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NEET D- AND F-BLOCK ELEMENTS — PYQS

Max. Marks: 312 **Questions:** 78

Section A (MCQ) — 78 questions

Q.1 Although +3 oxidation state is most common in lanthanoids, cerium still shows +4 oxidation state because : [NEET (UG) 2026]

(1) After losing one more electron, it acquires $4f^{14}$ electronic configuration.

(2) Its nearest inert gas is Radon.

(3) After losing one more electron, it acquires $4f^{0}$ electronic configuration.

(4) Its atomic number is 61.

Scan or tap for the full solution

Q.2 The calculated 'spin-only' magnetic moment of Ti^{2+} ($3d^2$) is : [NEET (UG) 2026]

(1) 3.87 BM (2) 4.90 BM

(3) 2.84 BM (4) 5.92 BM

Scan or tap for the full solution

Q.3 Match **List I** with **List II** : [NEET (UG) 2026]

List-I (Transition metal/compound/complex)		List-II (Catalytic Role)	
A.	V_2O_5	I.	Preparation of ammonia from N_2/H_2 mixture
B.	Fe	II.	Polymerisation of alkynes
C.	$PdCl_2$	III.	Preparation of H_2SO_4 from SO_2
D.	Ni complex	IV.	Oxidation of ethyne to ethanal

(1) A-III, B-IV, C-I, D-II

(2) A-III, B-I, C-IV, D-II

(3) A-II, B-I, C-IV, D-III

(4) A-IV, B-I, C-III, D-II

Solution

Q.4 The lanthanide ion having four unpaired electrons is (Given : Atomic numbers of Ce = 58, Nd = 60, Tb = 65 and Ho = 67) [RE-NEET (UG) 2026]

(1) Ho^{3+} (2) Nd^{3+} (3) Ce^{3+} (4) Tb^{3+}

Scan or tap for the full solution

Q.5 The green paramagnetic species formed by heating $KMnO_4$ at 513 K is [RE-NEET (UG) 2026]

(1) KO_2 (2) K_2MnO_4

(3) Mn_3O_4 (4) MnO

Scan or tap for the full solution

Q.6 Given below are two statements: One is labelled as **Assertion A** and the other is labelled as **Reason R**.

In light of the above statements, choose the most appropriate answer from the options given below:

Assertion (A): Generally, 3d transition metals have high melting points.

Reason (R): Involvement of 3d-electrons in addition to 4s-electrons in the interatomic metallic bonding. [RE-NEET (UG) 2026]

(1) A is not correct but R is correct

(2) Both A and R are correct and R is the correct explanation of A

(3) Both A and R are correct and R is NOT the correct explanation of A

(4) A is correct but R is not correct.

Scan or tap for the full solution

Q.7 Match **List - I** with **List - II**.

List - I		List - II	
A.	Haber process	I.	Fe catalyst
B.	Wacker oxidation	II.	$PdCl_2$
C.	Wilkinson catalyst	III.	$[(PPh_3)_3RhCl]$
D.	Ziegler catalyst	IV.	$TiCl_4$ with $Al(CH_3)_3$

Choose the correct answer from the options given below : [NEET (UG) 2025]

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-IV, C-III, D-II

(3) A-I, B-II, C-IV, D-III

(4) A-II, B-III, C-I, D-IV

Solution

Q.8 Given below are two statements :

Statement-I: Ferromagnetism is considered as an extreme form of paramagnetism.

Statement-II: The number of unpaired electrons in a Cr^{2+} ion (Z = 24) is the same as that of a Nd^{3+} ion (Z = 60).

In the light of the above statements, choose the correct answer from the options given below : [NEET (UG) 2025]

(1) Statement-I is true but Statement-II is false
(2) Statement-I is false but Statement-II is true
(3) Both Statement-I and Statement-II are true
(4) Both Statement-I and Statement-II are false

Scan or tap for the full solution

Q.9 'Spin only' magnetic moment is same for which of the following ions?

