

NEET D- AND F-BLOCK ELEMENTS — MAGNETIC PROPERTIES OF D-BLOCK ELEMENTS AND FORMATION OF COLOURED IONS — PYQS

Max. Marks: 52

Questions: 13

Section A (MCQ) — 13 questions

Q.1 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.2 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.3 '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.4 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.5 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.6 Which one of the following ions exhibits d-d transition and paramagnetism as well? [NEET 2018]

- (1) CrO_4^{2-} (2) $\text{Cr}_2\text{O}_7^{2-}$ (3) MnO_4^- (4) MnO_4^{2-}

Scan or tap for the full solution 

Q.7 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.8 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.9 Which of the following ions will exhibit colour in aqueous solutions? [AIPMT 2010 (Prelims)]

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

Scan or tap for the full solution 

Q.10 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.11 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.12 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.13 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	6	7	8	9	10	11
Ans.	3	1	1	4	1	4	3	2	2	2	2
Ques.	12	13									
Ans.	1	2									