CHEMISTRY

BOOKS - NIKITA CHEMISTRY (HINGLISH)

D-AND F-BLOCK ELEMENTS

MULTIPLE CHOICE QUESTIONS

1. Which of the following has mximum number of unpaired electrons ?

A. Fe^{3+}

B. Fe^{2+}

C. Co^{2+}

D. Co^{2+}

Answer: A

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2. The number of incomplete shells in transition elements are

A. 0

B. 1

C. 2

D. 3

Answer: C

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3. The number of transition series in the periodic table are

A. 4

B. 3

C. 5

D. 2

Answer: A

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4. The first elements of first, second and third transition series respectively are

A. Zn, Cd, Hg

B. Sc, Y, La

C. Cu, Ag, Au

D. Sc, Y, La

Answer: B

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5. The lightest transition element is

A. Hg

B. Sc, Y, La

C. Fe

D. Ti

Answer: B

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6. Which of the following has maximum I.E ?

A. Zn

B. Mn

C. Co

D. Ni

Answer: A

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7. The electronic configuration of $._{46}Pd$ is :

A. $4s^2 3d^8$

B. $4s^1 3d^9$

C. $5s^0 4d^{10}$

D. $5s^2 4d^8$

Answer: C

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8. First I.E. 5d elements are higher than those of 3d and 4d elements. This is due to

1) greater effective nuclear charge action on outer valence electrons.

2) greater effective nuclear charge is experience because of weak shielding effect of 4-f orbitals

A. only 1

B. only 2

C. 1 and 2

D. none is correct

Answer: C

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9. Pick out the incorrect statement for transition metals,

A. They from alloys

B. transition metals do not exhibit variable oxidation states

C. transition metal ions are colloured

D. transition metals and majority of their compounds are paramagnetic.

Answer: B

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10. Select incorrect statement (s)

A. NI^{2+} compounds tends to be thermodynamically more stable thean Pt^{2+}

B. PT^{4+} compounds are relatively more stable than Ni^{4+} compounds

C. K_2PtCl_6 exist

D. K_2NiCl_6 exist

Answer: D

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11. Pick out the incorrect statement for transition metals

A. they have low melting and boiling points (or low enthalpies of atomization)

B. 5d-elements have higher energies than 3d or 4d-elements

C. Zr and Hf have almost identical atomic and ionic radii

D. thtey form interstitial compounds.

Answer: A

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12. Magnetic moments $2.84B.\ M$ is given by :

(At. nos. ni = 28, Ti = 22, Cr = 24, Co = 27).

A. Ni^{2+}

B. Ti^{3+}

C. Cr^{2+}

D. Co^{2+}

Answer: A

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13. Which one of the following statements is not true?

A. Transition metals form alloys

B. Transition metals from complexes

C. Zn, Cd and Hg are transition metals

D. $K_2[PtCl_6]$ is a well known compound, but corresponding nickel compound is not known

Answer: C

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14. Non-stoichiometry is shown

1) due to variable valency of transition metals

2) due to defect in solid structure

3) reducing nature

Correct statemet (s) is /are

A. 1,2

B. 1,3

C. 2,3

D. 1,2,3

Answer: A

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15. Number of unpaired electrons increases in 3d series up to

A. Sc to Co

B. Sc to Mn

C. Sc to Ni

D. Sc to Cu

Answer: B

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16. The first ionisation energies of the elements of the first transition series $(Ti \rightarrow Cu)$

A. increases as the atomic number increases

B. decreases as the atomic number increases

C. do not show any change as the addition of electrons takes place in the inner (n-1) d-orbitals

D. increases from Ti to Mn and then decreases from Mn to Cu..

Answer: A

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17. Which one of the following ions has the highest megnetic moment ?

A. Mn^{2+}

B. Ti^{4+}

C. Mn^{7+}

D. V^{5+}

Answer: A

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18. Equivalent weight of $KMnO_4$ when it is convert into $MnSO_4$ is

A. M/5

B. M/6

C. M/3

D. M/2

Answer: A

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19. Wh ich of the following is weak reducing agent ?

A. Nickel

B. Scandium

C. Copper

D. Titanium

Answer: C

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20. Which of the following has highest ionic radii

A. Cr^{3+}

B. Mn^{3+}

C. Fe^{3+}

D. Co^{3+}

Answer: A

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21. Which of the following set has all the coloured ions ?

A. Cu^{+}, Cu^{2+}, Ni^{2+}

B. $Cu^{2+}, Ca^{2+}, Sc^{2+}$

C. $Cu^{2+}, Fe^{2+}, Co^{2+}$

D. Na^{+}, Mg^{2+}, Al^{3+}

Answer: C

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22. Which of the following statements is not true in regard to transition elements

A. They readily form complex compounds

B. They show variable valency

C. All their ions are colourless

D. Their ions contain partially filled d-electron levels

Answer: C

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23. Transition elemtns are coloured

A. Due to small size

B. Due to metallic nature

C. Due to unpaired d-electrons

D. All of these

Answer: C

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24. Which of the following alloys contain (s) Cu and Zn?

A. Bronze

B. Steel

C. Alnico

D. Brass

Answer: D

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25. Transition metals are often paramagnetic due to

A. Their high m.p. and b.p.

B. The presence of vacant orbitals

C. The presence of one or more upaired electrons in the system

D. Their being less electropoitive than the elements of groups I-A and II-A

Answer: C

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26. Which of the following elements forms stable di-nuclear ions?

A. Zn

B. Cd

C. Hg

D. Fe

Answer: C

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27. Lower oxidation state in transition metals are stabilized by

A. CO

B. O

C. I

D. Br

Answer: A

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28. B.M is equal to

A. $\frac{eh}{2\pi mc}$

B. $\frac{eh}{4\pi mc}$

C. $\frac{eV}{4\pi mc}$

D. $\frac{eV}{2\pi mc}$

Answer: B

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29. Spin only of Mn^{2+} is

A. 7 B. M

B. 6 B.M

C. 1.5 B.M

D. 5.9 B.M

Answer: D

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30. Which of the following is highest paramagnetic

A. Mn

B. Zn

C. Cu

D. Co

Answer: A

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31. Colour of Cu_2O is due to

A. d-d transition

B. charge transfer

C. f-f transition

D. geometry of Cu_2O

Answer: B

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32. An increase in both atomic and ionic radii with atomic number occurs in any group of the perioidc table and in accordance with this, the ionic radii of Ti (IV) and Zr (IV) ionc are 0.68 A° and $0.74A^{\circ}$ respectively, but for Hf (IV) ion the ionic radius of $0.75 A^{\circ}$, which is almost the same as that for Zr (IV) ion. This is due to

A. greater degree of covalency in compounds of Hf^{4+}

B. alntanide contraction

C. difference in the coordination number of Zr^{4+} and Hf^{4+} in their compounds

D. actinide contraction.

Answer: B

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33. Amongest the following, the lowest degree of paramagnetism per mole of the compound at 298 K will be show by.

A. $MnSO_4$

B. $CuSO_4$

C. $FeSO_4$

D. $NiSO_4$

Answer: B

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34. Alloy forming tendency of transition element is due to

A. large difference in atomic size

B. small difference in atomic size

C. more number of oxidation state

D. defect in their crystal lattice

Answer: B

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35. Elements which generally exhibit multiple oxidation states and whose ions are usually coloured are

A. Metalloids

B. Transition elements

C. Non-metals

D. Gases

Answer: B

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36. Which is wrong about transition metals?

A. They form complexes

B. They show variable valency

C. All transition metla compounds are paramagnetic

D. They from coloured ions

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37. Which of the following elements does not belong to the first transition series?

A. Fe

B. V

C. Ag

D. Cu

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38. Transition elements, in general, exhibit the following properties, except one. Name that property

A. variable oxidation property

B. naturela radioactivity

C. tendency to form complexes

D. formation of alloys

Answer: B

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39. Which of the following ions is coloured in solution ?

A. Zn^{2+}

B. Ti^{4+}

C. Cu^{+}

D. V^{2+}

Answer: D

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40. The maximum magnetic moment is shown by the ion with electronic configuration

A. $3d^8$

B. $3d^5$

C. $3d^7$

D. $3d^9$

Answer: B

41. The highest oxidation state is shown by transition element s with electronic configuration

A. $3d^8 4s^2$

B. $3d^5 4s^1$

C. $3d^5 4s^2$

D. $3d^3 4s^2$

Answer: C

42. Which radical can bring about the highest oxidation state of a transition metal ?

A. F^{-}

B. Cl^{-}

C. Br^{-}

D. I^{-}

Answer: A

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43. Ziegler-Natta catalyst is:

A. Pt / PtO

B. $TiCl_4 / Al(C_2H_5)_3$

C. Pt / Rh

D. Pt

Answer: B

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44. Zeigler-Natta catalyst is used

A. in the polymerization of ethene to produce polyethene

B. for oxidizing alcohols to aldehydes

C. in the polymerization of alkyne to give benzene

D. in the Ostwald process for converting NH_3 into NO

Answer: A

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45. Resemblance between Nb and Ta is because they

A. belong to same group of perioidc table

B. have the same mineral source

C. have almost same ionic and covalent radii

D. are transition metals

Answer: C

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46. The most stable oxidation state of chromium is

A. $+6$

B. $+4$

C. $+3$

D. $+2$

Answer: A

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47. Which of the following states is strong reducing agent?

A. $Cr(+III)$

B. $Cr(+VI)$

C. $Mo(+Vi)$

D. $MO(+III)$

Answer: D

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48. The most stable oxidation state for Mo and W are respectively

A. $+6, +6$

B. $+6, +5$

C. $+3, \ +3$

D. $+3, \ +6$

Answer: A

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49. Manganese show oxidation state from $+2$ to $+7$. The most oxidizing state known in aqueous solution is

A. $+2$

B. $+3$

C. $+4$

D. $+7$

Answer: D

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50. Ag^{+} is isoelectronic with

A. Cu^{2+}

B. Zn^{2+}

C. Cd^{2+}

D. Pd^{2+}

Answer: C

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51. The Cu^2 having $3d^9$ congiguration,Cu^+ having $3d^{10}$ configuration. The Cu^{2+} is ,

A. is more stable

B. is less stable

C. is equally stable

D. stability depends upon the nature of copper salt

Answer: B

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52. $CuCl_2$ is used as catalyst in

A. the conversion of $(CH_3)_2SiCl_2$ to linear silicones

B. making Cl_2 fom HCl in Deacon's process

C. the oxidation of the following metals does not dissolve in aqua-regia ?

D. in oxidation of alcohols

Answer: B

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53. Maximum atomization enthalpy is found in

A. Mn

B. Fe

C. Zn

D. V

Answer: D

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54. For which element of first transition series th oxisation potential value $(M \rightarrow M^{2+} + 2e^{-})$ is lowest

A. Mn

B. Fe

C. Ni

D. Cu

Answer: D

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55. The aqueous solutions of the following salts will be coloured in case of

A. $Zn(NO_3)_2$

B. $Co(NO_3)_2$

C. $CrCl_3$

D. both $Co(NO_3)_2$ and $CrCl_3$

Answer: D

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56. Soft d-block elements occurs as

A. silphide ore

B. oxide ore

C. nitride ore

D. hydroxide ore

Answer: A

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57. Mercury is the only metal which is liquid at $0^{\circ} C$. This is due to its

A. very high ionization energy and weak metallic bond

B. low ionization potential

C. high atomic mass

D. high vapour pressure

Answer: A

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58. Which of the following compounds is not coloured ?

A. AgBr

B. AgI

C. Cu_2O

D. $ZnCl_2$

Answer: D

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59. Which metal has highest density ?

A. Pt

B. Hg

C. Os

D. Ir

Answer: C

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60. The number of unpaired electrons in ferrous ion is

A. 5

B. 4

C. 3

D. 2

Answer: B

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61. The element with lowest melting and boiling point is

A. Ti

B. Cu

C. Zn

D. V

Answer: C

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62. Fe, Co nad Ni have valuable catalytic properties in process involbing

A. Inorganic compound

B. Oxidation

C. Hydrogenation

D. Compounmds of hydrogen

Answer: C

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63. Oxidation state of in Fe_3O_4 is

A. $+3$

B. $+8$

C. $+8/3$

D. $+3/8$

Answer: C

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64. Which of the following compounds is not coloured ?

A. $CuCl$

B. $CuBr$

C. $CuSO_4$

D. CuI

Answer: A

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65. Which of the following statement is not correct about transition metals

A. They have low M.P

B. They shows variable O.S

C. They tend to adopt closely packed structures

D. They have high lattice energy

Answer: A

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66. The valence shell electronic configuration of Cr^{2+} ion is

A. $4s^0 3d^4$

B. $4s^2 3d^2$

C. $4s^2 3d^0$

D. $3p^6 4s^2$

Answer: A

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67. In the first transition series, the highest b.p. and m.p. is of

A. Cr

B. V

C. Ni

D. Fe

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68. Which of the following is for oxidatin of SO_2 to SO_3 in contact process ?

