

PYQSide

JEE MAIN CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES — PYQS

Max. Marks: 112

Questions: 28

Section A (MCQ)

Q.1 Match List - I with List - II.

List - I Electronic configuration of neutral atom (where $n = 2$)		List - II Ionization Energy (kJ mol^{-1})	
A.	ns^2	I.	2080
B.	ns^2np^1	II.	899
C.	ns^2np^3	III.	800
D.	ns^2np^6	IV.	1402

Choose the correct answer from the options given below : [JEE Main 2026 (Online) 8th April Evening Shift]

- (1) A-II, B-III, C-IV, D-I (2) A-IV, B-III, C-II, D-I
(3) A-III, B-II, C-IV, D-I (4) A-III, B-II, C-I, D-IV

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Q.2 In a period, the first ionisation enthalpy of the element at extreme left and the negative electron gain enthalpy of the extreme right element, except noble gases, are respectively.

[JEE Main 2026 (Online) 6th April Evening Shift]

- (1) lowest and lowest (2) highest and lowest
(3) lowest and highest (4) highest and highest

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Q.3 Given below are two statements:

Statement-I: The correct order of electronegativity of fluorine, oxygen and nitrogen is $F > O > N$.

Statement-II: The oxidation state of oxygen in OF_2 is +2 and in Na_2O is -2.

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2026 (Online) 5th April Morning Shift]

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

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Q.4 Given below are two statements :

Statement-I: The number of pairs among $[\text{Al}_2\text{O}_3, \text{Cr}_2\text{O}_3]$, $[\text{Cl}_2\text{O}_7, \text{Mn}_2\text{O}_7]$, $[\text{Na}_2\text{O}, \text{V}_2\text{O}_3]$ and $[\text{CO}, \text{N}_2\text{O}]$ that contain oxides of same nature (acidic, basic, neutral or amphoteric) is 4.

Statement-II: Among Na_2O , Al_2O_3 , CO and Cl_2O_7 , the most basic and acidic oxides are Na_2O and Cl_2O_7 , respectively.

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

[JEE Main 2026 (Online) 5th April Evening Shift]

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

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Q.5 A monoatomic anion (A^-) has 45 neutrons and 36 electrons. Atomic mass, group in the periodic table and physical state at room temperature of the element (A) respectively are

[JEE Main 2026 (Online) 4th April Morning Shift]

- (1) 80, 17, liquid (2) 81, 16, solid
(3) 80, 16, gas (4) 81, 15, gas

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Q.6 The 1st ionization enthalpy for Mg is +737 kJ/mol. The most probable estimated value of the 2nd ionization enthalpy of Mg is _____.

[JEE Main 2026 (Online) 4th April Evening Shift]

- (1) -906 kJ/mol (2) -856 kJ/mol
(3) +1450 kJ/mol (4) +590 kJ/mol

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Q.7 Given below are two statements :

Statement-I: The first ionisation enthalpy of the elements Na, Mg, Cl and Ar follows the order $\text{Na} >$

$\text{Mg} > \text{Cl} > \text{Ar}$.

Statement-II: Among Ca, Al, Fe and B, the third ionisation enthalpy is very high for Ca.

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

[JEE Main 2026 (Online) 2nd April Morning Shift]

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

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Q.8 The correct set that contains all kinds (basic, acidic, amphoteric and neutral) of oxides is :

[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) Na_2O , K_2O , Al_2O_3 and As_2O_3
- (2) Al_2O_3 , As_2O_3 , CO and NO
- (3) K_2O , Cl_2O_7 , As_2O_3 and NO
- (4) Na_2O , N_2O , Al_2O_3 and CO

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Q.9 Given below are two statements :

Statement-I: The second ionization enthalpy of B, Al and Ga is in the order of $\text{B} > \text{Al} > \text{Ga}$.

Statement-II: The correct order in terms of first ionization enthalpy is $\text{Si} < \text{Ge} < \text{Pb} < \text{Sn}$.

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

[JEE Main 2026 (Online) 2nd April Evening Shift]

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

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Q.10 In period 4 of the periodic table, the elements with highest and lowest atomic radii are respectively.

