

## Properties

Bank

## Questions with Solutions

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## Q1 - 25 January - Shift 1

Inert gases have positive electron gain enthalpy. Its correct order is

*Space for your notes:*

- (1)  $\text{Xe} < \text{Kr} < \text{Ne} < \text{He}$
- (2)  $\text{He} < \text{Ne} < \text{Kr} < \text{Xe}$
- (3)  $\text{He} < \text{Xe} < \text{Kr} < \text{Ne}$
- (4)  $\text{He} < \text{Kr} < \text{Xe} < \text{Ne}$

## Q2 - 25 January - Shift 2

Which of the following represents the correct order of metallic character of the given elements ?

*Space for your notes:*

- (1)  $\text{Si} < \text{Be} < \text{Mg} < \text{K}$
- (2)  $\text{Be} < \text{Si} < \text{Mg} < \text{K}$
- (3)  $\text{K} < \text{Mg} < \text{Be} < \text{Si}$
- (4)  $\text{Be} < \text{Si} < \text{K} < \text{Mg}$

## Q3 - 29 January - Shift 1

The bond dissociation energy is highest for

*Space for your notes:*

- (1)  $\text{Cl}_2$
- (2)  $\text{I}_2$
- (3)  $\text{Br}_2$
- (4)  $\text{F}_2$

## Q4 - 30 January - Shift 1

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Match List-I with List-II  
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LIST-I (Atomic number)		LIST-II (Block of periodic table)	
(A)	37	I.	p-block
(B)	78	II.	d-block
(C)	52	III.	f-block
(D)	65	IV.	s-block

Choose the **correct** answer from the options given below:

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

## Q5 - 31 January - Shift 1

The correct increasing order of the ionic radii is

- (1)  $\text{Cl}^- < \text{Ca}^{2+} < \text{K}^+ < \text{S}^{2-}$
- (2)  $\text{K}^+ < \text{S}^{2-} < \text{Ca}^{2+} < \text{Cl}^-$
- (3)  $\text{S}^{2-} < \text{Cl}^- < \text{Ca}^{2+} < \text{K}^+$
- (4)  $\text{Ca}^{2+} < \text{K}^+ < \text{Cl}^- < \text{S}^{2-}$

Space for your notes:

## Q6 - 31 January - Shift 1

$\text{Nd}^{2+} =$  \_\_\_\_\_

- (1)  $4f^2 6s^2$
- (2)  $4f^4$
- (3)  $4f^3$
- (4)  $4f^4 6s^2$

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Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as

**Reason (R)**

**Assertion (A)** : The first ionization enthalpy of 3d series elements is more than that of group 2 metals

**Reason (R)** : In 3d series of elements successive filling of d-orbitals takes place.

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

- (1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**
- (2) Both **(A)** and **(R)** are true but **(R)** is **not** the correct explanation of **(A)**
- (3) **(A)** is false but **(R)** is true
- (4) **(A)** is true but **(R)** is false

*Space for your notes:*

**Q8 - 31 January - Shift 2**

Which of the following elements have half-filled f-orbitals in their ground state ?

(Given : atomic number

Sm = 62; Eu = 63; Tb = 65; Gd = 64, Pm = 61 )

- A. Sm
- B. Eu
- C. Tb
- D. Gd
- E. Pm

Choose the **correct** answer from the options given below:

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

*Space for your notes:*

**Q9 - 01 February - Shift 2**

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Questions with Solutions For electron gain enthalpies of the elements

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denoted as  $\Delta_{eg}H$ , the incorrect option is :

(1)  $\Delta_{eg}H (\text{Cl}) < \Delta_{eg}H (\text{F})$

(2)  $\Delta_{eg}H (\text{Se}) < \Delta_{eg}H (\text{S})$

(3)  $\Delta_{eg}H (\text{I}) < \Delta_{eg}H (\text{At})$

(4)  $\Delta_{eg}H (\text{Te}) < \Delta_{eg}H (\text{Po})$

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# Answer Key

(As per Official NTA Key released on 2 Feb)