A. MnO_2

B. $CuCl_2$

C. V_2O_5

D. Fe and Mo

Answer: A::C

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69. Amongst Cu^{+1}, Fe^{+2} and Cr^{+3}

(At. No. $Cu = 29$, $Fe = 26$, $Cr = 24$)

A. Cu^{+1} is colourless, Fe^{+2} and Cr^{+3} are coloured

B. all are coloured

C. all are colourless

D. only Cr^{+3} is coloured, Cu^{+1} and Fe^{+2} are colourless

Answer: A

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70. In the following transition elements, the lowest m.p. and b.p.

A. Hg

B. Cr

C. Cu

D. Fe

Answer: A

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71. Manganese belongs to

A. 1^{st} transition series

B. 2^{nd} transition series

C. 3^{rd} transition series

D. 4^{th} transition series

Answer: A

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72. Colour of the Cu_2O is due to

A. d-d transition

B. p-p transition

C. charge transfer

D. f-f transition

Answer: C

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73. Which of the following ion is coloured ?

A. Sc^{3+}

B. Zn^{3+}

C. Cu^{1+}

D. Cr^{3+}

Answer: D

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74. The transition metals have last electron entering into (n-1) d-orbital, where d-orbital are degenerate. Colour of transition metal ions is due to absorption of light of some wavelength. This result in transition of electron which is

A. d-s transition

B. d-d transition

C. d-p transition

D. both 'a' and 'b'

Answer: B

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75. Transition elements have greater tendency to form complexes because

A. they contain partially filed d-orbitals

B. nuclear charge to atomic size ratio is quite high

C. both 'a' and 'b'

D. they ar metals and all metals form complexes

Answer: C

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76. The electron which take part in order to exhibit variable oxidation states by transition metals are

A. ns electrons

B. (n-1) d-electrons

C. ns and (n-1) d-electrons

D. (n+1) d-electrons

Answer: C

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77. Variable oxidation state is shown by

A. normal elements

B. metallic elements

C. nonmetallic elements

D. transition elements.

Answer: D

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78. Which of the following is wrong about interstitial compounds ?

A. their M.P. is higher than parent metals

B. their density is higher than parent metals

C. their hydrides are powerful reducing agent than parent metals.

D. these are neither ionic nor covalent

Answer: B

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79. The number of d-electrons retained in Fe^{2+} (At. No. Fe=26)` ions are:

A. 3

B. 2

C. 4

D. 5

Answer: C

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80. The colour of transition metal ion is attributed to:

A. small-size of metla ions

B. absorption of light in UV region

C. complete ns sub-shell

D. incomplete (n-1) d orbital

Answer: D

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81. Which one of the following ions is colourless ?

A. Cu^{+}

B. Co^{2+}

C. Ni^{2+}

D. Fe^{3+}

Answer: A

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82. Which of the following transition metal ion will have magnetic moment ?

A. Sc^{3+}

B. Ti^{3+}

C. Cu^{+}

D. Zn^{2+}

Answer: B

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83. If n is the number of unpaired electrons, the magnetic moment (in BM) of transition metal/ion is given by

A. $\sqrt{n(n+2)}$

B. $\sqrt{2n(n+1)}$

C. $\sqrt{n(n-2)}$

D. $\sqrt{n2(n-1)}$

Answer: A

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84. Which is the set of non stoichiometric compounds

A. $NaCl, FeO, MgCl_2$

B. $Fe_3, O_4, NaCl, CuS$

C. Fe_3H, TiC, VH

D. $CuCL, CuS, MgO$

Answer: C

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85. Which of the following has highest ionisation energy ?

A. Cr

B. Zn

C. V

D. Fe

Answer: B

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86. A transition element X has a configuration $[Ar]3d^4$ in its $+3$ oxidation state. Its atomic number is

A. 25

B. 26

C. 22

D. 19

Answer: A

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87. Fe^{+3}

A. is isoelectronic with Cu^{2}

B. is isoelectronic with Co^{2+}

C. is isoelectronic with Mn^{2+}

D. is isoelectronic with Ni^{2+}

Answer: C

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88. Which of the following is not correct about transition metals

A. Their melting and boiling points are high

B. Their compounds are generally colured

C. They can form ionic or covalent compounds

D. They do not exhibit variable valency

Answer: D

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89. Ground state electronic configuration of Cr atom is :

A. $[Ar], 3d^5 4s^1$

B. $[Kr], 4d^{10} 5s^2$

C. $[Ar], 3d^6 4s^0$

D. $[Ne], 3s^2 3p^5$

Answer: A

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90. The aqueous solution of the following salts will be coloured in the case of

A. $Zn(NO_3)_2$

B. $Co(NO_3)_2$

C. $Cu(NO_3)_2$

D. both b and c

Answer: D

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91. The no. of unpaired electrons in Mn^{7+} ions (At. No of Mn =25) is

A. 0

B. 1

C. 2

D. 3

Answer: A

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92. The first and last element of the second transition series respectively are

A. Y, Cd

B. La, Hg

C. Cd, Y

D. none of the above

Answer: A

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93. The highest oxidation state of Mn is shown by

A. $Kmno_4$

B. K_2MnO_4

C. MnO_2

D. Mn_2O_4

Answer: A

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94. Number of unpaired electrons present in $\left[Ni(H_2O)_6\right]^{2+}$

A. zero

B. 2

C. 4

D. 8

Answer: B

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95. Zinc does not show variable valency Because of:

A. complete d subshell

B. iocomplete d subshell

C. $4s^2$ sub shell

D. non of the above

Answer: A

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96. Common oxidation state of Scandium, a transition element is /are (At. No =21)

A. $+4$

B. $+1$

C. $+2 \text{ and } +3$

D. $+4$ and $+1$

Answer: C

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97. Oxidation number of osmium (Os) in OsO_4 is

A. $+4$

B. $+6$

C. $+7$

D. $+8$

Answer: D

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98. The purple colour of $\left[Ti(H_2O)_6\right]^{+3}$ ion is due to

A. unpaired d-electron

B. transfer of an electron

C. presence of water molecules

D. all of them

Answer: A

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99. From $+6$ to $+1$ oxidation state is shon by the element of ...... group

A. V-B

B. VI-B

C. VII-B

D. VIII

Answer: B

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100. Zn and Hg do not show variable valency like $d-$ block elements because-

A. They are soft

B. Their d-shells are complete

C. They have only two electrons in the outemost subshell

D. Their d-shell are incomplete

Answer: B

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101. The number of unpaired electrons in cobalt atoms is (atomic number of Co= 27)

A. 2

B. 3

C. 4

D. 1

Answer: B

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102. Cuprous ion is colourless, while cupric ion is colured because

A. both have half filled p and d-orbitals

B. coprous ion has incomplete d-orbital and cupric ion has complete d-orbitals

C. both have unpaired electrons in d-orbitals

D. cuprous ion has a complete d-orbital and cupric ion has an incomplete d-orbitals

Answer: D

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103. The valence shell of transition element consists of

A. nd-orbitals

B. $(n-1)$ d-orbitals

C. ns nd-orbitals

D. $(n-1)$ d ns-orbitals

Answer: D

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104. Transition metal usually exhibit highest oxidation states in their

A. chlorides

B. hydrides

C. fluorides

D. iodides

Answer: C

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105. The catalytic activity of the transition metals and their compound is ascribed to:

A. their chemical reactivity

B. their unfilled d-orbitals

C. their ability to adopt multiple oxidation states in their complex ion

D. none of these

Answer: C

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106. In the ground state, an element has 13 electrons in its 'M' shell. The element is

A. Cu

B. Mn

C. Ni

D. Fe

Answer: B

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107. In the ground state configuration of Co, how many electrons are present in 'M' shell ?

A. 13

B. 2

C. 15

D. 3

Answer: C

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108. If the colours of salts of transition elements are due to the presence of unpaired electrons in the transition metal ions, which of the following ions will be colourless in aqueous solution

A. Ti^{3+}

B. Ti^{4+}

C. Fr^{2+}

D. Fr^{3+}

Answer: B

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109. The transition elements are so named because

A. they shows reducing property

B. their properties are similar to other elements

C. their properties are different from other elements

D. they have party filled d-orbitals

Answer: D

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110. The atomic radii of transition series elements

A. increas as thatomic number increases.

B. decrease as atomic number increases.

C. remains almost constant.

D. increase as atomic mass decreases.

Answer: B

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111. Which one of the following elements exhibits highest valency ?

A. Mn

B. Os

C. W

D. Mo

Answer: B

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112. Which one of the following statements is false ?

A. Lead is a non-transition lelements

B. Chrominum is a transition elements

C. Sodium is a non-transition elements

D. Zinc is a inner transition elements

Answer: D

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113. Which of the following ions has d^5 electronic configureation ?

A. Cr^{2+}

B. Co^{3+}

C. Mn^{3+}

D. Fe^{3+}

Answer: D

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114. Which of the following ions is colourless ?

A. $V^{3+}(Z=23)$

B. $Cu^{2+}(Z=29)$

C. $Ti^{4+}(Z=22)$

D. $Fe^{2+}(Z=26)$

Answer: C

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115. maximum number of variable oxidation state in a transition series are exhibited by

A. extreme left elements

B. exterme right elements

C. middle elements

D. all transition elements

Answer: C

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116. Which of the following metals exhibits more than one oxidation state ?

A. Fe

B. Zn

C. Cr

D. Both (a) and (x c)

Answer: D

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117. Which of the following species is expected to be paramagnetic ?

A. Zn^{2+}

B. Cu^{+}

C. Cu^{2+}

D. H_2

Answer: C

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118. The density of Sc is

A. $2.99gm/ml$

B. $5.96gm/ml$

C. $8.99gm/ml$

D. $4.90gm / ml$

Answer: D

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119. In first transition series, the melting point of Mn is low because

A. Due to d^{10} configuration, metallic bonds are strong

B. Due to d^{7} configuration, metallic bonds are weak

C. Dur to d^{5} configuration, metallic bonds are weak

D. none of these

Answer: C

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120. Of the ions Zn^2, Ni^{2+} and Cr^{3+} [atomic number of $Zn = 30, Ni = 28, Cr = 24$]

A. Zn^{2+} is colourless and Ni^{2+} and Cr^{3+} are coloured

B. all three are coloured

C. all three are colourless

D. Ni^{2+} is coloured and Zn^{2+} and Cr^{3+} are colourless

Answer: A

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121. Paramagnetism is exhibited by molecules which

A. not attracted in a magnetic field

B. carrying a positive charge

C. containing unpaired electrons

D. containing only paired electrons

Answer: C

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122. Which one of the following is transition element ?

A. Mg

B. Ca

C. Ni

D. Na

Answer: C

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123. Which of the following is a colourless ion?

A. Cu^{+2}

B. Fe^{+3}

C. Ti^{+3}

D. Zn^{+2}

Answer: D

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124. If a compund absorbs orange colour from the white light, then the observed colour of the compound is

A. yellow

B. orange

C. blue

D. violet

Answer: C

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125. The atomic radii of transition elements in a period are.

A. smaller than those of s-block as well as p-block elements

B. greater than those of s-block as well as p-block elements.

C. smaloler than toose of s-block but greater than those of p-block elements.

D. greater than thiose of s-block but smaller than those of p-block

Answer: C

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126. Which of the following d-block elements has d^{10} configuration ?