[JEE Main 2026 (Online) 28th January Morning Shift]

- (1) Rb & Br (2) Na & Cl (3) K & Br (4) K & Se

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Q.11 Consider the elements N, P, O, S, Cl and F. The number of valence electrons present in the elements with most and least metallic character from the above list is respectively.

[JEE Main 2026 (Online) 28th January Evening Shift]

- (1) 7 and 5 (2) 6 and 7 (3) 5 and 7 (4) 5 and 6

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Q.12 Given below are two statements :

Statement-I: $\text{K} > \text{Mg} > \text{Al} > \text{B}$ is the correct order in terms of metallic character.

Statement-II: Atomic radius is always greater than the ionic radius for any element.

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2026 (Online) 24th January Morning Shift]

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

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Q.13 The correct order of C, N, O and F in terms of second ionisation potential is

[JEE Main 2026 (Online) 24th January Evening Shift]

- (1) $\text{C} < \text{N} < \text{F} < \text{O}$ (2) $\text{C} < \text{F} < \text{N} < \text{O}$
- (3) $\text{F} < \text{N} < \text{C} < \text{O}$ (4) $\text{C} < \text{O} < \text{N} < \text{F}$

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Q.14 The correct trend in the first ionization enthalpies of the elements in the 3rd period of periodic table is :

[JEE Main 2026 (Online) 23rd January Morning Shift]

- (1) $\text{Si} < \text{S} < \text{Al} < \text{P} < \text{Cl}$ (2) $\text{Al} < \text{Si} < \text{S} < \text{P} < \text{Cl}$
- (3) $\text{S} < \text{Si} < \text{Al} < \text{P} < \text{Cl}$ (4) $\text{Al} < \text{S} < \text{P} < \text{Si} < \text{Cl}$

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Q.15 Given below are two statements :

Statement-I: The second ionisation enthalpy of Na is larger than the corresponding ionisation enthalpy of Mg.

Statement-II: The ionic radius of O^{2-} is larger than that of F^- .

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

[JEE Main 2026 (Online) 23rd January Evening Shift]

- (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

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Q.16 A 'p'-block element (E) and hydrogen form a binary cation $(\text{EH}_x)^+$, while EH_3 on treatment with K_2HgI_4 in alkaline medium gives a precipitate of basic mercury(II) amido-iodine. Given below are first ionisation enthalpy values (kJ mol^{-1}) for first element each from group 13, 14, 15 and 16. Identify the correct first ionisation enthalpy value for element E.

[JEE Main 2026 (Online) 22nd January Morning Shift]

- (1) 1402 (2) 1086 (3) 801 (4) 1312

Scan or tap for the full solution

**Q.17** Given below are two statements :**Statement-I:** $C < O < N < F$ is the correct order in terms of first ionization enthalpy values.**Statement-II:** $S > Se > Te > Po > O$ is the correct order in terms of the magnitude of electron gain enthalpy values.

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

[JEE Main 2026 (Online) 22nd January Evening Shift]

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

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**Q.18** Which of the following represents the correct trend for the mentioned property?

- A. $F > P > S > B$ – First Ionization Energy
 B. $Cl > F > S > P$ – Electron Affinity
 C. $K > Al > Mg > B$ – Metallic character
 D. $K_2O > Na_2O > MgO > Al_2O_3$ – Basic character
 Choose the **correct** answer from the options given below :

[JEE Main 2026 (Online) 21st January Morning Shift]

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

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**Q.19** Given below are two statements :**Statement-I:** The correct order in terms of atomic/ionic radii is $Al > Mg > Mg^{2+} > Al^{3+}$.**Statement-II:** The correct order in terms of the magnitude of electron gain enthalpy is $Cl > Br > S > O$.

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

[JEE Main 2026 (Online) 21st January Evening Shift]

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

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**Q.20** The atomic number of the element from the following with lowest 1st ionisation enthalpy is :

[JEE Main 2025 (Online) 8th April Evening Shift]

- (1) 32 (2) 35 (3) 19 (4) 87

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**Q.21** Choose the incorrect trend in the atomic radii (r) of the elements.