A. Ti^{3+} B. Cr^{2+}
C. Mn^{2+} D. Fe^{2+}
E. Sc^{3+}

Choose the most appropriate answer from the options given below. [NEET (UG) 2024]

(1) B and D only (2) A and E only
(3) B and C only (4) A and D only

Scan or tap for the full solution

Q.10 The E° value for the Mn^{3+}/Mn^{2+} couple is more positive than that of Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+} due to change of [NEET (UG) 2024]

(1) d^5 to d^4 configuration
(2) d^5 to d^2 configuration
(3) d^4 to d^5 configuration
(4) d^3 to d^5 configuration

Solution

Q.11 The pair of lanthanoid ions which are diamagnetic is [NEET (UG) 2024]

(1) Ce^{4+} and Yb^{2+} (2) Ce^{3+} and Eu^{2+}
(3) Gd^{3+} and Eu^{3+} (4) Pm^{3+} and Sm^{3+}

Scan or tap for the full solution

Q.12 Which of the following pairs of ions will have same spin only magnetic moment values within the pair?

A. Zn^{2+}, Ti^{2+} B. Cr^{2+}, Fe^{2+}
C. Ti^{3+}, Cu^{2+} D. V^{2+}, Cu^{+}

Choose the correct answer from the options given below : [RE-NEET (UG) 2024]

(1) C and D only (2) A and D only
(3) A and B only (4) B and C only

Scan or tap for the full solution

Q.13 Which of the following set of ions act as oxidising agents? [RE-NEET (UG) 2024]

(1) Ce^{4+} and Tb^{4+} (2) La^{3+} and Lu^{3+}
(3) Eu^{2+} and Yb^{2+} (4) Eu^{2+} and Tb^{4+}

Scan or tap for the full solution

Q.14 The UV-visible absorption bands in the spectra of lanthanoid ions are 'X', probably because of the excitation of electrons involving 'Y'. The 'X' and 'Y', respectively, are : [RE-NEET (UG) 2024]

(1) Broad and f orbitals
(2) Narrow and f orbitals
(3) Broad and d and f orbitals
(4) Narrow and d and f orbitals

Solution

Q.15 The oxidation states not shown by Mn in given reaction are :

$$3MnO_4^{2-} + 4H^+ \longrightarrow 2MnO_4^- + MnO_2 + 2H_2O$$

A. +6 B. +2
C. +4 D. +7
E. +3

Choose the most appropriate answer from the options given below : [RE-NEET (UG) 2024]

(1) D and E only (2) B and D only
(3) A and B only (4) B and E only

Scan or tap for the full solution

Q.16 The stability of Cu^{2+} is more than Cu^{+} salts in aqueous solution due to - [NEET (UG) 2023]

(1) enthalpy of atomization.
(2) hydration energy.
(3) second ionisation enthalpy.
(4) first ionisation enthalpy.

Solution

Q.17 Which of the following statements are INCORRECT?

A. All the transition metals except scandium form MO oxides which are ionic.
B. The highest oxidation number corresponding to the group number in transition metal oxides is attained in Sc_2O_3 to Mn_2O_7.
C. Basic character increases from V_2O_3 to V_2O_4 to V_2O_5.
D. V_2O_4 dissolves in acids to give VO_4^{3-} salts.
E. CrO is basic but Cr_2O_3 is amphoteric.