A. Cu, Ag, An

B. Zn, Cd, Hg

C. Fe, Co, Ni

D. Ru, Rh, Pd

Answer: B

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127. The ore cromite contsins FeO and

A. CrO_3

B. $ZnCO_3$

C. Cr_2O_3

D. CrO_4

Answer: C

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128. An atom with atomic number 21 belongs to the category of

A. s-block elements

B. p-block elements

C. d-block elements

D. f-block elements

Answer: C

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129. The highest magnetic moments is shown by the transition metal ion with the outermost electronic configuration is:

A. $3d^2$

B. $3d^5$

C. $3d^7$

D. $3d^9$

Answer: B

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130. Which of the following pair of ions have the same number of unpaired electrons

A. Ni^{+2}, Co^{+2}

B. Mn^{+2}, Fe^{+3}

C. Mn^{+2}, Ni^{+2}

D. Ti^{+3}, Co^{+2}

Answer: B

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131. A transition element X has a configuration $[Ar]3d^4$ in its $+3$ oxidation state. Its atomic number is

A. 25

B. 26

C. 22

D. 10

Answer: A

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132. The maximum number of transition metal elements that can be accommodated in any series

A. 4

B. 6

C. 8

D. 10

Answer: D

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133. The pair of atoms with anomalous (exceptional) electron congigurations

A. Cu, Cr

B. Cu, Zn

C. Cr, Cd

D. Cr, Zn

Answer: A

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134. The transition metals possess strong binding jforce because of

A. unfilled 'p' orbital

B. incomplest 'd' orbitals

C. filled 'd' orbitals

D. filled 's' and 'dd orbitals

Answer: B

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135. Least paramagnetic property is shown by

A. Fe

B. Mn

C. Ni

D. Cu

Answer: D

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136. Transition metals from

A. Ionic bonds

B. Ionic, covalent and coordinate covalent bonds

C. Covalent bonds

D. Vordinate covalent bonds

Answer: B

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137. Which one of the following represents the electronic configuration of 2^{nd} transition elements

A. $4d^{10}, 5s^2$

B. $4d^{1-10}, 5s^{0-2}$

C. $4f^{14}, 5d^{1-10}, 6s^{2}$

D. $5f^{14}, 5d^{10}, 7s^{2}$

Answer: B

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138. Transition metals are less reactive because of their

A. high ionization potential and low m.p.

B. high inization potential and high m.p.

C. low ionization potential with low m.p.

D. low inization potential and high m.p.

Answer: B

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139. The number of d-electrons in Fe^{+2} ion is equal to that of

A. d-electrons in Ni^{2+}

B. d-electrons in V^{2+}

C. d-electrons in CO^{3+}

D. d-electrons in Cr^{+}

Answer: C

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140. Which one of the following is an example of non-typical transition elements?

A. Li, K, Na

B. Be, Al, Pb

C. Zn, Cd, Hg

D. Ba, Ca, Sr

Answer: C

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141. Transition metal exhibits an oxidation state grater than $+2$ due to loss of

A. p-electron

B. s and p-electrons

C. p and d-electrons

D. s and d-electrons

Answer: D

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142. The stable oxidation state likely to be shown by first row transition metals is

A. Cr^{3+}

B. V^{3+}

C. Co^{4+}

D. Mn^{7+}

Answer: D

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143. Interstitial compounds are formed by

A. Fe, Co

B. Co, Ni

C. Fe, Ni

D. all of thes

Answer: D

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144. The pair of elements which can show +1 odidation state.

A. Cr, Zn

B. Fe, Zn

C. Cr, Cu

D. Cu, Zn

Answer: C

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145. Transitions elements show generally positive oxidation state due to

A. large atomic size

B. low inization energy

C. low electronegativity

D. high electronegativity

Answer: C

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146. The most stable oxidation state of copper is

A. $+1$

B. $+2$

C. $+3$

D. $+4$

Answer: A

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147. The common oxidation state of transition elements is

A. $+2$

B. $+4$

C. $+3$

D. $+7$

Answer: A

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148. Which of the following transition elements does not exhibit variable oxidation states ?

A. Sc

B. Fe

C. Ni

D. Zn

Answer: D

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149. The transition element that has stable condifuration in $+1$ oxidation state is

A. Cu

B. Zn

C. Sc

D. Mn

Answer: A

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150. Which of the following is not used as a catalyst ?

A. Fe

B. Ni

C. Pt

D. Cl_2

Answer: D

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151. the catalyst used in the hydrogenation of oils is :

A. Zn

B. Ni

C. Mo

D. Fe

Answer: B

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152. Which of the following ions is paramagnetic ?

A. Cu^{+}

B. Zn^{+2}

C. Ti^{+3}

D. Ti^{+4}

Answer: C

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153. In which of the following ions, d-d transition is not possible

A. Ti^{4+}

B. Cr^{3+}

C. Mn^{2+}

D. Cu^{2+}

Answer: A

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154. The lowest magnetic moment is shown by the transition metal ion with the configuration

A. $3d^2$

B. $3d^3$

C. $3d^7$

D. $3d^9$

Answer: D

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155. The magnetic nature of Zn^{+2}

A. diamagnetic

B. paramagnetic

C. ferro magnetic

D. none

Answer: A

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156. Which of the following atom would be rappled by magnetic filed ?

A. Ti

B. Cr

C. Ni

D. Zn

Answer: D

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157. The number of unpaired electrons in Zn^{2+} is

A. 2

B. 3

C. 4

D. 0

Answer: D

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158. One of the following is diamagnetic

A. Cu

B. Cu^{+}

C. Cu^{2+}

D. all the above

Answer: B

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159. The common oxidation states of Ti are

A. $+2$

B. $+3$

C. $+4$

D. $+5$

Answer: C

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160. Transition metals:

A. exhibit diamagnetism

B. undergo inert pair effect

C. do not form alloys

D. show variable oxidation states

Answer: D

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161. Among $TiF_6^{2-}, CoF_6^{3-}, Cu_2C1_2$ and $NiC1_4^{2-}$ (At. No. $Ti = 22, Co = 27, Cu = 29, Ni = 28)$, the colourless species are -

A. CoF_6^{3-} and $NiCl_4^{2-}$

B. TiF_6^{2-} and $NiCl^4$ ^ (2 -)

C. Cu_2Cl_2 and $NiCl_4^{2-}$

D. TiF_6^{2-} and Cu_2Cl_2

Answer: D

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162. Mercury is the only metal which is liquid at $0^{\circ} C$. This is due to its

A. very high ionization energy and weak metallic bond

B. Low inisation potential

C. High atomic weight

D. High vapour pressure

Answer: A

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163. The magnetic moment (in BM) of Zn^{2+} ion according to spin-only formula is

A. zero

B. 1.73

C. 2.84

D. 3.87

Answer: A

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164. The metal ion which does not form coloured compound is

A. Cr

B. Fe

C. Zn

D. Mn

Answer: C

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165. Which of the following element has maximum, first ionisation potential?

A. V

B. Ti

C. Cr

D. Mn

Answer: D

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166. Which metal common in brass and bronze ?

A. Zn

B. Mg

C. Cu

D. Al

Answer: C

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167. The 3d-series elements ranges

A. $Z = 21 - 30$

B. $Z = 22 - 30$

C. $Z = 20 - 30$

D. $Z = 31 - 40$

Answer: A

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168. The elements which exhibit both vertical and horizontal similarities are:

A. inert gas elements

B. representative elements

C. rare elements

D. transition elements

Answer: D

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169. The number of unpaired electron in $Mn^{4+}(Z = 25)$ is :-

(a). Four

(b). Two

(c). Five

(d). Three

A. 5

B. 4

C. 3

D. 2

Answer: A

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170. Number of unpaired electrons in Fe^{3+} (Z = 26) is

A. 5

B. 6

C. 3

D. 4

Answer: A

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171. The number of unpaired electrons in a nickel atom (ground state) are (At. No. of Ni=28)

A. 2

B. 5

C. 3

D. 7

Answer: A

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172. Match list I with list II and select the correct answer using the codes given below the lists

List I	List II
Metal Ions	Magnetic moment (B,M)
$A.\ Cr^{3+}$	1. $\sqrt{35}$
$B.\ Fe^{2+}$	2. $\sqrt{30}$
$C.\ Ni^{2+}$	3. $\sqrt{24}$
$D.\ Mn^{2+}$	4. $\sqrt{15}$
	5. $\sqrt{8}$

A. $A-1, B-3, C-5D-4$

B. $A-2, B-3, C-5, D-1$

C. $A-4, B-3, C-5, D-1$

D. $A-4, B-5, C-3, D-1$

Answer: C

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173. Which of the following compounds is used at the staring material for the preparation of $K_2Cr_2O_7$?

A. Chrome alum

B. Chromo yellow

C. Chromit ore

D. Chrome red

Answer: C

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174. In $Cr_2O_7^{2-}$, $Cr - O - Cr$ bond anlge is

A. 109°

B. 126°

C. 180°

D. 90°

Answer: B

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175. Solid $KmnO_4$ on heating with H_2 forms

A. MnO

B. KOH

C. H_2O

D. all of these

Answer: D

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176. $KMnO_4$ is

A. oxidizing agent

B. reducing agent

C. both 'a' and 'b'

D. none of these

Answer: A

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177. Potassium permanganate acts as an oxidant in neutral, alkaline as well as acidic media. The final product obtained from it in three condition are respectively:

A. $MnO_2{}' MnO_2, Mn^{2+}$

B. MnO_2, Mn^{3+}, Mn^{2+}

C. $MnO_2, MnO_4^{2-}, Mn^{3+}$

D. MnO, MnO_4, Mn^{2+}

Answer: A

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178. In $Cr_2O_7^{2-}$ every Cr atom is linked to

A. one oxygen atom

B. two oxygen atom

C. three oxygen atom

D. four oxygen atom

Answer: D

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179. Acidified potassium dichromate is treated with hydrogen sulphide. In the reactiion, the oxidation number of chromium

A. Increases from $+3$ to $+6$

B. Decrease from $+6$ to $+3$

C. Remains unchanged

D. Decreases from $+6$to $+2$

Answer: B

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180. Ethylene reacts with alkaline $KMnO_4$ to form-

A. Ethanol

B. Ethane 1,2-diol

C. Ethylene glyocal

D. both 'b' and 'c'

Answer: C

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181. The yellow colour of chromates changes to orange on acidification due to the formation of

A. Cr^{3+}

B. Cr_2O_3

C. $Cr_2O_7^{2-}$

D. CrO_3

Answer: C

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182. Chromyl chloride tsts is used to detect

A. NO_2^-

B. OH^-

C. Cl^-

D. Cn^-

Answer: C

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183. The shape of CrO_4^{2-} is ....and Cr atom involves.l..hydrization.

A. square planar, dsp^2

B. tetrahedral, sp^3

C. square planar, d^2sp^3

D. linear, sp.

Answer: B

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184. Pick out the incorrect statement about $K_2Cr_2O_7$

A. It act as oxidising agent in basic medium

B. It dissolves in alkali to form chromate

C. It oxidizes $FeSO_4$ solution to $Fe_2(SO_4)_3$

D. It is used as cleansing agent for glassware etc. when mixzed with cold conc H_2SO_4.

Answer: A

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185. Pick out incorrect statemment about $K_2Cr_2O_7$.

A. It oxidazes KI to I_2

B. It oxidizes Ki to I_2

C. It oxidizes SO_2 to $K)_2SO_4$

D. It oxidizes SO_2 to S

Answer: D

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186. The addition of acidic $K_2Cr_2O_7$ to NaCl produces a colour

A. green

B. pink

C. red

D. violet

Answer: C

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187. Which of the following compounds is formed when a mixture of $K_2Cr_2O_7$ and KCl is heated with conc. H_2SO_4 ?

A. CrO_2Cl_2

B. $CeCL_3$

C. $CrOCl_2$

D. CrO_2Cl_2

Answer: A

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188. Formula of chromyl chloride is-

A. Cr_2Ocl_2

B. $CrCl_3$

C. $CrOCl_2$

D. CrO_2Cl_2

Answer: D

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189. Pick out the incorrect statement.

A. MnO_4^{2-} is quite strongly oxidizing and stable only

in very strong alkalies. In dilute alkali, water or acidic solutions , it disproportionates.

B. In acidic solutions, MnO_4^- is reduced to Mn^{2+} and thus, $KMnO_4$ is widely used as oxidizing agent

C. $KMnO_4$ does not act as oxidizing agent in alkaline medium

D. $KMnO_4$ is manufactured by the fusion of pyrolusite ore with KOH in presence of air or KNO_3. followed by electrolytic oxidation in alkaline solution.

