when 1 mole of potassium dichromate react with potassium iodide?

(a) 1 (b) 2 **(c) 3** (d) 4

12) The number of moles of acidified $KMnO_4$ required to oxidize 1 mole of ferrous oxalate(FeC_2O_4) is _____.

(a) 5 (b) 3 **(c) 0.6** (d) 1.5

13) Which one of the following statements related to lanthanons is incorrect?

(a) Europium shows +2 oxidation state (b) The basicity decreases as the ionic radius decreases from Pr to Lu.

(c) All the lanthanons are much more reactive than aluminium

(d) Ce^{4+} solutions are widely used as oxidising agents in volumetric analysis.

14) Which of the following lanthanoid ions is diamagnetic?

(a) Eu^{2+} **(b) Yb^{2+}** (c) Ce^{2+} (d) Sm^{2+}

15) Which of the following oxidation states is most common among the lanthanoids?

(a) +4 (b) +2 (c) +5 **(d) +3**

16) The most common oxidation state of actinoids is _____.

(a) +2 **(b) +3** (c) +4 (d) +6

17) The actinoid elements which show the highest oxidation state of +7 are _____.

(a) Np, Pu, Am (b) U, Fm, Th (c) U, Th, Md (d) Es, No, Lr

18) Which one of the following is not correct?

(a) $La(OH)_3$ is less basic than $Lu(OH)_3$ (b) In lanthanoid series ionic radius of Ln^{3+} ions decreases

(c) La is actually an element of transition metal series rather than lanthanide series

(d) Atomic radii of Zr and Hf are same because of lanthanide contract

19) Which of the following compounds is colourless?

(a) Fe^{3+} **(b) Ti^{4+}** (c) Co^{2+} (d) Ni^{2+}

20) Which of the following is wrong with respect to lanthanide contraction?

(a) Decrease in ionic radii **(b) Increase in tendency to act as reducing agents** (c) Decrease in basic character

(d) Resembles second and third row of d-block elements

21) Which of the following is not coloured?

(a) Mn^{2+} **(b) Zn^{2+}** (c) Cr^{3+} (d) Cu^{2+}

22) The colour of $K_2Cr_2O_7$ and Fe^{2+} ions are respectively due to_____.

(a) Crystal defects and charge transfer spectra (b) d-d transition and charge transfer spectra

(c) Charge transfer spectra and crystal defects **(d) Charge transfer spectra and d-d transition**

23) The reaction of aqueous $KMnO_4$ with H_2O_2 in acidic condition gives_____.

(a) Mn^{4+} and MnO_2 (b) Mn^{4+} and O_2 **(c) Mn^{2+} and O_2** (d) Mn^{2+} and O_3

24) Sometimes vessels made of copper or bronze show traces of green colour. This is due to the formation of _____.

(a) $Cu(OH)_2$ (b) $CuCO_3$ **(c) $Cu(OH)_2CuCO_3$** (d) $Cu(OH)_2CuSO_4$

25) On oxidation with $KMnO_4$ in acidic medium, SO_2 is oxidised to _____.

(a) SO_2 **(b) H_2SO_4** (c) SO_3^{2-} (d) H_2S

26) Electrode potential of M^{2+}/M for Ni is abnormal because of _____.

(a) high $lE_1 + E_2$ (b) high hydration energy (c) ΔH atomisation **(d) Electronic configuration of Ni^{2+}**

27) Coinage metals are _____.

(a) normal metals **(b) transition metals** (c) active metals (d) alkali metals

28) Except _____ all element from Rf to Cn, are synthetically prepared and have very low half life periods.

(a) cadmium **(b) actinium** (c) yttrium (d) cadmium

29) The electronic configuration of Sc is _____.

(a) [Ar] $3d^1$ $4s^2$ (b) [Ar] $3d^2$ $4S^1$ (c) [Ar] $3d^5$ $4S^1$ (d) [Ar] $3d^3$ $4S^1$

30) The general electronic configuration of d-block elements can be written as _____.

(a) [Noble gas]n - $1d^{1-10}$ ns^{1-2} (b) [Noble gas]n - $1d^{-10}$ n^{1-6} (c) [Noble gas]n - 2 d^{10} ns^{1-2} (d) [Noble gas]n - 2 d^{10} ns^{1-6}

31) The transition element which has only + oxidation state is _____.