Choose the correct answer from the options given below: [NEET (UG) 2023]

(1) B and D only (2) C and D only
(3) B and C only (4) A and E only

Scan or tap for the full solution

Q.18 Gadolinium has a low value of third ionisation enthalpy because of [NEET (UG) 2022]

(1) small size

(2) high exchange enthalpy

(3) high electronegativity

(4) high basic character

Solution

Q.19 In the neutral or faintly alkaline medium, $KMnO_4$ oxidises iodide into iodate. The change in oxidation state of manganese in this reaction is from [NEET (UG) 2022]

(1) +7 to +4 (2) +6 to +4

(3) +7 to +3 (4) +6 to +5

Scan or tap for the full solution

Q.20 Decrease in size from left to right in actinoid series is greater and gradual than that in lanthanoid series due to [NEET (UG) 2022 (Phase 2)]

(1) 5f orbitals have greater shielding effect

(2) 4f orbitals are penultimate

(3) 4f orbitals have greater shielding effect

(4) 5f orbitals have poor shielding effect

Scan or tap for the full solution

Q.21 Given below are two statements :

Statement-I: Cr^{2+} is oxidising and Mn^{3+} is reducing in nature.

Statement-II: Sc^{3+} compounds are repelled by the applied magnetic field.

In the light of the above statements, choose the most appropriate answer from the options given below : [NEET (UG) 2022 (Phase 2)]

(1) Statement-I is incorrect but Statement-II is correct

(2) Both Statement-I and Statement-II are correct

(3) Both Statement-I and Statement-II are incorrect

(4) Statement-I is correct but Statement-II is incorrect

Scan or tap for the full solution

Q.22 The incorrect statement among the following is : [NEET (UG) 2021]

(1) Actinoids are highly reactive metals, especially when finely divided.

(2) Actinoid contraction is greater for element to element than lanthanoid contraction.

(3) Most of the trivalent Lanthanoid ions are colorless in the solid state.

(4) Lanthanoids are good conductors of heat and electricity.

Scan or tap for the full solution

Q.23 Zr (Z = 40) and Hf (Z = 72) have similar atomic and ionic radii because of : [NEET (UG) 2021]

(1) Having similar chemical properties

(2) Belonging to same group

(3) Diagonal relationship

(4) Lanthanoid contraction

Solution

Q.24 The calculated spin only magnetic moment of Cr^{2+} ion is? [NEET (UG) 2020]

(1) 4.90 BM (2) 5.92 BM

(3) 2.84 BM (4) 3.87 BM

Scan or tap for the full solution

Q.25 Identify the incorrect statement. [NEET (UG) 2020]

(1) The transition metals and their compounds are known for their catalytic activity due to their ability to adopt multiple oxidation states and to form complexes.

(2) Interstitial compounds are those that are formed when small atoms like H, C or N are trapped inside the crystal lattices of metals.

(3) The oxidation states of chromium in CrO_4^{2-} and $Cr_2O_7^{2-}$ are not the same.

(4) Cr^{2+} (d^4) is a stronger reducing agent than Fe^{2+} (d^6) in water.

Scan or tap for the full solution

Q.26 The manganate and permanganate ions are tetrahedral due to : [NEET (UG) 2019]

(1) The π-bonding involves overlap of p-orbitals of oxygen with p-orbitals of manganese

(2) The π-bonding involves overlap of d-orbitals of oxygen with d-orbitals of manganese

(3) The π-bonding involves overlap of p-orbitals of oxygen with d-orbitals of manganese

(4) There is no π-bonding

Scan or tap for the full solution

Q.27 Which one of the following ions exhibits d-d transition and paramagnetism as well? [NEET 2018]

(1) CrO_4^{2-} (2) $Cr_2O_7^{2-}$ (3) MnO_4^- (4) MnO_4^{2-}

Scan or tap for the full solution

Q.28 The reason for greater range of oxidation states in actinoids is attributed to [NEET 2017]

(1) actinoid contraction

(2) 5f, 6d and 7s levels having comparable energies

(3) 4f and 5d levels being close in energies

(4) the radioactive nature of actinoids.

Scan or tap for the full solution

Q.29 Which one of the following statements is correct when SO_2 is passed through acidified $K_2Cr_2O_7$ solution? [NEET 2016 (Phase 1)]

(1) SO_2 is reduced.

(2) Green $Cr_2(SO_4)_3$ is formed.