Answer: C

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190. MnO_4^- ions can be reduced in strongly alkaline medium to give

A. MnO_2

B. Mn^{1+}

C. MnO_4^{2-}

D. MnO_3^-

Answer: C

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191. On adding $KMnO_4$ to cold conc. H_2SO_4, it gives

A. MnO_2

B. Mn_2O_3

C. Mn_2O_7

D. MnO_3.

Answer: C

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192. In acidic medium oxidation state of Mn changes from

A. $+7$ to $+2$

B. $+6$ to $+2$

C. $+3$ to $+2$

D. -5 to $+2$

Answer: A

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193. The equivalent weights of $KMnO_4$ as an oxidising agent in acidic and neutral media will be respectively (M = molecular weight of $KMnO_4$)

A. M/7 and M/2

B. M/5 and M/3

C. M/4 and M/5

D. M/2 and M/4

Answer: B

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194. When $KMnO_4$ solution is added to hot oxalic acid solution the decoloursitation is slow in the beginning but becomes instantaneous after some time. This is because

A. $MnSO_4$

B. MnO_2

C. MnO_4^{2-}

D. MnO_3^-

Answer: A

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195. Equivalent weight of $KMnO_4$ when it is convert into $MnSO_4$ is

A. M/5

B. M/6

C. M/3

D. M/2

Answer: A

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196. Acidified $KMnO_4$ solution is decolourized by

A. toluene

B. $MnSO_4$

C. H_2O_2

D. KI

Answer: C

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197. For the redox reaction,

$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$

the correct coefficients of the reactants for the balanced reaction are

A. $\begin{matrix} MnO_4^- & C_2O_4^{2-} & H^+ \\ 2 & 5 & 16 \end{matrix}$

B. $\begin{matrix} MnO_4^- & C_2O_4^{2-} & H^+ \\ 6 & 5 & 2 \end{matrix}$

C. MnO_4^- $C_2O_4^{2-}$ H^+
5 16 2

D. MnO_4^- $C_2O_4^{2-}$ H^+
2 16 5

Answer: A

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198. Potassium manganite (K_2MnO_3) is formed when

A. chlorine is passe dinto aqueous $KMnO_4$ solution

B. manganes dioxide is fused with potassium hydroxide in air

C. $MnSO_4$ is reacted whti aq. $KMnO_4$

D. K_2MnO_4 on red heat

Answer: D

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199. Which of the following statements is not true ?

A. An acidified solution of $K_2Cr_2O_7$ liberated I_2 from KI

B. In acidic medium, dichromate ion is present

C. Neutral $KMnO_4$ oxidises KI to I_2

D. Potassium dichromate is an oxidising agent

Answer: C

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200. Baeyer's reagent is:

A. $KMnO_4 + H_2SO_4$

B. $KMnO_4 + KOH$

C. $KMnO_4 + H_2O$

D. $K_2Cr_2O_7 + KOH$.

Answer: B

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201. Following ions are equilibrium at

$Cr_2O_7^{2-} \Leftrightarrow CrO_4^{2-}$

A. $pH - 4$

B. $pH - 9$

C. $pH - 7$

D. $pH - 10$

Answer: C

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202. The mineral from which potassium permagnate is manufactured

A. pyrolusite, MnO_2

B. braunite, Mn_2O_3

C. hausmannite, Mn_3O_4

D. manganite, $Mn_2.\ H_2O.$

Answer: A

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203. MnO_4^{2-} is

A. Diamagnetic

B. Ferromagnetic

C. paramagnetic

D. nonmagnetic

Answer: C

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204. The reaction, $MnO_4^{2-} + e^- \Leftrightarrow MnO_4^-$ is shifted to right in

A. an acidic medium

B. a basic medium

C. a netural medium

D. both acidic and bisic media

Answer: A

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205. Equivalent mass of $kMnO_4$ in alkaline medium is

A. 158

B. 52.6

C. 49

D. 79

Answer: B

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206. When an ecidified solution of ferrous sulphiate is treated with potassium paramagnet solution, the ion which is oxidised is

A. MnO_4^-

B. NH_4^+

C. Fe^{3+}

D. SO_4^{2-}

Answer: C

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207. The shape of MnO_4^- ion and the hybridisation of Mn in MnO_4^- is

A. sp^3

B. sp^2

C. sp

D. sp^3d^2

Answer: A

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208. MnO_4^{2-} has ______ geometry

A. Trigonal

B. Tetrahedral

C. Octahedral

D. Pyramidal

Answer: B

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209. At red heat $KMnO_4$ decompose into,

A. K_2MnO_2

B. K_2MnO_3

C. K_2SO_4

D. $KHSO_4$

Answer: B

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210. $KMnO_4$ act as oxidising agent in netural medium. It accept how many electrons to convert MnO_2.

A. 2

B. 3

C. 4

D. 5

Answer: B

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211. $KMnO_4$ is heated with conc. H_2SO_4 gives

A. Mn_2O_7

B. MnO_2

C. $MnSO_4$

D. MnO

Answer: C

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212. Molecular mass of $KMnO_4$ is

A. 158

B. 294

C. 198

D. 134

Answer: A

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213. MnO_4^{2-} can be coverted to MnO_4^{-}

1) by oxidation of Cl_2

2) by oxidation of CO_2

3) by oxidation of H_2SO_4

4) by oxidations of O_3

5) by electrochemical oxidation at anode

A. $1, 2, 3$

B. $1, 3, 5$

C. $1, 2, 3, 5$

D. $1, 2, 3, 4, 5$

Answer: D

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214. When SO_2 is passed through an acidified $K_2Kr_2O_7$ solution, the oxidation state of sulphur changes from

A. $+4$ to $+6$

B. $+6$ to $+4$

C. $+4$ to 0

D. $+4$ to $+2$

Answer: A

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215. Which one of the following is reduced by hydrogen peroxide in acid medium?

A. Potassium permagnete

B. Potassium iodide

C. Ferrous sulphate

D. Potassium ferrocyanide

Answer: A

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216. Traces of MnO_4^- in conc. H_2SO_4 may be changed to `

A. MnO_4^{2-}

B. Mn^{2+}

C. Mn_2O_7

D. MnO_3^-

Answer: B

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217. Pyrolusite in MnO_2 is used to prepare $KMnO_4$. steps are

$MnO_2 \overset{I}{} MnO_4^{2-} \xrightarrow{II} MnO_4^-$. The I and II are,

A. I=Fused with KOH/air II=electrolytic oxidation

B. I=Fused with KOH/air II=Electrolytic reduction

C. I=Fused with conc. HNO_3/air II=electrolytic oxidation

D. I=Fused with conc. HNO_3/aire II=electrolytic reduction

Answer: A

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218. Which statement is not correct

A. Potassium paramagnet is a powerful oxidising substance

B. Potassium paramagnet is a weakeer oxidising substance than potassium dichromate

C. Potassium permanganate is a stronger oxidising substance than potassium dichromate

D. Potassium dichromate oxidises a secondary alcohol into a ketone

Answer: B

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219. In acidic medium MnO_4^{2-}

A. Disproporationates to MnO_4^- and MnO_2

B. It oxidised to MnO_4^-

C. It reduced to MnO_2

D. It reduced to Mn^{2+}

Answer: A

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220. Which is not true statement about $KMnO_4$

A. it's solution is unstable in acidic medium

B. its small quantity added to conc. H_2SO_4 a solourless solution containing Mn^{2+} ion

C. MnO_4^- changes to Mn^{2+} ion in basic medium

D. it act as oxidising agent in acidic, basic and netural medium

Answer: C

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221. The product of oxidation of I^- with MnO_4^- in alkaline medium is

A. IO_3^-, MnO_2

B. I_2, MnO_4^{2-}

C. I_2, MnO_2

D. IO^-, MnO_4^{2-}

Answer: A

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222. The colour of $K_2Cr_2O_7$ changes from red-orange to lemon-yellow on treatment with $KOH_{(aq.)}$, because of:

A. The reduction of Cr^{VI} to Cr^{III}

B. The formation of chromium hydroxide

C. The conversion of dichromate to chromate

D. The oxidation of potassium hydroxide to potassium peroxide

Answer: C

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223. At $pH = 4. Cr_2O_7^{2-}$ existas

A. CrO_2^{2+}

B. CrO_4^{2-}

C. CrO_4^{2+}

D. $Cr_2O_7^{2-}$

Answer: D

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224. At $pH = 12, Cr_2O_7^{2-}$ changes to:

A. CrO_3

B. CrO_2^{2+}

C. CrO_4^{2-}

D. CrO_4^{2+}

Answer: C

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225. When $KMnO_4$ reacts with acidified $FeSO_4$

A. Only $FeSO_4$ is oxidised

B. Only $KMnO_4$ is oxidised

C. $FeSO_4$ is oxidised and $KMnO_4$ is reduced

D. none of these

Answer: C

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226. $Cr_2O_7^{2-} \xrightarrow{pH=x} CrO_4^{2-} \xrightarrow{pH=y} Cr_2O_7^{2-}$

x and y can be :

A. 4 and 5

B. 4 and 8

C. 8 and 4

D. 8 and 10

Answer: C

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227. $KMnO_4$ reacts with KI in acidic medium gives

A. $KIO_3 + MnO_2$

B. $I_2 + MnSO_4$

C. $I_2 + MnO_4^{2-}$

D. $KOI + MnO_4^{2-}$

Answer: B

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228. Acidic $KMnO_4$ oxidises SO_2 to

A. S

B. SO_3

C. H_2SO_4

D. MnSO_(4)`

Answer: C

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229. Acidic $K_2Cr_2O_7$ oxidises KI to

A. KOI

B. KOI_3

C. HI

D. I_2

Answer: D

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230. Acidic $K_2Cr_2O_7$ oxidises S_2 to K_2SO_4 and itself reduced into

A. $Cr_2(SO_4)_3$

B. CrO_3

C. H_2CrO_4

D. KOH

Answer: A

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231. f-block elements are placed in

A. 2^{nd} group, 4^{th} and 5^{th} row

B. 3^{rd} group, 6^{th} and 7^{th} row

C. 4^{th} group 4^{th} and 5^{th} row

D. 5^{th} group, 4^{th} and 7^{th} row

Answer: B

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232. $f -$ block elements (sometimes called inner transition elements) are the elements in which the last electron enters the__________orbitals.

A. electrons are edded in $(n-3)$ f shell

B. electrons are added in $(n-1)$ f shell

C. electrons are added in $(n-2)$ f shell

D. electrons are added in $(n-2)$ d shell

Answer: C

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233. f-block elemement are divided in to

A. 1 series

B. 2 series

C. 3 series

D. 4 series

Answer: B

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234. Lanthandies and actinides are

A. s-block elements

B. p-block elements

C. d-block elements

D. f-block elements

Answer: A

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235. Lanthanides are known as

A. rare earth elements

B. 4-f series elements

C. 1^{st} inner transition elements

D. all of these

Answer: D

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236. Actinides are known as

A. 5-f series elements

B. 2^{nd} inner transition elements

C. radio active elemenrts

D. all of these

Answer: D

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237. The elements present in alnthanide series are

A. 14

B. 15

C. 16

D. 17

Answer: A

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238. The elements present in actinides series are

A. 14

B. 15

C. 16

D. 17

Answer: A

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239. Lanthanum is

A. d-block element

B. f-block element

C. s-block element

D. p-block element

Answer: A

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240. 4-f series start from

A. La to Lu

B. Ce to Lu

C. Gd to Lu

D. Pr to Lu

Answer: B

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241. In 4-f series penultimate shell contain how many electrons ?

A. $d^{0 \text{to} 1}$

B. $d^{1 \text{to} 10}$

C. d^{0}

D. $d^{10 \text{to} 0}$

Answer: A

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242. In 4-f series outermost shell contains how many electrosn ?

A. 1

B. 2

C. 3

D. 4

Answer: B

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243. In 4-f series anti penultimate shell contains how many electrons ?

A. 1 to 14

B. 0 to 14

C. 2 to 7

D. 2 to 8

Answer: A

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244. In lanthanide and actinide, the penultimate shell is

A. s

B. p

C. d

D. f

Answer: C

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245. General valence shell electronic configuration of $f-$ block elements is

A. $(n-2)d^{0-1}, ns^2, (n-1)f^{0-14}$

B. $(n-2)f^{1-14}, (n-1)^{0-1}d, ns^2$

C. $(n-2)^{0-14}f, (n-1)d^0, ns^2$

D. $(n-1)f^{1-14}, (n-1)d^1, ns^2$

Answer: B

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246. The last filled orbital in lanthanides is

A. 6s

B. 5s

C. 4s

D. 3s

Answer: A

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247. The last filled orbital in actinides is

A. 6s

B. 7s

C. 5s

D. 4s

Answer: B

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248. Lantanide series arises due to

A. stability of 6s-orbitals

B. stability of 5d-orbitals

C. stability of 4f-orbitals

D. equal stability of 5d and 4f-orbitals

Answer: C

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249. Actinide series is arises due to

A. stability of 5f-orbitals

B. stability of 7s-orbitals

C. stability of 6d-orbitals

D. equal stability of 6d and 5f-orbitals

Answer: A

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250. Actinide series start from

A. Ac to Lr

B. Th to Lr

C. U to Lr

D. Cf to Lr

Answer: B

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251. Actinum is

A. f-block element

B. d-block element

C. p-block element

D. s-block element

Answer: B

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252. Which of the following is radioactive element among the 4-f series ?

