

Dear student following is Tough level [●●●●O] test paper. Any 5 correct attempts in 10 minutes would be a satisfactory performance. Many questions have narrow difference among choices be careful.

- Q.1 Which one of the following is paramagnetic in nature ?**  
 (A)  $V(CO)_6$  (B)  $Fe(CO)_5$   
 (C)  $Fe_2(CO)_9$  (D)  $Cr(CO)_6$
- Q.2 Which one of the following statements is false ?**  
 (A) An acidified solution of  $K_2Cr_2O_7$  liberates iodine from potassium iodide.  
 (B) In acidic solution, dichromate ions are converted into chromate ions.  
 (C) Ammonium dichromate on heating undergoes exothermic decomposition to give  $Cr_2O_3$ .  
 (D) Potassium dichromate is used as a titrant for  $Fe^{2+}$  ions.
- Q.3 Pick out the incorrect statement-**  
 (A)  $MnO_4^{2-}$  is quite strongly oxidizing and stable only in very strong alkalines. In dilute alkali, water of 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.
- Q.4 Which of the electron configurations is correctly matched to the appropriate transition metal cation ?**  
 (A)  $Co^{3+}$  :  $[Ar] 4s^2 3d^4$   
 (B)  $Cu^{2+}$  :  $[Ar] 3d^9$   
 (C)  $Pd^{2+}$  :  $[Xe] 4d^8$   
 (D)  $Ru^{3+}$  :  $[Kr] 5s^2 4d^3$   
 (E)  $Cr^{2+}$  :  $[Ar] 4s^2 3d^2$
- Q.5 Which statement explains why chromium metal is resistant to corrosion ?**  
 (A) It reacts with oxygen to form a film of chromium(III) oxide on the metal surface.  
 (B) It has a negative standard oxidation potential  
 (C) It reacts with water to form a film of chromium(III) hydroxide on the metal surface.  
 (D) Chromium is only slightly resistant to corrosion and must be protected by galvanization.
- Q.6 As the number of ..... , the melting points of the transition metals ..... .**  
 (A) Unpaired of electron decreases; increase  
 (B) d electrons increases; increase  
 (C) Unpaired d electrons increases; increase  
 (D) d electrons increases; decrease then increase  
 (E) d electrons decreases; increase
- Q.7 Which ligand is correctly characterized?**  
 (A)  $EDTA^{4-}$  : tetradentate  
 (B)  $NCS^-$  : bidentate  
 (C)  $C_2O_4^{2-}$  : bidentate  
 (D)  $H_2NCH_2CO_2^-$  : tridentate  
 (E)  $H_2NCH_2CH_2NH_2$  : monodentate
- Q.8 Which metal hybrid orbital is correctly matched to the number of unpaired electrons in the tetrahedral complex  $[Cu(en)_2]^{2+}$  ?**  
 (A)  $sp$ , 1 (B)  $dsp^2$ , 3  
 (C)  $sp^3$ , 1 (D)  $sp^3$ , 3  
 (E)  $dsp^2$ , 1
- Q.9 Which characteristic does the valence bond theory and crystal-field theory have in common ?**  
 (A) Both theories can account for the color of a coordination complex.  
 (B) Both theories use electrostatic forces in their description of coordination complexes.  
 (C) Both theories use hybrid orbitals in their description of coordination complexes.  
 (D) Both theories are able to account for the bonding between the metal and the ligand.  
 (E) Both theories readily explain why a coordination complex can be high-spin or low-spin.
- Q.10 Which behavior is generally characteristic of transition metal cations ?**  
 (A) The remaining electrons are more shielded.  
 (B) Most of the valence electrons are in the p subshell.  
 (C) There is an initial removal of electrons from the d subshell.  
 (D) The value of  $Z_{eff}$  is lower than in the neutral atom.  
 (E) The 4s subshell orbitals are higher in energy than the 3d subshell orbitals.

### CHEMISTRY IIT JEE (CLASS TEST - 7) (INORGANIC) ANSWER KEY

Name : ..... Roll No. : .....

	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Ans.	A	B	C	B	A	C	C	C	D	E

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