(3) The solution turns blue.

(4) The solution is decolourised.

Solution

Q.30 The electronic configuration of Eu (Atomic No. 63), Gd (Atomic No. 64) and Tb (Atomic No. 65) are [NEET 2016 (Phase 1)]

(1) $[Xe]4f^6\ 5d^1\ 6s^2$, $[Xe]4f^7\ 5d^1\ 6s^2$ and $[Xe]4f^8\ 5d^1\ 6s^2$

(2) $[Xe]4f^7\ 6s^2$, $[Xe]4f^7\ 5d^1\ 6s^2$ and $[Xe]4f^9\ 6s^2$

(3) $[Xe]4f^7\ 6s^2$, $[Xe]4f^8\ 6s^2$ and $[Xe]4f^8\ 5d^1\ 6s^2$

(4) $[Xe]4f^6\ 5d^1\ 6s^2$, $[Xe]4f^7\ 5d^1\ 6s^2$ and $[Xe]4f^9\ 6s^2$

Scan or tap for the full solution

Q.31 Which one of the following statements related to lanthanoids is incorrect? [NEET 2016 (Phase 2)]

(1) Europium shows +2 oxidation state.

(2) The basicity decreases as the ionic radius decreases from Pr to Lu.

(3) All the lanthanons are much more reactive than aluminium.

(4) Ce(+4) solutions are widely used as oxidizing agent in volumetric analysis.

Scan or tap for the full solution

Q.32 Gadolinium belongs to 4f series. Its atomic number is 64. Which of the following is the correct electronic configuration of gadolinium? [AIPMT 2015]

(1) $[Xe]4f^9 5s^1$ (2) $[Xe]4f^7 5d^1 6s^2$

(3) $[Xe]4f^6 5d^2 6s^2$ (4) $[Xe]4f^8 6d^2$

Scan or tap for the full solution

Q.33 Magnetic moment 2.84 B.M. is given by (At. nos. Ni = 28, Ti = 22, Cr = 24, Co = 27) [AIPMT 2015 (Cancelled)]

(1) Cr^{2+} (2) Co^{2+} (3) Ni^{2+} (4) Ti^{3+}

Scan or tap for the full solution

Q.34 Because of lanthanoid contraction, which of the following pairs of elements have nearly same atomic radii? (Numbers in the parenthesis are atomic numbers) [AIPMT 2015 (Cancelled)]

(1) Zr(40) and Hf(72) (2) Zr(40) and Ta(73)

(3) Ti(22) and Zr(40) (4) Zr(40) and Nb(41)

Scan or tap for the full solution

Q.35 The reaction of aqueous $KMnO_4$ with H_2O_2 in acidic conditions gives [AIPMT 2014]

(1) Mn^{4+} and O_2 (2) Mn^{2+} and O_2

(3) Mn^{2+} and O_3 (4) Mn^{4+} and MnO_2

Scan or tap for the full solution

Q.36 Magnetic moment 2.83 BM is given by which of the following ions?
(At. nos. Ti = 22, Cr = 24, Mn = 25, Ni = 28) [AIPMT 2014]

(1) Ti^{3+} (2) Ni^{2+} (3) Cr^{3+} (4) Mn^{2+}

Scan or tap for the full solution

Q.37 Reason of lanthanoid contraction is [AIPMT 2014]

(1) negligible screening effect of 'f'-orbitals

(2) increasing nuclear charge

(3) decreasing nuclear charge

(4) decreasing screening effect.

Solution

Q.38 $KMnO_4$ can be prepared from K_2MnO_4 as per the reaction,

$$3MnO_4^{2-} + 2H_2O \rightleftharpoons 2MnO_4^- + MnO_2 + 4OH^-$$

The reaction can go to completion by removing OH^- ions by adding [NEET 2013]

(1) CO_2 (2) SO_2 (3) HCl (4) KOH

Scan or tap for the full solution

Q.39 Which of the following does not give oxygen on heating? [NEET 2013]

(1) $K_2Cr_2O_7$ (2) $(NH_4)_2Cr_2O_7$

(3) $KClO_3$ (4) $Zn(ClO_3)_2$

Scan or tap for the full solution

Q.40 Which of the following statements about the interstitial compounds is incorrect? [NEET 2013]

(1) They are much harder than the pure metal.