A. Ce

B. Pm

C. Ho

D. Yb

Answer: B

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253. Lanthanide series start from the elements with atomic number

A. 27 to 71

B. 58 to 71

C. 56 to 70

D. 60 to 74

Answer: B

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254. The atomic number of elements of first transition series lie in the range of

A. 90 to 103

B. 89 to 103

C. 91 to 104

D. 90 to 104

Answer: A

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255. The first element of rare earth metals is

A. lanthanum

B. uranium

C. actinum

D. cericum

Answer: D

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256. Last element of lanthanide series is:

A. Yb

B. Lu

C. Lr

D. Th

Answer: B

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257. The first element in actinide series is

A. Ac

B. Th

C. Pu

D. Cm

Answer: B

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258. The last ement in actinide series is

A. No

B. Bk

C. Lr

D. Fm

Answer: C

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259. Actinum is the element of

A. transition series

B. inner transition series

C. 5f series

D. none of these

Answer: A

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260. Californium is the member of

A. 4f series

B. 5f series

C. p-block

D. d-block

Answer: B

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261. Actinides

A. are all synthetic elements

B. including elements of atomic number 104

C. have only short lived isotopes

D. have variable valency

Answer: D

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262. No is the member of 5f series. The other members of this group are

A. Th and Pm

B. Cm and Sm

C. Tm and Th

D. Am and Fm

Answer: D

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263. The position of neodymium in between

A. Eu and Tb

B. Ho and Tm

C. Pr and Pm

D. Pm and Eu

Answer: C

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264. Which of the following element belong to actinide series ?

A. La

B. Lu

C. Gd

D. Th

Answer: D

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265. The position of actinides is suggested by

A. Van Hevesy

B. Seaborg

C. Biot

D. Pasture

Answer: B

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266. Total number of transuranic elements present in periodic table are `

A. 11

B. 25

C. 29

D. 20

Answer: B

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267. First transuranium element is

A. Np

B. Uup

C. Uuo

D. Uut

Answer: A

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268. From La to Lu ionisation potential

A. decreases

B. increases

C. constant

D. first increases than decreases

Answer: B

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269. Which of the following is most electropositive

A. Yb

B. Lu

C. Sm

D. Dy

Answer: C

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270. Among the lanthanides, La^{3+} and Lu^{3+} ions are

A. paramagnetic

B. diamagnetic

C. ferromagnetic

D. all of these

Answer: B

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271. How many shells are present in lanthanide

A. 6

B. 8

C. 7

D. 5

Answer: A

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272. Completely filled shells in lanthanides are

A. first 4

B. first 2

C. first 3

D. first 5

Answer: C

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273. The last three orbitals are partially filled in which of the following ?

A. 5^{th} and 6^{th}

B. 6^{th}

C. 4^{th}

D. $4^{th}, 5^{th}, 6^{th}$

Answer: D

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274. Total number of shells in actinides

A. 4

B. 5

C. 6

D. 7

Answer: D

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275. Completely filled shells in actinides are

A. first two

B. first three

C. first four

D. first five

Answer: C

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276. Partially filled shells in actinides are

A. 6^{th} and 7^{th}

B. 6^{th}

C. 5^{th}

D. $5^{th}, 6^{th}, 7^{th}$

Answer: D

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277. The artificially prepared element from lanthanide series is

A. europium

B. thulium

C. promethium

D. gadolinium

Answer: C

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278. Lanthanum the first member of the lanthanide series has

A. only 3d-orbital is filled

B. 3d and 4d-orbitals are unfilled

C. 4d and 4f-orbitals are unifilled

D. 4f and 5d-orbitals are unfilled

Answer: D

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279. Lanthanide series belongs to

A. 6^{th} period

B. 7^{th} period

C. 5^{th}period

D. 4^{th} period

Answer: A

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280. Which of the following belong to actinide series ?

A. Cm

B. La

C. Lu

D. Gd

Answer: A

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281. Usually lanthanide forms

A. ionic compounds

B. covalent compounds

C. co-ordinate compounds

D. chelate compounds

Answer: A

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282. In actinides incoming electron enters into

A. 4f-orbital

B. 5f-orbital

C. 3f-orbital

D. 6f-orbital

Answer: B

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283. All actinides are

A. methalloid

B. inert

C. radioactive

D. nonradioactive

Answer: C

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284. The number of incomplete shells in transition elements are

A. 0

B. 1

C. 2

D. 3

Answer: D

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285. The last electron of an atom in inner transition element are called

A. s-electrons

B. p-electrons

C. d-electrons

D. f-electrons

Answer: D

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286. The individual members of the lanthanide series is called as

A. lanthanides

B. lanthanons q

C. 4f elements

D. all of these

Answer: D

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287. The individual members of the actinide series is called as

A. actinides

B. actinons

C. 2^{nd} inner transition elements

D. all of these

Answer: D

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288. Lanthanum is the first element of the lanthanide series has

A. only 6s-orbital is filled

B. 4d and 4f-orbitals are unfilled

C. 3d and 5d-orbitals are unfilled

D. 4f-and 5d-orbitals are filled

Answer: A

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289. Which of the following are not transuranium elements ?

A. Th and Pa

B. Cf and Bk

C. Md and Lr

D. Am and Np

Answer: A

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290. In case of actinides

A. first five shells are completely filled

B. first four shells are comletely filled

C. last shell is partially filled

D. last two shells are partly filled

Answer: B

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291. Element of lanthanide series belonging to

A. III A

B. III B

C. IV A

D. IV B

Answer: B

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292. Which element cannot be termed as f-block element ?

A. only Lu

B. only Lu and Ce

C. only La and Lu

D. only La and Ac

Answer: D

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293. The f-block elements are also called as

A. transition elements

B. inner transition elements

C. rare earth elements

D. both 'b' and 'c'

Answer: D

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294. The last three orbitals are partially filled in which of the following ?

A. transition elements

B. s-block elements

C. p-block elements

D. f-block elements

Answer: D

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295. 4f and 5f-series has total number of elements

A. 13

B. 12

C. 14

D. 28

Answer: D

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296. In lanthanides, the differential electron is filled in

A. sf-orbital

B. 4d-orbital

C. 6f-orbital

D. 4f-orbital

Answer: D

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297. Which of the following 5f-series elements has fully filled 5f-orbitals ?

A. Only nobelium and americium

B. Only nobelium and lawrencium

C. Only americium and lawrencium

D. Only americium and curium

Answer: B

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298. Which one of the following has radioactive properties ?

A. Praseody mium

B. Samarium

C. Promethium

D. Neodymium

Answer: C

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299. The element present in after Gd in lanthanide series is

A. Sm

B. Tm

C. Nd

D. Pr

Answer: B

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300. The position of actinides in between

A. Ac and Sg

B. Ac and Db

C. Ac and Rf

D. Ac and Hs

Answer: C

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301. The most common lanthanoid is :

A. Sm

B. Pm

C. Ce

D. Ho

Answer: B

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302. Why the f-block elements are called inner transition elements?

A. transition elements

B. inert elements

C. representative elements

D. innertransition elements

Answer: D

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303. All lanthanide mineral contains all elements except

A. Er

B. Eu

C. Pm

D. Tb

Answer: C

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304. Among the lanthanides the one obtained by synthetic method is

A. Lu

B. Pm

C. Pr

D. No

Answer: B

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305. Transuranium elements are the elements of actinide series, which follows ?

A. Curium

B. Plutonium

C. Neptunium

D. Uranium

Answer: D

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306. Naturatl rasioctive elements of actinide series are

A. up to thorium

B. up to uranium

C. up a curium

D. up to protactium

Answer: B

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307. How many transuranium elements present in 5f series ?

A. 10

B. 11

C. 12

D. 13

Answer: B

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308. Synthetic radioactive elements present in actinides are

A. 9

B. 10

C. 11

D. 12

Answer: C

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309. Naturally occuring radio active elements present in second inner transition series

A. 3

B. 4

C. 5

D. 6

Answer: A

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310. Which of the following is transuranium element ?

A. U

B. Ta

C. Pa

D. Am

Answer: D

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311. Lanthanide elements are called as rare earth because

A. their oxides are difficult to decompose

B. the elements are rarely found in the earth crust

C. they were few in nature

D. they element were very light

Answer: B

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312. The transuranic elements are prepared by

A. addition reaction

B. decomposition reaction

C. decarboxy lation

D. nuclear reaction

Answer: D

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313. Which element is not naturally occuring ?

A. Th

B. U

C. Ac

D. Am

Answer: D

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314. Which of the following, is prepared artificially?

A. Ce

B. Pm

C. Pr

D. Am

Answer: B

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315. The lanthanide have general electronic configuration

A. $[Xe]4f^{1-14}, 5s^2, 5p^6, 6s^2$

B. $[Xe](n-1)d^{1-10}, ns^{1-2}$

C. $[Xe]4f^{1-14}, 5d^{0-1}, 6s^2$

D. $[Xe]4f^{0-14}, 5d^{0-10}, 6s^2$

Answer: C

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316. The outer electronic coonfiguration of cerium is

A. $6s^2, 4f^1, 5d^1$

B. $6s^2, 4f^2, 5d^0$

C. $6s^2, 4f^7, 5d^1$

D. $6s^2, 4f^{13}, 5d^0$

Answer: B

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317. Match list I and II and select the correct answer using the code given below the list.

List-I	List-II
At.no. of elements	Names of the elements
A. 60	1. Neodymium
B.61	2. Samarium
C. 62	3. Europium
D.63	4.Promethium

A. $\begin{matrix} A & B & C & D \\ 1 & 2 & 3 & 4 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 1 & 3 & 2 & 4 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 1 & 4 & 2 & 3 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 4 & 3 & 2 & 1 \end{matrix}$

Answer: C

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318. Which of the following elements shows $6s^2, 4f^7 5d^1$ electronic configuration ?

A. Eu

B. Gd

C. Tb

D. Dy

Answer: B

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319. Lutetium has electronic configuration

A. $6s^2, 4f^{13}, 5d^1$

B. $6s^2, 4f^{12}, 6d^0$

C. $6s^2, 4f^{14}, 5d^1$

D. $6s^2, 4f^7, 5d^0$

Answer: C

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320. Gadolinium contain one electron in 5d-orbital due to

A. stability of $4f^0$ configuration

B. stability of $4f^7$ configuration

C. stability of $4f^{14}$ configuration

D. none of these

Answer: B

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321. In which of the following elements one electron is present in 5d orbitals ?

A. Gd and Yb

B. Gd and Tm

C. Gd and Lu

D. Ho and Lu

Answer: C

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322. Which of the following is expected electronic configuration of europium ?

A. $6s^2, 4f^7, 5d^0$

B. $6s^2, 4f^6 5d^1$

C. $6s^2, 4f^{14}, 5d^0$

D. $6s^2, 4f^{13}, 5d^1$

Answer: B

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323. The expected electronic configuration of cerium is

A. $[Xe]6s^2, 4f^2, 6d^0$

B. $[Xe]6s^2, 4f^6, 5d^2$

C. $[Xe]6s^2, 4f^1, 5d^1$

D. none of these

Answer: C

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324. How many unpaired electrons present in 4f-orbital of lutetium ?

A. 1

B. 2

C. 0

D. 4

Answer: C

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325. As atomic number increases from 57 to 71 in tripositive lanthanon, the number of unpaired electrons

A. increases regularly from 0 to 14

B. first increases from 0 to 7 and then fall to zero

C. increases from 0 to 5 and then fall to zero

D. increase from 0 to 6 and then fall all zero

Answer: B

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326. The electronic configuration of gaedolinium.

A. $[Xe]4f^8, 5d^9, 6s^2$

B. $[Xe]4f^2, 4d^1, 6s^2$

C. $[Xe]4f^6, 5d^2, 6s^2$

D. $[Xe]4f^3, 5d^5, 6s^2$

Answer: B

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327. Which of the following has $4f^7$ configuration

A. Pr

B. Gd

C. Nd

D. Am

Answer: B

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328. How many total number of unparied electrons in Gd are

A. 7 unparied electrons

B. 8 unpaired electrons

C. 6 unpaired electrons

D. 5 unpaired electrons

Answer: B

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329. The electronic configuration of actinides Cannot be assigned with degree of certainty because of

A. overlapping of inner orbirtals

B. small energy difference between 5f and 6d orbitals

C. free movement of electrons over all the orbitals

D. all of these

Answer: B

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330. The outer electronic configuratio of actinide elements is

A. $7s^{2}. 5t^{0-14}, 6d^{0}$

B. $7s^{2}, 5f^{1-14}, 6d^{0-1}$

C. $7s^{2}, 5f^{1-14}, 6d^{-10}$

D. $7s^{2}, 5f^{1-14}, 6d^{10}$

Answer: B

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331. Which one of the following is an electronic configuration of thorium?