[JEE Main 2025 (Online) 7th April Evening Shift]

- (1)
- $r_{Rb} < r_{Cs}$
- (2)
- $r_{At} < r_{Cs}$
- (3)
- $r_{Br} < r_{K}$
- (4)
- $r_{Mg} < r_{Al}$

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**Q.22** Which of the following statements are correct?

- A. The process of adding an electron to a neutral gaseous atom is always exothermic.
 B. The process of removing an electron from an isolated gaseous atom is always endothermic.
 C. The 1st ionization energy of boron is less than that of beryllium.
 D. The electronegativity of C is 2.5 in CH_4 and CCl_4
 E. Li is the most electropositive among elements of group I.

Choose the correct answer from the options given below: [JEE Main 2025 (Online) 3rd April Morning Shift]

- (1) A, C and D Only (2) B and C Only
 (3) B and D Only (4) B, C and E Only

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**Q.23** Match the LIST-I with LIST-II

LIST-I (Family)		LIST-II (Symbol of Element)	
A.	Pnictogen (group 15)	I.	Ts
B.	Chalcogen	II.	Og
C.	Halogen	III.	Lv
D.	Noble gas	IV.	Mc

Choose the correct answer from the options given below: [JEE Main 2025 (Online) 3rd April Evening Shift]

- (1) A-IV, B-I, C-II, D-III (2) A-IV, B-III, C-I, D-II
 (3) A-III, B-I, C-IV, D-II (4) A-II, B-III, C-IV, D-I

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**Q.24** Electronic configuration of four elements A, B, C and D are given below:

- (A) $1s^2 2s^2 2p^3$
 (B) $1s^2 2s^2 2p^4$
 (C) $1s^2 2s^2 2p^5$
 (D) $1s^2 2s^2 2p^2$

Which of the following is the correct order of increasing electronegativity (Pauling's scale)?

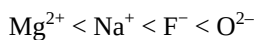
[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) $D < A < B < C$ (2) $A < B < C < D$
 (3) $A < C < B < D$ (4) $A < D < B < C$

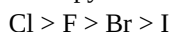
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**Q.25** Given below are two statements :

Statement-I: The radii of isoelectronic species increase in the order:



Statement-II: The magnitude of electron gain enthalpy of halogens decreases in the order:



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

[JEE Main 2025 (Online) 29th January Morning Shift]

- (1) Statement-I is incorrect but Statement-II is correct
- (2) Both Statement-I and Statement-II are correct
- (3) Statement-I is correct but Statement-II is incorrect
- (4) Both Statement-I and Statement-II are incorrect

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Q.26 The incorrect decreasing order of atomic radii is

[JEE Main 2025 (Online) 28th January Morning Shift]

- (1) $\text{Si} > \text{P} > \text{Cl} > \text{F}$
- (2) $\text{Mg} > \text{Al} > \text{C} > \text{O}$
- (3) $\text{Al} > \text{B} > \text{N} > \text{F}$
- (4) $\text{Be} > \text{Mg} > \text{Al} > \text{Si}$

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Q.27 Given below are two statements :

Statement-I: According to the Law of Octaves, the elements were arranged in the increasing order of their atomic number.

Statement-II: Meyer observed a periodically repeated pattern upon plotting physical properties of certain elements against their respective atomic numbers.

In the light of the above statements, choose the **correct** answer from the options given below :

[JEE Main 2025 (Online) 28th January Evening Shift]

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

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Section B (Numerical)

Q.28 First and second ionization enthalpies of lithium are 520 kJ mol^{-1} and 7297 kJ mol^{-1} respectively. Energy required to convert 3.5 mg lithium (g) into $\text{Li}^{2+}(\text{g})$ [$\text{Li}(\text{g}) \longrightarrow \text{Li}^{2+}(\text{g})$] is _____ kJ. (nearest integer)

[Molar mass of Li = 7 g mol^{-1}]

[JEE Main 2026 (Online) 6th April Morning Shift]

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ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	1	3	1	1	1	3	4	3	2	3	3
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	3	1	2	3	1	4	2	3	4	4	2
Ques.	23	24	25	26	27						
Ans.	2	1	2	4	1						

Section B (Numerical)

Ques.	28										
Ans.	4										