(2) They have higher melting points than the pure metal.

(3) They retain metallic conductivity.

(4) They are chemically reactive.

Scan or tap for the full solution

Q.41 Which of the following lanthanoid ions is diamagnetic?
(At. nos. Ce = 58, Sm = 62, Eu = 63, Yb = 70) [NEET 2013]

(1) Eu^{2+} (2) Yb^{2+} (3) Ce^{2+} (4) Sm^{2+}

Scan or tap for the full solution

Q.42 The outer electronic configuration of Gd (At. No. 64) is [NEET 2013 (Karnataka)]

(1) $4f^5\ 5d^4\ 6s^1$ (2) $4f^7\ 5d^1\ 6s^2$
(3) $4f^3\ 5d^5\ 6s^2$ (4) $4f^4\ 5d^5\ 6s^1$

Scan or tap for the full solution

Q.43 Sc (Z = 21) is a transition element but Zn (Z = 30) is not because [NEET 2013 (Karnataka)]

(1) both Sc^{3+} and Zn^{2+} ions are colourless and form white compounds.
(2) in case of Sc, 3d orbitals are partially filled but in Zn these are filled.
(3) last electron is assumed to be added to 4s level in case of Zn.
(4) both Sc and Zn do not exhibit variable oxidation states.

Scan or tap for the full solution

Q.44 The catalytic activity of transition metals and their compounds is ascribed mainly to [AIPMT 2012 (Mains)]

(1) their magnetic behaviour
(2) their unfilled d-orbitals
(3) their ability to adopt variable oxidation states
(4) their chemical reactivity

Scan or tap for the full solution

Q.45 Which of the following exhibits only + 3 oxidation state? [AIPMT 2012 (Mains)]

(1) U (2) Th (3) Ac (4) Pa

Scan or tap for the full solution

Q.46 Which one of the following does not correctly represent the correct order of the property indicated against it? [AIPMT 2012 (Mains)]

(1) Ti < V < Cr < Mn : increasing number of oxidation states
(2) $Ti^{3+} < V^{3+} < Cr^{3+} < Mn^{3+}$: increasing magnetic moment
(3) Ti < V < Cr < Mn : increasing melting points
(4) Ti < V < Mn < Cr : increasing 2nd ionization enthalpy

Scan or tap for the full solution

Q.47 Four successive members of the first series of the transition metals are listed below. For which one of them the standard potential ($E°_{M^{2+}/M}$) value has a positive sign? [AIPMT 2012 (Mains)]

(1) Co (Z = 27) (2) Ni (Z = 28)
(3) Cu (Z = 29) (4) Fe (Z = 26)

Scan or tap for the full solution

Q.48 Identify the alloy containing a non-metal as a constituent in it. [AIPMT 2012 (Prelims)]

(1) Invar (2) Steel
(3) Bell metal (4) Bronze

Solution

Q.49 Which of the statements is not true? [AIPMT 2012 (Prelims)]

(1) On passing H_2S through acidified $K_2Cr_2O_7$ solution, a milky colour is observed.
(2) $Na_2Cr_2O_7$ is preferred over $K_2Cr_2O_7$ in volumetric analysis.
(3) $K_2Cr_2O_7$ solution in acidic medium is orange.
(4) $K_2Cr_2O_7$ solution becomes yellow on increasing the pH beyond 7.