A. $[Rn]7s^{2}, 5f^{0}, 6d^{2}$

B. $[Rn]7s^{2}, 5f^{1}, 6d^{1}$

C. $[Rn]7s^1, 5f^3, 6d^1$

D. $[Rn]7s^1, 5f^4, 6d^0$

Answer: A

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332. Americium does not contain 6d electrons due to

A. stability of f^0 configuration

B. stability of f^7 configuration

C. stability of f^{14} configuration

D. radioactive nature

Answer: B

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333. Thr outer electronic configuration of lawrencium is

A. $7s^2, 5f^{14}, 6d^1$

B. $4s^2, 5f^{13}, 6d^2$

C. $7s^2, 5f^{14}, 7p^2$

D. $7s^2, 5f^{14}, 7p^1$

Answer: A

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334. Match list I and II and select the correct answer using the codes given below the lists

List-I	List-II
At. no. of elements	Names of the elements
$A.96$	1. Berkelium
$B.97$	2. Curium
$C.$ 98	3. Californium
$D.99$	4. Einsteinium

A. $\begin{matrix} A & B & C & D \\ 1 & 2 & 1 & 1 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 4 & 3 & 2 & 3 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 4 & 3 & 1 & 3 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 2 & 1 & 3 & 4 \end{matrix}$

Answer: C

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335. Which of the following element involves th gradual filling of 5f level ?

A. Pm

B. Cm

C. Sm

D. Tm

Answer: B

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336. The electronic configuration of Am^{2+} is

A. $7s^0, 5f^6, 6d^0$

B. $7s^0, 5f^5, 6d^0$

C. $7s^0, 5f^7, 6d^0$

D. $7s^0, 5f^4, 6s^0$

Answer: C

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337. The penultimate shell of f-block elements contains how many electrons ?

A. 19 to 32

B. 8 to 9

C. 8 to 14

D. 19 to 36

Answer: B

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338. Holonium closely resembles with Einstenium having observe electronic configuration

A. s^2, f^{11}, d^0

B. s^2, f^7, d^1

C. s^2, f^9, d^0

D. s^2, f^{14}, d^0

Answer: A

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339. The outer expected electronic configuration $5f^5, 6d^1, 7s^2$ is of the element

A. Ac

B. Am

C. No

D. Tb

Answer: D

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340. $4f^7, 5d^0, 6s^2$ represents electronic condiguration of

A. Gd

B. Sm

C. Eu

D. Tb

Answer: C

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341. Ytterbium has electronic configuration

A. $4f^7 5d^0 6s^2$

B. $4f^{14}5d^{0}6s^{2}$

C. $4f^{14}5s^{1}6s^{2}$

D. $4f^{7}5d^{1}6s^{2}$

Answer: B

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342. An element t belonging to lanthanide has at. No. 64, its electronic configuration is

A. $4f^{7}5s^{0}6s^{2}$

B. $4f^{8}5d^{0}6s^{2}$

C. $4f^{7}5d^{1}6s^{2}$

D. $4f^6 5d^2 6s^2$

Answer: C

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343. Which of the following lanthanoide shows stable electronic configuration ?

A. Only Eu and Gd

B. Only Eu, Gd and Yb

C. Only Eu, Gd, and Yb

D. Only Gd, Yb and Lu

Answer: C

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344. Which of the following elements has half filled f-orbitals ?

A. only Eu

B. only Eu and Yb

C. Only Gd

D. only Eu and Gd

Answer: D

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345. Which of the following has fully filled f-orbitals ?

A. Only Eu and Yb

B. Only Gd and Eu

C. Only Gd and Lu

D. Only Yb and Lu

Answer: D

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346. The electronic configuration $4f^{0}5d^{1}6s^{2}$ represents

A. actinium

B. lanthanum

C. cerium

D. praseodymium

Answer: B

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347. Which of the following has $5f^{7}6d^{0}7s^{2}$ configuration ?

A. curium

B. americium

C. nobelium

D. lawrencium

Answer: B

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348. The actinoide with atomic number 96 has electronci configuration

A. $[Xe]5f^{7}6d^{1}7s^{2}$

B. $[Rn]5f^{7}6d^{1}7s^{2}$

C. $[Rn]4f^{7}5d^{1}6s^{2}$

D. $[Xe]5f^{7}6d^{1}7s^{2}$

Answer: B

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349. The actinides which has half filled 5f-orbitals are

A. only Am

B. only Cm

C. both Am and No

D. Both Am and Cm

Answer: D

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350. $5f^3 6d^1 7s^2$ represents electronci configuration of

A. thorium

B. uranium

C. neptunium

D. protactinium

Answer: B

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351. $4f^{14}5d^{0}6s^{2}$ represents configuration of which of the following

A. Lu

B. Eu

C. Yb

D. Gd

Answer: C

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352. Which one of the following is an electronic configuration of thorium?

A. $5f^1 6d^1 7s^2$

B. $5f^2 6d^0 7s^2$

C. $5f^2 6d^1 7s^2$

D. $5f^0 6d^2 7s^0$

Answer: A

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353. Which of the following f-block elements has half filled electrocin configuration having at. No. ?

A. 95,96,102 and 103

B. 70,71, 102 and 103

C. 63,64,95 and 96

D. 63,64,70 and 71

Answer: C

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354. The f-block element having at n. 95 has electronic configuration

A. $[Xe]5f^7 6d^0 7s^2$

B. $[Rn]5f^6 6d^1 4s^2$

C. $[Rn]5f^7 6d^0 7s^2$

D. $[Xe]4f^2 5d^0 6s^2$

Answer: C

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355. The number of partially filled shell in f-block elements are

A. 2

B. 3

C. 4

D. 5

Answer: B

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356. The expected general, electronic configuration of lanthanons is

A. $6s^2, 4^{0-14}, 5d^1$

B. $6s^2, 4f^{1-14}, 5d^1$

C. $6s^2, 4f^{0-14}, 5d^{0-1}$

D. $6s^2, 4f^{1-14}, 5d^{0-1}$

Answer: B

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357. The most accepted abserved electronic configuration of lanthanide is

A. $6s^2, 4f^{0-14}, 5d^1$

B. $6s^2, 4f^{1-14}, 5d^{0-1}$

C. $6s^2, 4f^{2-14}, 5d^{0-1}$

D. $6s^2, 4f^{2-14}, 5d^1$

Answer: B

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358. An element has electronci configuration $(Xe)6s^2 4f^{13}, 5d^0$. In which group it is placed

A. second

B. third

C. fourth

D. fifth

Answer: B

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359. The number of unpaired electrons present in Am are

A. 2

B. 3

C. 4

D. 7

Answer: B

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360. The most accepted electronic configuration of f-block element is

A.

$$(n-2)s^2, p^6, d^{10}, f(0-14), (n-1)s^2, p^6d^{0-1}, ns^{0-2}$$

B. $(n-2)s^2, p^6, d^{10}, f^{1-14}, (n-1)s^2, p^6d^{0-1}, ns^2$

C. $(n-2)s^2, p^6, d^{10}, f^{0-14}, (n-1)s^2, p^6d^1, ns^{0-1}$

D. $(n-2)s^2, p^6, d^{10}, f^{0-14}, (n-1)s^2, p^6d^1, ns^2$

Answer: B

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361. $\ln^{3+}$ contain

A. 1 to 6 4-f unpaired electrons

B. 1 to 5 4-f unpaired electrons

C. 1 to 7 4-f unpaired electrons

D. all of these

Answer: D

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362. All lanthanides exhibit a stable valency of

A. 2

B. 3

C. 4

D. 6

Answer: B

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363. Which of the following forms stable +4 oxidation state ?

A. La

B. Gd

C. Eu

D. Ce

Answer: D

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364. Which of the followig show maximum number of different oxidation state in its compounds ?

A. Eu

B. Gd

C. La

D. Nd

Answer: D

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365. The number of unpaired electrons in Ce^{3+} ion is 0

A. 0

B. 1

C. 2

D. 3

Answer: B

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366. The most characteristic oxidation state of lanthanide is

A. $+2$

B. $+3$

C. $+4$

D. $+6$

Answer: B

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367. Lanthanidwes shows variable oxidation state, because they release electron from the following orbitals

A. 4f

B. 6s

C. 5d

D. all of these

Answer: D

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368. In aqueous solutions Eu^{2+} acts as

A. an oxidising agent

B. an reducing agent

C. either of these

D. redox agent

Answer: B

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369. Sm^{3+} acts as

A. an oxidising agent

B. an reducing agent

C. either

D. neither

Answer: B

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370. Atomic number $_{64}Gd, _{66}Dy, _{69}Tm, _{71}Lu.$ which of the following does not have unpaired electron ?

A. Gd^{3+}

B. Dy^{3+}

C. Tm^{3+}

D. Lu^{3+}

Answer: D

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371. Which of the following element show +2 oxidation state in $4f^7$ configuration ?

A. Pm

B. Tb

C. Eu

D. Ho

Answer: C

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372. Stable oxidation state of Yb is

A. $+2$

B. $+3$

C. $+4$

D. $+6$

Answer: A

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373. Ce^{4+} ion is

A. oxidising agent

B. reducing agent

C. redox agent

D. one of the above

Answer: A

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374. Cerium shows $+4$ oxidation state, in which of the following configuration ?

A. f^0

B. f^6

C. f^7

D. f^{14}

Answer: A

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375. Yb^{2+} is

A. `reducing agent

B. oxidising agent

C. redox agent

D. one of the above

Answer: A

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376. Ytterbium show $+2$ oxidation state, in which of the following configuration ?

A. f^0

B. f^7

C. f^{14}

D. f^8

Answer: C

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377. Eu^{3+} ion is isoelectronic with

A. Ce^{4+}

B. Yb^{2+}

C. Eu^{4+}

D. Sm^{2+}

Answer: D

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378. How many f-electrons are present in Tb when it show $+3$ oxidation state ?

A. 6

B. 7

C. 8

D. 9

Answer: C

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379. The number of unpaired electrons in Lu^{3+} are

A. 0

B. 2

C. 6

D. 7

Answer: A

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380. In first inner-transition series, the highest oxidation state oxhibited by

A. Pm

B. Eu

C. Sm

D. Nd

Answer: D

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381. Which of the following has highest paired 4f electrons ?

A. Yb^{3+}

B. Pr^{3+}

C. Pm^{3+}

D. Sm^{3+}

Answer: A

View Text Solution

382. Which of the follow2ing show the oxidation state of $+4$?

A. Pm

B. Eu

C. Sm

D. Tb

Answer: D

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383. Neodymium show $+2, +3,$ and $+4$ oxidation state of $+4$ oxidation state. The most oxidising state known is aqueous solution is

A. $+2$

B. $+3$

C. $+4$

D. none of these

Answer: B

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384. Which of the following has all of its electrons paired ?

A. Pr^{3+}

B. Ce^{3+}

C. Tb^{4+}

D. none of these

Answer: D

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385. Which of the following lanthanide elements from tetrapositive ion in aqueous solution ?

A. Sm

B. Gd

C. Pm

D. Ce

Answer: D

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386. Which one of the following is good oxidising agent ?

A. Eu^{2+}

B. Sm^{2+}

C. Ce^{4+}

D. Yb^{2+}

Answer: C

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387. Dipositive Pm is isoelectronic with

A. Nd^{3+}

B. Ce^{4+}

C. Eu^{3+}

D. Sm^{3+}

Answer: D

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388. Decreasing order of oxidising property of tetrapositive lanthanide is

A. $Dy^{4+} > De^{4+} > Pr^{4+} > Nd^{4+}$

B. $Dy^{4+} Nd^{4+} > Pr^{4+} > Ve^{4+}$

C. $Ce^{4+} > Pr^{4+} > Nd^{4+} > Dy^{4+}$

D. $Nd^{4+} > Pr^{4+} > Dy^{4+} > Ce^{4+}$

Answer: B

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389. Decresis order of reducing properties of $\ln^{3+}$

A. $Eu^{3++} > Tb^{3+} > Dy^{3+} > Gd^{3+}$

B. $Eu^{3+} > Gd^{3+} > Tb^{3+} > Dy^{3+}$

C. $Eu^{3+} > Dy^{3+} > Gd^{3+} > Tb^{3+}$

D. $Dy^{3+} > Eu^{3+} > Tb^{3+} > Gd^{3+}$

Answer: A

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390. All $\ln^{3+}$ ions are strong reducing agent in solid and aqueous medium. Which is due to

A. high I.P.

B. high lattice energy

C. high hydration energy and high negative vlue of reduction potential

D. all of these

Answer: D

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391. High negative value of raduction potential, indicates lanthanides are

A. oxidising agent

B. reducing agnet

C. high complex forming tendency

D. high magnetic property

Answer: B

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392. The electronic configuration of holmium is $+3$ oxidation state

A. $6s^0, 4f^{11}, 5d^0$

B. $6s^0, 4f^{14}, 5d^0$

C. $6s^0, 4f^{10}, 5d^0$

D. $6s^0, 4f^{12}, 5d^0$

Answer: C

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393. Which of the following elements shown $+2$ O. S. in f^7 configuration ?