Q1 (3)

Q2 (1)

Q3 (1)

Q4 (4)

Q5 (4)

Q6 (2)

Q7 (1)

Q8 (1)

Q9 (2)

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Element	$\Delta_{\text{eg}}H[\text{KJ/mol}]$
He	+48
Ne	+116
Kr	+96
Xe	+77

From NCERT

So, order is  $\text{Ne} > \text{Kr} > \text{Xe} > \text{He}$ 

Q2 (1)

Metallic character increases down the group and decreases along the period.

Q3 (1)

Bond energy of  $\text{F}_2$  less than  $\text{Cl}_2$  due to lone pair lone pair repulsions.

Bond energy order  $\text{Cl}_2 > \text{Br}_2 > \text{F}_2 > \text{I}_2$

Q4 (4)

Atomic number	Block
37 (K)	s-block
78 (Pt)	d-block
52 (Te)	p-block
65 (Tb)	f-block

Q5 (4)

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In isoelectronic species size  $\propto \frac{1}{Z}$



Q6 (2)



Q7 (1)

From Sc to Mn ionization energy is less than that of Mg.

For 3d series :

	Sc	Ti	V	Cr	Mn
IE (KJ/mol)	631	656	650	653	717
	Fe	Co	Ni	Cu	Zn
IE (KJ/mol)	762	758	736	745	906

For 2<sup>nd</sup> Group

	Be	Mg	Ca	Sr	Ba	Ra
IE (KJ/mol)	631	656	650	653	717	762

Q8 (1)

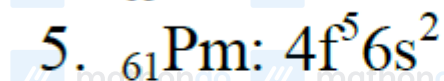
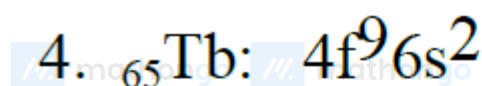
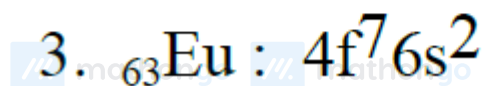
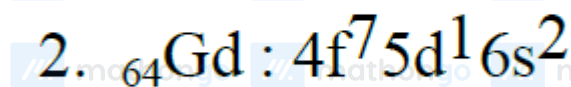
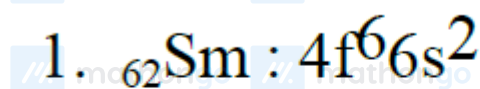
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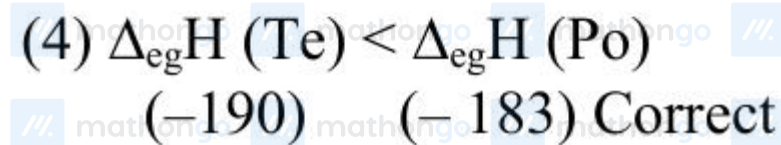
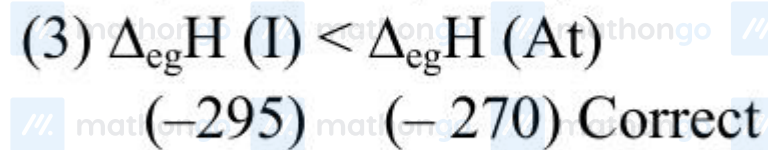
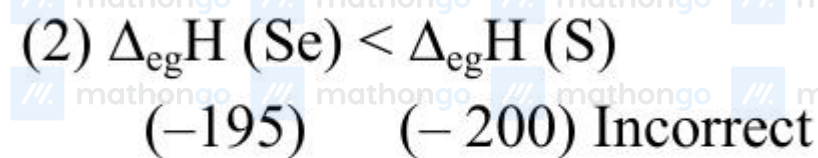
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Q9 (2)



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