Scan or tap for the full solution

Q.50 For the four successive transition elements (Cr, Mn, Fe and Co), the stability of +2 oxidation state will be there in which of the following order?
(At. nos. Cr = 24, Mn = 25, Fe = 26, Co = 27) [AIPMT 2011 (Prelims)]

(1) Mn > Fe > Cr > Co (2) Fe > Mn > Co > Cr
(3) Co > Mn > Fe > Cr (4) Cr > Mn > Co > Fe

Scan or tap for the full solution

Q.51 Acidified $K_2Cr_2O_7$ solution turns green when Na_2SO_3 is added to it. This is due to the formation of [AIPMT 2011 (Prelims)]

(1) $Cr_2(SO_4)_3$ (2) CrO_4^{2-}
(3) $Cr_2(SO_3)_3$ (4) $CrSO_4$

Solution

Q.52 Which of the following oxidation states is the most common among the lanthanoids? [AIPMT 2010 (Mains)]

(1) 4 (2) 2 (3) 5 (4) 3

Scan or tap for the full solution

Q.53 Which of the following ions will exhibit colour in aqueous solutions? [AIPMT 2010 (Prelims)]

(1) La^{3+} (Z = 57) (2) Ti^{3+} (Z = 22)
(3) Lu^{3+} (Z = 71) (4) Sc^{3+} (Z = 21)

Scan or tap for the full solution

Q.54 Which of the following ions has electronic configuration $[Ar]3d^6$?
(At. nos. Mn = 25, Fe = 26, Co = 27, Ni = 28) [AIPMT 2010 (Prelims)]

(1) Ni^{3+} (2) Mn^{3+} (3) Fe^{3+} (4) Co^{3+}

Scan or tap for the full solution

Q.55 Which of the following pairs has the same size? [AIPMT 2010 (Prelims)]

(1) Fe^{2+}, Ni^{2+} (2) Zr^{4+}, Ti^{4+}
(3) Zr^{4+}, Hf^{4+} (4) Zn^{2+}, Hf^{4+}

Scan or tap for the full solution

Q.56 Which one of the elements with the following outer orbital configurations may exhibit the largest number of oxidation states? [AIPMT 2009]

(1) $3d^5 4s^1$ (2) $3d^5 4s^2$ (3) $3d^2 4s^2$ (4) $3d^3 4s^2$

Scan or tap for the full solution

Q.57 Out of TiF_6^{2-}, CoF_6^{3-}, Cu_2Cl_2 and $NiCl_4^{2-}$ (Z of Ti = 22, Co = 27, Cu = 29, Ni = 28) the colourless species are [AIPMT 2009]

(1) Cu_2Cl_2 and $NiCl_4^{2-}$ (2) TiF_6^{2-} and Cu_2Cl_2
(3) CoF_6^{3-} and $NiCl_4^{2-}$ (4) TiF_6^{2-} and CoF_6^{3-}

Scan or tap for the full solution

Q.58 The correct order of decreasing second ionisation enthalpy of Ti(22), V(23), Cr(24) and Mn(25) is [AIPMT 2008]

(1) Mn > Cr > Ti > V (2) Ti > V > Cr > Mn
(3) Cr > Mn > V > Ti (4) V > Mn > Cr > Ti

Scan or tap for the full solution

Q.59 Which one of the following ions is the most stable in aqueous solution?
(At. No. Ti = 22, V = 23, Cr = 24, Mn = 25) [AIPMT 2007]

(1) V^{3+} (2) Ti^{3+} (3) Mn^{3+} (4) Cr^{3+}

Scan or tap for the full solution

Q.60 Identify the incorrect statement among the following: [AIPMT 2007]

(1) Lanthanoid contraction is the accumulation of successive shrinkages.
(2) As a result of lanthanoid contraction, the properties of 4d series of the transition elements have no similarities with the 5d series of elements.
(3) Shielding power of 4f electrons is quite weak.
(4) There is a decrease in the radii of the atoms or ions as one proceeds from La to Lu.