A. Eu and Gd

B. Eu and Tb

C. Eu and Yb

D. Eu and Lu

Answer: A

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394. The oxidation state of Lu in $4f^{14}$ configuration is

A. $+2$

B. $+3$

C. $+4$

D. $+6$

Answer: B

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395. La^{3+} is isoelectronic with

A. Tb^{3+}

B. Eu^{3+}

C. Ce^{4+}

D. Sm^{3+}

Answer: C

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396. Which of the following ion posses six unpaired electrons ?

A. $Eu^{3+}, Ce^{3+}, Gd^{3+}$

B. $Eu^{3+}, Tb^{3+}, Sm^{2+}$

C. $Tb^{3+}, Nd^{3+}, Sm^{2+}$

D. $Sm^{2+}, Er^{3+}, Eu^{2+}$

Answer: B

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397. The common oxidation state of actinides is

A. $+4$

B. $+5$

C. $+3$

D. $+7$

Answer: C

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398. $+4$ oxidation state is most inportant for

A. Pa

B. Np

C. Cm

D. Th

Answer: D

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399. Stable oxidation state of No is

A. $+2$

B. $+3$

C. $+4$

D. $+7$

Answer: D

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400. The main reason for larger number of oxidation state exhibited by the actinides than the corresponding lanthanides, is

A. more energy ifference between 5f and 6d orbitals than 4f and 5d orbitals

B. less energy difference between 5t and 6d orbitals than 4f and 5d orbitals

C. larger atomic size of actinides

D. more reactive nature of actinides than lanthanides

Answer: B

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401. Most stable oxidation state of Pa is

A. $+2$

B. $+3$

C. $+5$

D. $+7$

Answer: C

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402. Which of the following statement is incorrect regarding lanthanides and actinides?

A. Oxidation state +3 is most common in both the series

B. In both series f-orbitals are progressively filled

C. The elements of there series are radioactive

D. Both series show contraction effect

Answer: C

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403. In the 5f series highest oxidation state is exhibited by

A. U and Np

B. Np and Pu

C. Pu and Am

D. Cm and Fm

Answer: B

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404. The correct order of oxidising property of ln^{4+} ion is

A. $Dy > Tb > Nd > Pr > Ce$

B. $Dy > Nd > Pr > Tb > Ce$

C. $Dy > Nd > Tb > Ce > Pr$

D. $Nd > Dy > Tb > Pr > Ce$

Answer: B

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405. The unstable oxidation of Sm is

A. $+4$ and $+3$

B. $+4$

C. $+3$

D. $+2$

Answer: D

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406. Stable oxidation state of Berkelium is

A. $+3$

B. $+4$

C. $+2$

D. $+6$

Answer: B

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407. The outer elecftronic configuration of plutonium in $+6$ oxidatino state is

A. $7s^0, 5f^5, 6d^0$

B. $7s^0, 5f^1, 6d^0$

C. $7s^0, 5f^2, 6d^0$

D. $7s^0, 5f^4, 6d^0$

Answer: C

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408. Cf^{3+} is isoelectronic with

A. Md^{4+}

B. Am^{4+}

C. Pu^{7+}

D. Es^{4+}

Answer: D

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409. Oxidation state of uranium in UO_2^{2+} is

A. $+4$

B. $+5$

C. $+6$

D. $+7$

Answer: C

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410. The most stable oxidation state of thorium is

A. $+3$

B. $+4$

C. $+5$

D. $+6$

Answer: B

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411. Electronic configuration of Pu^{7+}

A. $7s^0, 5f^{14}, 6d^0$

B. $7s^0, 5f^3, 6d^0$

C. $7s^0, 5f^0, 6d^0$

D. $7s^0, 5f^1, 6d^0$

Answer: B

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412. Np^{7+} is

A. oxidising agent

B. reducing agnet

C. coloured ion

D. all of these

Answer: C

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413. Which of the following ion is easily reduced

A. Ce^{3+}

B. Ce^{4+}

C. Nd^{2+}

D. Yb^{2+}

Answer: B

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414. Which of the following ion is easily oxidised

A. Sm^{2+}

B. Ce^{4+}

C. Nd^{4+}

D. Ce^{3+}

Answer: A

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415. The pricipal oxidation state of lanthanide is

A. $+2$

B. $+3$

C. $+4$

D. $+5$

Answer: B

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416. Samarium shows the oxidation state

A. $+3 \text{ and } +4$

B. $+2, +3 \text{ and } +4$

C. $+2, \text{ and } +3$

D. only $+3$

Answer: C

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417. Lanthanide do not show oxidation state

A. $+3$

B. $+4$

C. $+6$

D. $+2$

Answer: C

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418. The lanthanum exhibits which of the following oxidation state ?

A. only $+2$

B. $+2 \text{ and } +3$

C. only $+3$

D. only $+3 \text{ and } +4$

Answer: D

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419. Lanthanides are able to show oxidation states

A. only $+3$

B. only $+4$

C. only $+2 \text{ and } +3$

D. both $+2, +3 \text{ and } +4$

Answer: D

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420. $4f^{0}, 5d^{0}6s^{0}$ represents which one of the following

A. Ce^{3+}

B. Ac^{3+}

C. La^{3+}

D. Ce^{+2}

Answer: C

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421. Gd^{+3} ions has electronic configuration

A. $4f^0, 5d^0, 6s^0$

B. $f^7, 5d^1, 6s^0$

C. $4f^7, 5d^0, 6s^0$

D. $f^7, 6d^0, 7s^0$

Answer: C

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422. $4f^{14}5d^0 6s^0$ represents which of the followig ?

A. Yb^{3+}

B. Lu^{3+}

C. Nb^{3+}

D. Lr^{3+}

Answer: B

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423. Which of the following M^{2+} ions have stable configuration ?

A. Eu^{2+} only

B. Eu^{2+} and Yb^{2+} only

C. Yb^{2+} only

D. Yb^{2+} and Sm^{2+} only

Answer: B

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424. Which lanthanoid deiposite ions has strong tendency of donation electron ?

A. Sm^{2+}

B. Eu^{2+}

C. Yb^{2+}

D. none of these

Answer: A

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425. The most basic hydroxide is

A. $Lu(OH)_3$

B. $Ce(OH)_3$

C. $La(OH)_3$

D. $Yb(OH)_3$

Answer: C

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426. Which of the M^{4+} ion has more tendency to gain single electron ?

A. Ce^{4+}

B. Dy^{4+}

C. Pr^{4+}

D. Nd^{4+}

Answer: B

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427. The lanthanoide which shows all i.e., $+2, +3$ and $+4$ oxidation state is

A. europium

B. samarium

C. neodymium

D. gadolinium

Answer: C

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428. The lanthanoide ion used as oxidizing agent is

A. Eu^{3+}

B. Yb^{3+} and Ce^{3+}

C. Eu^{3+} and Tb^{3+}

D. none of these

Answer: D

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429. Tb^{+4} has electronic configuration $4f^7 5d^0 6s^0$.

Because of this it hs strong tendency to

A. loose electrons

B. undergo oxidation

C. gain electron

D. high hydration

Answer: C

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430. What is the correct order of basicity of hydroxide ?

A. $La(OH)_3 < Nd(OH)_9 < Tb(OH)_3 < Lu(OH)_3$

B. $La(OH)_3 < Lu(OH)_3 < Nd(OH)_3 < Tb(OH)_3$

C. $La(OH)_3 > Lu(OH)_3 > Nd(OH)_3 > (OH)_3$

D. $La(OH)_3 f > Nd(OH)_3 > Tb(OH)_3 > Lu(OH)_3$

Answer: D

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431. Eu^{2+} ion has strong tendency to

A. gain electron

B. lose electron

C. undergo reduction

D. none of these

Answer: B

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432. The lanthanoide ion with e.c. $4f^{14}5d^{0}6s^{0}$ has tendecny to

A. under goes reduction

B. gain electron

C. lose electron

D. all of these

Answer: C

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433. Actinides exhibits oxidation state

A. $+3 \text{ and } +4$

B. $+4 \text{ and } 5$

C. $+5 \text{ and } +6$

D. $+2$ to $+7$

Answer: D

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434. $4f^2 5d^0 6s^0$ is the electronic configuration of lanthanoide ion

A. only Eu^{2+}

B. only Gd^{3+} and Eu^{2+}

C. only Eu^{2+}, Gd^{3+} and Tb^{4+}

D. only Eu^{2+} and Tb^{2+}

Answer: C

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435. Which of the following M^{2+} is not a stable oxidation state ?

A. Gd^{3+}

B. La^{3+}

C. Lu^{3+}

D. Eu^{3+}

Answer: D

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436. The Yb^{2+} and Lu^{3+} ion has electronic configuration

A. $4f^{14}5d^{1}6s^{0}$

B. $4f^{14}5d^{0}6s^{0}$ and $4f^{14}5d^{1}6s^{0}$ respectively

C. $4f^{14}5d^{0}6s^{0}$

D. $4f^{14}5d^{1}6s^{2}$

Answer: C

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437. Which of the following M^{4+} cations does not have stable electronic configuration ?

A. Ce^{4+}

B. Nd^{4+}

C. Tb^{4+}

D. Both a and b

Answer: B

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438. The ions having $4f^0, 5d^0 6s^0$ stable electronic configuration are

A. La^{3+} and Ce^{4+}

B. La^{3+} and Ce^{3+}

C. only Ce^{4+}

D. only La^{3+}

Answer: A

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439. Lanthanides does not show $+4$ O. S. in which of the following configuration

A. f^0

B. f^7

C. f^{14}

D. all of these

Answer: C

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440. Erbium shows was oxidations state

A. only $+4$

B. $+3, \ +4$

C. only $+3$

D. $+2, \ +3$

Answer: C

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441. Cerium shows most common oxidation state

A. $+2, \ +4$

B. $+3, \ +4$

C. $+2, \ +3$

D. $+4, \ +5$

Answer: B

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442. Which of the following tripositive ion has half filled 4 f subshell ?

A. Gd

B. Am

C. Pr

D. Yb

Answer: A

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443. Ce^{4+} is used as oxidising agent because

A. it has tendency to attain $+2$, O.S.

B. it has tendency to attain $+3$, O.S.

C. it has tendency to attain $+5$, O.S.

D. it does not gain electron

Answer: B

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444. $+2 \text{ and } +3$ oxidation state is stable in which of the following respectively

A. Eu, Lu

B. Ce, Lu

C. Eu, Nd

D. Ce, Eu

Answer: A

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445. In aqueous solution, cerium shows stable O.S.

A. $+2$

B. $+4$

C. $+3$

D. $+5$

Answer: B

View Text Solution

446. In aqueous solution, Eu shows stable O.S.

A. $+3$

B. $+4$

C. $+3$

D. $+5$

Answer: B

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447. $\ln^{2+}$ ions one used as

A. oxidising agent

B. reducing agent

C. either

D. neither

Answer: B

View Text Solution

448. $\ln^{4+}$ ions are used as

A. oxidising agent

B. reducing agent

C. either

D. neither

Answer: A

View Text Solution

449. ln^{3+} ions are

A. reducing agent

B. oxidising agent

C. either

D. neither

Answer: A

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450. $Lu(OH)_3$ is less basis than $La(OH)_3$. This is due to

A. decrease in ionic character of M-OH bond

B. ionic size decrease due to lanthanide contraction

C. increase in covalent character of M-OH bond

D. all of these

Answer: D

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451. Which of the following hydroxide is more ionic and more basic in nature ?

A. $Ce(OH)_3$

B. $Lu(OH)_3$

C. $Dy(OH)_3$

D. $Tm(OH)_3$

Answer: A

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452. The +4 ion of which one of the following has half filled 4f subshell.

A. Gd

B. Tb

C. Tm

D. Sm

Answer: B

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453. The stable O.S. of uranium is

A. $+3$

B. $+4$

C. $+5$

D. $+6$

Answer: D

View Text Solution

454. Stable oxidation state of nobelium is

A. $+2$

B. $+3$

C. $+4$

D. $+5$

Answer: A

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455. tripositive actinides ions are

A. with three protons

B. with three neutrons

C. with three electrons

D. with three electrons less than its atomic number

Answer: D

View Text Solution

456. LN^{3+} has electronic configuration

A. $6s^0, 4f^{1to14}5d^0$

B. $6s^2, 4f^{1to14}, 5d^0$

C. $6s^0, 4f^{1to14}, 5d^1$

D. $6s^1, 4f^{1to14}, 5d^1$

Answer: A

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457. Since, lanthanides relased electron from 4f, 5d and 6s orbitals, they show

A. fixed oxidation state

B. variable oxidation state

C. two oxidation state

D. one oxidation state

Answer: B

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458. Which element show the maximum difference in the oxidation state of its compounds ?