(a) Ni (b) Mn (c) Cr **(d) Sc**

32) Select the wrong statement.

(a) All cuprous salts are blue in colour. (b) Transition metals are highly reactive.

(c) All cuprous salts are white in colour (d) Mercury is a liquid metal.

33) Paramagnetism is the property of _____.

(a) Paired electrons (b) Completely filled electronic subshells **(c) Unpaired electrons**

(d) Completely vacant electronic subshells

34) d-block elements form colored ions because _____.

(a) They absorb some energy for d-s-transition. (b) They absorb some energy for p-d-transition.

(c) They absorb some energy for d-d-transition. (d) They do not absorb energy.

35) Formation of colored ions is possible when compounds contains _____.

(a) Paired electrons **(b) Unpaired electrons** (c) Lone pair of electrons (d) None of the above

36) Potassium permanganate on heating gives _____.

(a) Potassium maganate (b) Manganese heptoxide (c) Manganous sulphate (d) Potassium sulphate

37) Potassium permanganate oxidises H_2S to _____.

(a) Sulphuric acid (b) Sulphur dioxide **(c) Sulphur** (d) Sulphur trioxide

38) Which one of the following ions is the most stable in aqueous solution?

(a) V^{3+} (b) Ti^{3+} (c) Mn^{3+} **(d) Fe^{3+}**

39) Among the following, the compound, that is both paramagnet and colored is _____.

(a) $K_2Cr_2O_7$ (b) $(NH_4)_2[TiCl_6]$ **(c) $VOSO_4$** (d) $K_3[Cu(CN)_4]$

40) Name the gas that can readily decolourise acidified $KMnO_4$ solution _____.

(a) NO_2 (b) P_2O_5 (c) CO_2 **(d) SO_2**

41) Which one is incorrect for d-block elements forming complexes?

(a) They are small and highly charged (b) They have vacant low energy orbitals **(c) They can form coloured ions**

(d) Their orbitals accept an electron pair donated by other groups

42) Which ion shows a μ of 5.91 BM?

(a) Mn^{2+} (b) Ti^{3+} (c) Cr^{3+} (d) Cu^{2+}

43) Which one of the following can be used to making the medium for acidic $KMnO_4$?

(a) HCl (b) HNO_3 **(c) H_2SO_4** (d) both a and b

44) The lanthanide contraction is due to _____.

(a) Perfect shielding of 4f electron **(b) imperfect shielding of-4f electron** (c) Perfect shielding of 3d electron

(d) Imperfect shielding of 3d electron

45) Which one of the following is not an an actinide?

(a) Uranium (b) Curium (c) Californian **(d) Erbium**

46) The correct order of ionic radii of Y^{3+}, La^{3+}, Eu^{3+} and Lu^{3+} is _____.

(a) $La^{3+} < Eu^{3+} < Lu^{3+}$ Y^{3+} (b) $Y^{3+} < La^{3+} < Eu^{3+} < Lu^{3+}$ **(c) $Y^{3+} < Lu^{3+} < Eu^{3+} < La^{3+}$** (d) $Lu^{3+} < Eu^{3+} < La^{3+} < Y^{3+}$

47) Which one of the following is not correct?

(a) Along the lanthanide series covalent character increases (b) Basic character decreases from La^{3+} to Lu^{3+}

(c) Ionic size increases from La^{3+} to Lu^{3+} (d) Reducing behaviour decreases from La^{3+} to Lu^{3+}

48) Ionisation enthalpy of Nickel is 2490 KJ mol^{-1} and that of platinum is 2655 KJ mol^{-1} hence which is more stable_____.

(a) Ni^{+2} **(b) Pt^{2+}** (c) Same stability (d) None

49) Along the transition series melting point _____.

(a) increases (b) decreases **(c) first increases, then decreases** (d) first decreases, then increases

50) Which one of the following is used to estimate hydrogen peroxide?

(a) $K_2Cr_2O_7$ **(b) $KMnO_4$** (c) $CuSO_4$ (d) Ag_2O