



The d- and f- block Elements

Q.No.1:

Which of the following arrangements does not represent the correct order of the property stated against it ?

JEE 2013

- A. $V^{2+} < Cr^{2+} < Mn^{2+} < Fe^{2+}$: paramagnetic behaviour
- B. $Ni^{2+} < Co^{2+} < Fe^{2+} < Mn^{2+}$: ionic size
- C. $Co^{3+} < Fe^{3+} < Cr^{3+} < Sc^{3+}$: stability in aqueous solution
- D. $Sc < Ti < Cr < Mn$: number of oxidation states

Q.No.2:

Four successive members of the first row transition elements are listed below with atomic numbers. Which one of them is expected to have the highest

$E^0_{M^{3+}/M^{2+}}$ value ?

JEE 2013

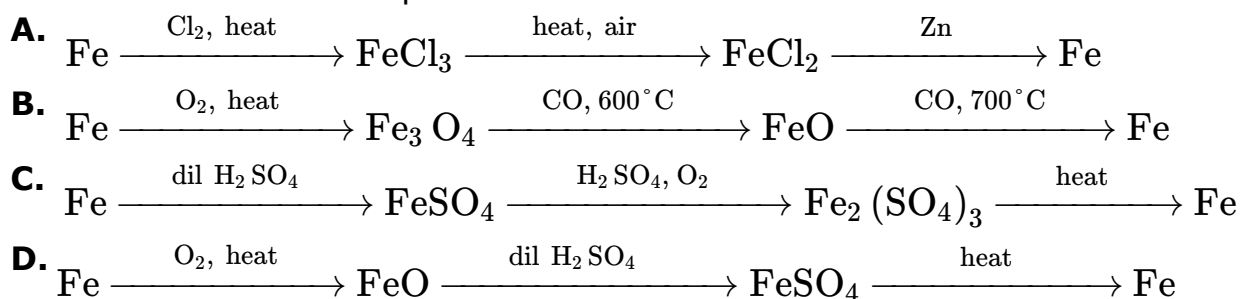
- A. Cr(Z = 24)
- B. Mn(Z = 25)
- C. Fe(Z = 26)
- D. Co(Z = 27)

Q.No.3: The equation which is balanced and represents the correct product(s) is

- A. $[Mg(H_2O)_6]^{2+} + (EDTA)^{4-} \xrightarrow{\text{excess NaOH}} [Mg(EDTA)]^{2-} + 6H_2O$
- B. $CuSO_4 + 4KCN \rightarrow K_2[Cu(CN)_4] + K_2SO_4$
- C. $Li_2O + 2KCl \rightarrow 2LiCl + K_2O$
- D. $[CoCl(NH_3)_5]^+ + 5H^+ \rightarrow Co^{2+} + 5NH_4^+ + Cl^-$

Q.No.4: Which series of reactions correctly represents the chemical relations

related to iron and its compounds ?



Q.No.5: Match the catalysts to the correct processes:

Catalyst	Process
(A) TiCl_3	(i) Wacker process
(B) PdCl_2	(ii) Ziegler – Natta polymerization
(C) CuCl_2	(iii) Contact process
(D) V_2O_5	(iv) Deacon's process

JEE 2015

- A.** (A) – (iii), (B) – (ii), (C) – (iv), (D) – (i)
B. (A) – (ii), (B) – (i), (C) – (iv), (D) – (iii)
C. (A) – (ii), (B) – (iii), (C) – (iv), (D) – (i)
D. (A) – (iii), (B) – (i), (C) – (ii), (D) – (iv)

Q.No.6: Which of the following atoms has the highest first ionization energy?

JEE 2016

- A.** Na
B. K
C. Sc
D. Rb

Q.No.7: The transition element that has lowest enthalpy of atomisation, is:

JEE 2019

- A.** Fe
B. Cu
C. V
D. Zn

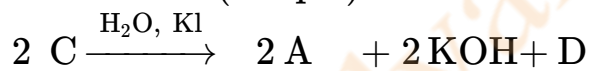
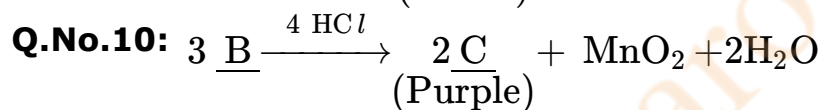
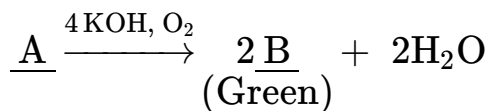
Q.No.8: In the reaction of oxalate with permanganate in acidic medium, the

number of electrons involved in producing one molecule of CO_2 is: **JEE 2019**

- A. 1
- B. 10
- C. 2
- D. 5

Q.No.9: The element that usually does NOT show variable oxidation states is: **JEE 2019**

- A. Cu
- B. Ti
- C. Sc
- D. V



In the above sequence of reactions, A and D, respectively, are : **JEE 2019**

- A. KI and KMnO_4
- B. MnO_2 and KIO_3
- C. KIO_3 and MnO_2
- D. KI and K_2MnO_4