A. La

B. Sm

C. Gd

D. Am

Answer: D

View Text Solution

459. The number of unpaired electrons in Yb^{3+} is found to be

A. zero

B. one

C. two

D. six

Answer: B

View Text Solution

460. In lantanide the nuclear charge

A. increases form Ce to Lu

B. decreases from Ce to Lu

C. remain same

D. increases up to C to Gd and then decreases

Answer: A

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461. The shield effect of electron decreases in the order

A. $f > d > p > s$

B. $s > p > d > f$

C. $s > d > p > f$

D. $p > d > s > f$

Answer: B

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462. The lanthanide contraction is due to

A. perfect shielding of f-orbitals

B. perfect shielding of d-orbitals

C. imperfect shielding of f-orbitals

D. imperfect shielding of d-orbitals

Answer: C

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463. As atomic number increases, the ionic radii of $\ln^{3+}$ ion

A. increases

B. first increases and then decreases

C. decreases

D. first decreases and then increases

Answer: C

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464. The decrease in the size of innce transition element is

q

A. more

B. less

C. not regular

D. none of these

Answer: B

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465. Lanthanide contraction is related to

A. valence electron

B. ionic radii

C. densities

D. nuclear mass of various membere of the series

Answer: B

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466. From Ce to Lu atomic size decreases

A. 18 Pm

B. $8Pm$

C. $12Pm$

D. $10Pm$

Answer: D

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467. Which of the following ion has smallest radii ?

A. Yb^{3+}

B. Ce^{3+}

C. Pm^{3+}

D. Sm^{3+}

Answer: A

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468. Lanthanide contraction is due to increase in

A. iionic radii

B. shielding of 4f electrons

C. effective nuclear charge

D. size of 4f orbitals

Answer: C

View Text Solution

469. The correct order of ionic radius of $Yb^{3+}, La^{3+}, Eu^{3+}, Lu^{3+}$ is

A. $Yb < Lu < Eu < La$

B. $La < Eu < Lu < Yb$

C. $Lu < Eu < La < Yb$

D. $Yb < La < Eu < Lu$

Answer: A

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470. Because of lanthanoide contraction, which of the following pairs of elements have nearly same atomic radii ?

(Numbers in the parenthesis are atomic numbers)

A. Ti (22) and Zr (40)

B. Zr (40) and Nb (41)

C. Zr (40) and Hf (72)

D. Zr (40) and Ta (73)

Answer: C

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471. A raduction of atomic size with increase in atomic number is a characteristic of elements of

A. radioactive series

B. high atomic mass

C. f-block

D. all of these

Answer: C

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472. As increase in both atomic and ionic radii with atomic number occurs in any group of the periodic table and in accordance with this, the ionic radii of Ti^{4+} and Zr^{4+} ion are 68 Pm and 74 Pm respectivelt. But for Hf^{4+} ion, the ionci radius is 75 Pm. Which is most same as that for Zr^{4+} ion. This is due to

A. greater degree of covalency in compound of Hf^{4+}

B. lanthanide contraction

C. difference in co-ordination number of Zr^{4+} and Hf^{4+} in their compound

D. actinide contraction

Answer: B

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473. The lanthanide contraction is responsible for the fact that

A. Zr and Yb have same size

B. Zr and Nb have same oxidation sate

C. Zr and Hf have same radius

D. Zr and Zn have same oxidation state

Answer: C

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474. Tantalum and nobonium have sinmilar ionic radii because

A. of diagonal relationship

B. both are in same group

C. the have same chemical properties

D. of lanthanide contraction

Answer: D

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475. The properties of 3^{rd} transition series elements and 2^{nd} transition series elements are same because of

A. both belong to d-block

B. both belong to same group of the periodic table

C. both have same number of electrons

D. both have same radii

Answer: D

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476. The properties of tungsten and molybdenum are sinmilar because

A. both belong to d-block

B. both belong to same group of the periodic table

C. both have same number of electrons

D. both have same radii

Answer: D

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477. Which of the following pair of atoms have similar

A. Hf and Os

B. W and Mo

C. Hf and Nb

D. Ta and Mo

Answer: B

View Text Solution

478. Which of the following is more basic hydroxide ?

A. $Sm(OH)_3$

B. $Yb(OH)_3$

C. $Ho(OH)_3$

D. $Ho_{OH} - (3)$

Answer: A

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479. Which of the following is more ionic hydroxide ?

A. $Eu(OH)_3$

B. $Pr(OH)_3$

C. $Tm(OH)_3$

D. $Ho(OH)_3$

Answer: B

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480. Which of the following $\ln^{3+}$ ion is strongest raducing agent ?

A. Sm

B. Tb

C. Pm

D. Lu

Answer: C

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481. Which of the following is chemical twins ?

A. Zr and Ta

B. Nb and W

C. Ta and Nb

D. Tc and Os

Answer: C

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482. Lanthanide contraction due to

A. poor shielding of 5f orbitals

B. poor shielding of 3f orbitals

C. prerfect shielding of 4f orbitals

D. poor shielding of 4f orbitals

Answer: D

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483. Which of the following hydroxide has more covalent character ?

A. $Gd(OH)_3$

B. $Pm(OH)_3$

C. $Dy(OH)_3$

D. $Nd(OH)_3$

Answer: C

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484. Decreasing order of ionic character of $\ln(OH0_3$ is

A. $Sm(OH)_3 > Lu(OH)_3 > Gd(OH)_3 > Tb(OH)_3$

B. $Tb(OH)_2 > Gd(OH)_3 > Lu(OH)_3 > Sm(OH)_3$

C. $Lu(OH)_3 > Sm(OH)_3 > Gd(OH)_3 > Tb(OH)_3$

D. $Tb(OH)_3 > SM(OH)_3 > Gd(OH)_3 > Tb(OH)_3$

Answer: A

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485. Which of the following f-block element are not able to oxocations ?

A. cerium and samarium

B. uranium and thorium

C. neptunim and protactium

D. nobelium and fermium

Answer: A

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486. Actinide from

A. ionic compounds

B. covalent compounds

C. co-ordinate compounds

D. chalates

Answer: B

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487. Among the following strongest base is

A. $La(OH)_3$

B. $Ce(OH)_3$

C. $Lu(OH)_3$

D. $Yb(OH)_3$

Answer: A

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488. The correct order of ionic radii of the ion is

A. $La^{3+} < Eu^{3+} < Lu^{3+} < Yb^{3+}$

B. $Yb^{3+} < La^{3+} < Eu^{3+} < Lu^{3+}$

C. $Lu_{3+} < Eu^{3+} < Yb^{3+} < La^{3+}$

D. $Lu^{3+} < Yb^{3+} < Eu^{3+} < La^{3+}$

Answer: D

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489. With increase in atomic number, the atomic size or inonic size go on decreasing in case of

A. d-block elements

B. s-block elements

C. f-block elements

D. p-block elements

Answer: C

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490. Basic nature of compounds of

A. lanthanide $>$ actinide

B. lanthanide $<$ actinide

C. lathanide = actinide

D. none is correct

Answer: B

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491. Which element among the lanthanide has smallest atomic size ?

A. Ce

B. Lu

C. Eu

D. Gd

Answer: B

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492. Lanthanide contraction is due to increase in

A. shielding of 4f electrons

B. effective nuclear charge

C. atomic number

D. size of 4f orbital

Answer: B

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

A. $Y^{3+} < Lu^{3+} < Eu^{3+} < La^{3+}$

B. $La^{3+} < Eu^{3+} < Lu^{3+} < Y^{3+}$

C. $Lu^{3+}, < Eu^{3+} < La^{3+} < Y^{3+}$

D. $Y^{3+} < La^{3+} < Lu^{3+} < Eu^{3+}$

Answer: A

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494. Lanthanides are

A. 14 elements in the 7^{th} period filling 4f orbitals

B. 14 elements in the 5^{th} period filling 5t orbitals

C. 14 element in the 5^{th} period filling 5t orbitals

D. 14 elements in the 4^{th} period that are filling 4f orbitals

Answer: B

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495. Chemical twins are preent in which of the transition series

A. 2^{nd} and 3^{rd}

B. 1^{st} and 2^{nd}

C. 3^{rd} and 4^{th}

D. none of these

Answer: A

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496. The steady decrease in atomic size in lanthanide series is called lanthanide confraction and in all amounts to

A. 150 Pm

B. $10Pm$

C. $20Pm$

D. $40Pm$

Answer: B

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497. Lanthanoide contraction affects on

A. basicity of lanthanoide hydroxides

B. atomic and ions radii of post lanthanoide

C. similarty in properties of 2^{nd} and 3^{rd} row transition elements

D. all of these

Answer: D

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498. Which of the following pair of elements are called chemical twins ?

A. Zr and Hf

B. No and Ta

C. Mo and W

D. all of these

Answer: D

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499. From $La(OH)_3$ to $Lu_{OH}\ _{-}(3)$ which of the following is wrong statement ?

A. Ionic character decreases

B. Covalent character increases q

C. Ionic radius of M^{3+} ion increases

D. Basic character decreases

Answer: C

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500. What is the correct order of ionic size of lanthanoide ions ?

A. $Lu^{3+} > Tb^{3+} > Sm^{3+} > La^{3+}$

B. $Lu^{3+} < Tb^{3+} Sm^{3+} < La^{3+}$

C. $Lu^{3+} < Sm^{3+} < Tb^{3+} < La^{3+}$

D. $Sm^{3+} < Lu^{3+} < Tb^{3+} < La^{3+}$

Answer: B

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501. The pair of elements which are not having similarly in atomic and ionic radii are

A. Zr and Hf

B. Mo and Ta

C. Nb and Ta

D. Mo and W

Answer: B

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502. The pair of elements like Zr - Hf, Nb - Ta and Mo -W. Due to lanthanoide contraction

A. having similarly in atomic and ionic size

B. these are called chemical twins

C. these elements have similar properties

D. all of these

Answer: D

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503. The pair of lanthanoide ions used as raducing agents is/are

A. Eu^{3+} and Ce^{4+}

B. Ce^{4+} and Tb^{4+}

C. Eu^{2+} and Dy^{4+}

D. Nd^{2+} and Sm^{2+}

Answer: D

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504. Actinides form oxocation because of

A. actinide contraction

B. radioactive nature

C. reducing property q

D. high charge density in higher oxidation state

Answer: D

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505. The least basic hydroxide is

A. $La(OH)_3$

B. $Ce(OH)_3$

C. $Lu(OH)_3$

D. $Pm(OH)_3$

Answer: C

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506. Which of the following lanthanodie ion used as oxidizing agent ?

A. only Tb^{3+}

B. only Ce^{2+}

C. only Ce^{4+} and Tb^{4+}

D. only Tb^{2+} and Dy_{3+}

Answer: C

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507. In lanthanoides the increase in at. No. 14 results in decrease of atomic radii by only 10 pm. Because of

A. gradual decrease in nuclear charge

B. gradual decrease in nuclear charge

C. 4f-orbirtals provids less shielding effect

D. 4f-orbitals provides more shielding effect

Answer: C

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508. The steady decrease in ionic size in lanthanides due ot lanthanide contraction and in all amount to

A. 10 pm

B. 40 pm

C. 18 pm

D. 50 pm

Answer: C

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509. Which of the following is correct about actinides ?

A. They form stable oxidation state +2

B. They do not form oxocation

C. They shows only +2 oxidation state

D. Stability of +3 oxidation state increase as atomic number increases.

Answer: D

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510. Which of the following has poor shielding effect ?

A. s

B. P

C. 4 f

D. 5 f

Answer: D

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511. Most of the ions of lanthanide and actinide series have unpaired electrons in $(n-2f)$ orbitals and hence they are

A. diamagnetic

B. paramagnetic

C. ferromagnetic

D. none of these

Answer: B

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512. Basic characters of $\ln^{3+}$ ion is

A. increases with ionic size increases

B. decreases with ionic size decreases

C. increases with nuclear charge increases

D. increases with atomic number increases

Answer: B

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513. Which of the following oxocation is not possible

A. PuO_2^+

B. CeO_2^+

C. UO_2^{2+}

D. NpO_2^{2+}

Answer: B

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514. Basicity of the lanthanides depends upon

A. gain of electrons

B. loss of electrons

C. sharing of electrons

D. coupling of electrons

Answer: B

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515. Which of the following has lowest basicity ?

A. $Ce(OH)_3$

B. $Bk(OH)_3$

C. $Md(OH)_3$

D. $No(OH)_3$

Answer: A

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