Scan or tap for the full solution

Q.61 In which of the following pairs are both the ions coloured in aqueous solution?
(At. no. : Sc = 21, Ti = 22, Ni = 28, Cu = 29, Co = 27) [AIPMT 2006]

(1) Ni^{2+}, Cu^{+} (2) Ni^{2+}, Ti^{3+}
(3) Sc^{3+}, Ti^{3+} (4) Sc^{3+}, Co^{2+}.

Scan or tap for the full solution

Q.62 Copper sulphate dissolves in excess of KCN to give [AIPMT 2006]

(1) $Cu(CN)_2$ (2) CuCN
(3) $[Cu(CN)_4]^{3-}$ (4) $[Cu(CN)_4]^{2-}$

Scan or tap for the full solution

Q.63 More number of oxidation states are exhibited by the actinoids than by the lanthanoids. The main reason for this is [AIPMT 2006]

(1) more active nature of the actinoids
(2) more energy difference between 5f and 6d orbitals than that between 4f and 5d orbitals
(3) lesser energy difference between 5f and 6d orbitals than that between 4f and 5d orbitals
(4) greater metallic character of the lanthanoids than that of the corresponding actinoids.

Scan or tap for the full solution

Q.64 More number of oxidation states are exhibited by the actinoids than by the lanthanoids. The main reason for this is [AIPMT 2005]

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(4) greater metallic character of the lanthanoids than that of the corresponding actinoids.

Scan or tap for the full solution

Q.65 The number of moles of $KMnO_4$ reduced by one mole of KI in alkaline medium is [AIPMT 2005]

(1) one (2) two (3) five (4) one fifth

Scan or tap for the full solution

Q.66 Four successive members of the first row transition elements are listed below with their atomic numbers. Which one of them is expected to have the highest third ionisation enthalpy? [AIPMT 2005]

(1) Vanadium (Z = 23) (2) Chromium (Z = 24)
(3) Manganese (Z = 25) (4) Iron (Z = 26)

Scan or tap for the full solution

Q.67 The aqueous solution containing which one of the following ions will be colourless?
(Atomic number : Sc = 21, Fe = 26, Ti = 22, Mn = 25) [AIPMT 2005]
(1) Sc^{3+} (2) Fe^{2+} (3) Ti^{3+} (4) Mn^{2+}

Scan or tap for the full solution

Q.68 Among K, Ca, Fe and Zn, the element which can form more than one binary compound with chlorine is [AIPMT 2004]
(1) Fe (2) Zn (3) K (4) Ca

Scan or tap for the full solution

Q.69 Among the following series of transition metal ions, the one where all metal ions have $3d^2$ electronic configuration is
[At. Nos. Ti = 22, V = 23, Cr = 24, Mn = 25]
[AIPMT 2004]
(1) Ti^{3+}, V^{2+}, Cr^{3+}, Mn^{4+}
(2) Ti^{+}, V^{4+}, Cr^{6+}, Mn^{7+}
(3) Ti^{4+}, V^{3+}, Cr^{2+}, Mn^{3+}
(4) Ti^{2+}, V^{3+}, Cr^{4+}, Mn^{5+}

Solution

Q.70 Lanthanoids are [AIPMT 2004]
(1) 14 elements in the sixth period (atomic no. 90 to 103) that are filling 4f sublevel
(2) 14 elements in the seventh period (atomic number = 90 to 103) that are filling 5f sublevel
(3) 14 elements in the sixth period (atomic number = 58 to 71) that are filling the 4f sublevel
(4) 14 elements in the seventh period (atomic number = 50 to 71) that are filling 4f sublevel.

