

Date Planned : __ / __ / __	Daily Tutorial Sheet-4	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main (Archive)	Exact Duration : _____

46. When XO_2 is fused with an alkali metal hydroxide in presence of an oxidizing agent such as KNO_3 , a dark green product is formed which disproportionates in acidic solution to afford a dark purple solution. X is :

(A) Ti (B) Cr (C) V (D) Mn (2018)

47. The transition element that has lowest enthalpy of atomisation, is : (2019)

(A) V (B) Fe (C) Zn (D) Cu

48. The 71st electron of an element X with an atomic number of 71 enters into the orbital : (2019)

(A) 4f (B) 6s (C) 6p (D) 5d

49. The element that usually does NOT show variable oxidation states is : (2019)

(A) Cu (B) V (C) Sc (D) Ti

50. Match the metals (column I) with the coordination compound(s)/enzyme(s) (column II) : (2019)

Column I (Metals)		Column II (Coordination)	
(1)	Co	(P)	Wilkinson catalyst
(2)	Zn	(Q)	Chlorophyll
(3)	Rh	(R)	Vitamin B ₁₂
(4)	Mg	(S)	Carbonic anhydrase

(A) (1) → Q ; (2) → P ; (3) → S ; (4) → R

(B) (1) → P ; (2) → Q ; (3) → R ; (4) → S

(C) (1) → S ; (2) → R ; (3) → P ; (4) → Q

(D) (1) → R ; (2) → S ; (3) → P ; (4) → Q

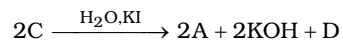
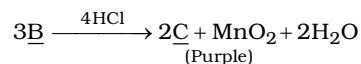
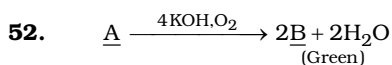
51. The correct order of atomic radii is : (2019)

(A) Eu > Ce > Ho > N

(B) Ho > N > Eu > Ce

(C) N > Ce > Eu > Ho

(D) Ce > Eu > Ho > N



In the above sequence of reactions, A and D respectively, are :

(A) KI and KMnO_4

(B) MnO_2 and KIO_3

(C) KIO_3 and MnO_2

(D) KI and K_2MnO_4

53. Consider the hydrated ions of Ti^{2+} , V^{2+} , Ti^{3+} and Sc^{3+} . The correct order of their spin-only magnetic moments is : (2019)

(A) $\text{V}^{2+} < \text{Ti}^{2+} < \text{Ti}^{3+} < \text{Sc}^{3+}$

(B) $\text{Sc}^{3+} < \text{Ti}^{3+} < \text{V}^{2+} < \text{Ti}^{2+}$

(C) $\text{Sc}^{3+} < \text{Ti}^{3+} < \text{Ti}^{2+} < \text{V}^{2+}$

(D) $\text{Ti}^{3+} < \text{Ti}^{2+} < \text{Sc}^{3+} < \text{V}^{2+}$

54. The pair that has similar atomic radii is : (2019)
(A) Mo and W (B) Mn and Re (C) Ti and Hf (D) Sc and Ni
55. Thermal decomposition of a Mn compound (X) at 513 K results in compound Y, MnO_2 and a gaseous product. MnO_2 reacts with NaCl and concentrated H_2SO_4 to give a pungent gas Z. X, Y and Z respectively, are : (2019)
(A) K_2MnO_4 , KMnO_4 and Cl_2 (B) KMnO_4 , K_2MnO_4 and Cl_2
(C) K_2MnO_4 , KMnO_4 and SO_2 (D) K_3MnO_4 , K_2MnO_4 and Cl_2
56. The correct order of the first ionization enthalpies is: (2019)
(A) $\text{Mn} < \text{Ti} < \text{Zn} < \text{Ni}$ (B) $\text{Ti} < \text{Mn} < \text{Ni} < \text{Zn}$
(C) $\text{Zn} < \text{Ni} < \text{Mn} < \text{Ti}$ (D) $\text{Ti} < \text{Mn} < \text{Zn} < \text{Ni}$
57. The highest possible oxidation states of uranium and plutonium, respectively, are: (2019)
(A) 4 and 6 (B) 6 and 4 (C) 7 and 6 (D) 6 and 7
58. The maximum possible denticities of a ligand given below towards a common transition and inner-transition metal ion, respectively, are: (2019)
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- (A) 6 and 8 (B) 8 and 8 (C) 6 and 6 (D) 8 and 6
59. The maximum number of possible oxidation states of actinoids are shown by: (2019)
(A) neptunium (Np) and plutonium (Pu) (B) actinium (Ac) and thorium (Th)
(C) nobelium (No) and lawrencium (Lr) (D) berkelium (Bk) and californium (Cf)
60. The atomic radius of Ag is closest to: (2020)
(A) Au (B) Hg (C) Cu (D) Ni
61. The third ionization enthalpy is minimum for : (2020)
(A) Co (B) Ni (C) Mn (D) Fe