Scan or tap for the full solution

Q.71 Which one of the following characteristics of the transition metals is associated with their catalytic activity? [AIPMT 2003]
(1) High enthalpy of atomization
(2) Paramagnetic behaviour
(3) Colour of hydrated ions
(4) Variable oxidation states

Solution

Q.72 The basic character of the transition metal monoxides follows the order
(Atomic nos. Ti = 22, V = 23, Cr = 24, Fe = 26)
[AIPMT 2003]
(1) VO > CrO > TiO > FeO
(2) CrO > VO > FeO > TiO
(3) TiO > FeO > VO > CrO
(4) TiO > VO > CrO > FeO

Solution

Q.73 The correct order of ionic radii of Y^{3+}, La^{3+}, Eu^{3+} and Lu^{3+} is
(Atomic nos. Y = 39, La = 57, Eu = 63, Lu = 71)
[AIPMT 2003]
(1) $Y^{3+} < La^{3+} < Eu^{3+} < Lu^{3+}$
(2) $Y^{3+} < Lu^{3+} < Eu^{3+} < La^{3+}$
(3) $Lu^{3+} < Eu^{3+} < La^{3+} < Y^{3+}$
(4) $La^{3+} < Eu^{3+} < Lu^{3+} < Y^{3+}$

Solution

Q.74 General electronic configuration of lanthanides is
[AIPMT 2002]
(1) $(n-2)f^{1-14}\ (n-1)s^2p^6d^{0-1}\ ns^2$
(2) $(n-2)f^{0-14}\ (n-1)d^{0-1}\ ns^2$
(3) $(n-2)f^{0-14}\ (n-1)d^{10}\ ns^2$
(4) $(n-2)d^{0-1}\ (n-1)f^{1-14}\ ns^2$

Solution

Q.75 Which of the following shows maximum number of oxidation states? [AIPMT 2002]
(1) Cr (2) Fe (3) Mn (4) V

Scan or tap for the full solution

Q.76 Which of the following statements is **not** correct? [AIPMT 2001]
(1) $La(OH)_3$ is less basic than $Lu(OH)_3$.
(2) In lanthanide series ionic radius of Ln^{3+} ion decreases.
(3) La is actually an element of transition series rather than lanthanides.
(4) Atomic radii of Zr and Hf are nearly the same because of lanthanide contraction.

Scan or tap for the full solution

Q.77 Which of the following shows maximum number of oxidation states? [AIPMT 2000]
(1) Cr (2) Fe (3) Mn (4) V

Scan or tap for the full solution

Q.78 Which ion is colourless? [AIPMT 2000]
(1) Cr^{4+} (2) Sc^{3+} (3) Ti^{3+} (4) V^{3+}

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5
Ans.	**3**	**3**	**2**	**1**	**2**
Ques.	6	7	8	9	10
Ans.	**2**	**1**	**1**	**1**	**3**
Ques.	11	12	13	14	15
Ans.	**1**	**4**	**1**	**2**	**4**
Ques.	16	17	18	19	20
Ans.	**2**	**2**	**2**	**1**	**4**
Ques.	21	22	23	24	25
Ans.	**1**	**3**	**4**	**1**	**3**

Ques.	26	27	28	29	30
Ans.	**3**	**4**	**2**	**2**	**2**
Ques.	31	32	33	34	35
Ans.	**3**	**2**	**3**	**1**	**2**
Ques.	36	37	38	39	40
Ans.	**2**	**1**	**1**	**2**	**4**
Ques.	41	42	43	44	45
Ans.	**2**	**2**	**2**	**3**	**3**
Ques.	46	47	48	49	50
Ans.	**3**	**3**	**2**	**2**	**1**
Ques.	51	52	53	54	55
Ans.	**1**	**4**	**2**	**4**	**3**
Ques.	56	57	58	59	60
Ans.	**2**	**2**	**3**	**4**	**2**
Ques.	61	62	63	64	65
Ans.	**2**	**3**	**3**	**3**	**2**
Ques.	66	67	68	69	70
Ans.	**3**	**1**	**1**	**4**	**3**
Ques.	71	72	73	74	75
Ans.	**4**	**4**	**BONUS**	**1**	**3**
Ques.	76	77	78		
Ans.	**1**	**3**	**2**		

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