

17/08/2022

Slot-1



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## Answers & Solutions

Time : 45 min.

M.M. : 200

## *for* CUET UG-2022

(Chemistry)

### IMPORTANT INSTRUCTIONS:

1. The test is of 45 Minutes duration.
2. The test contains 50 Questions out of which 40 questions need to be attempted.
3. Marking Scheme of the test:
  - a. Correct answer or the most appropriate answer: Five marks (+5)
  - b. Any incorrect option marked will be given minus one mark (–1).
  - c. Unanswered/Marked for Review will be given no mark (0).



Choose the correct answer :

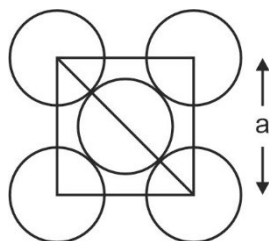
Question ID:692721

In a face centred cubic unit cell of close packed atoms, the radius of atom ( $r$ ) is related to the edge length ' $a$ ' of the unit cell by the expression

- (A)  $r = \frac{a}{\sqrt{2}}$  (B)  $r = \frac{a}{2}$   
 (C)  $r = \frac{a}{2\sqrt{2}}$  (D)  $r = \frac{\sqrt{3}a}{4}$

Answer (C)

Sol. For a FCC unit cell atom touches each other along a face diagonal, that can be represented as



$$\sqrt{2}a = 4r$$

$$r = \frac{a}{2\sqrt{2}}$$

Question ID:692722

Which of the following arrangements represents alignment of magnetic moments of Ferrimagnetic substance?

- (A)  $\uparrow \uparrow \downarrow \uparrow \downarrow \uparrow \uparrow \uparrow$   
 (B)  $\uparrow \uparrow \uparrow \uparrow \uparrow \uparrow \uparrow \uparrow$   
 (C)  $\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$   
 (D)  $\uparrow \downarrow \uparrow \downarrow \uparrow \downarrow \uparrow \downarrow$

Answer (A)

Sol.

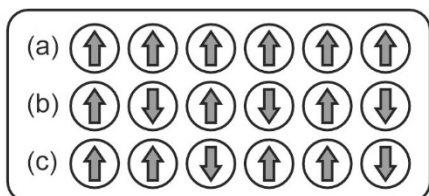


Fig. : Schematic alignment of magnetic moments in (a) ferromagnetic (b) antiferromagnetic and (c) ferrimagnetic.

Hence,

- (A)  $\uparrow \uparrow \downarrow \uparrow \downarrow \uparrow \uparrow \uparrow$  ferrimagnetic  
 (B)  $\uparrow \uparrow \uparrow \uparrow \uparrow \uparrow \uparrow \uparrow$  ferromagnetic  
 (C)  $\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$  ferromagnetic  
 (D)  $\uparrow \downarrow \uparrow \downarrow \uparrow \downarrow \uparrow \downarrow$  anti-ferromagnetic

Question ID:692723

An alloy of Cu, Ag and Au is found to have Cu constituting the CCP lattice. If Ag atoms occupy edge centres, and Au is present at body centre, then the alloy has formula

- (A)  $\text{Cu}_4\text{Ag}_2\text{Au}$  (B)  $\text{Cu}_4\text{Ag}_4\text{Au}$   
 (C)  $\text{Cu}_4\text{Ag}_3\text{Au}$  (D)  $\text{CuAgAu}$

Answer (C)

Sol. Cu forming CCP, so number of Cu = 4

Ag occupying edge centre, so number of Ag

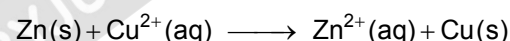
$$= 12 \times \frac{1}{4} = 3$$

Au present at body centre, so number of Au = 1

Formula  $\Rightarrow \text{Cu}_4\text{Ag}_3\text{Au}$

Question ID:692724

What is  $\Delta G^\circ$  for the given reaction?



(Given:  $E^\circ_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V}$  &  $E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34 \text{ V}$ )

$F = 96500 \text{ C mol}^{-1}$

- (A)  $\Delta G^\circ = -212.3 \text{ kJ/mol}$   
 (B)  $\Delta G^\circ = +212.3 \text{ kJ/mol}$   
 (C)  $\Delta G^\circ = -312.5 \text{ kJ/mol}$   
 (D)  $\Delta G^\circ = 0$

Answer (A)

Sol.  $\Delta G^\circ = -nFE^\circ$

For given cell reaction,  $n = 2$

$$E^\circ_{\text{cell}} = E^\circ_{\text{cathode}} - E^\circ_{\text{anode}}$$

$$= 0.34 - (-0.76)$$

$$= 1.1 \text{ V}$$

$$\Delta G^\circ = -2 \times 96500 \times 1.1$$

$$= -212.3 \text{ kJ/mol}$$

**Question ID:692725**

How many electrons flow when a current of 5 amperes is passed through a metal for 193 s?

(Given:  $F = 96500 \text{ C mol}^{-1}$ ,  $N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$ )

- (A)  $6.022 \times 10^{23}$  electrons
- (B)  $6.022 \times 10^{21}$  electrons
- (C)  $3.011 \times 10^{21}$  electrons
- (D)  $3.011 \times 10^{23}$  electrons

**Answer (B)**

**Sol.** Charge  $Q = it$

$$= 5 \times 193$$

$$= 965 \text{ C}$$

$$= \frac{965}{96500}$$

$$= 0.01 \text{ F}$$

1 F = charge of 1 mole electrons

0.01 F = charge of 0.01 mole electrons

= charge of  $6.02 \times 10^{23} \times 0.01$  electrons

= charge of  $6.02 \times 10^{21}$  electrons

**Question ID: 692726**

Kohlrausch law of independent migration of ion is applicable to

- (A) Only to weak electrolytes at a certain concentration
- (B) Only to strong electrolytes at all concentrations
- (C) To both - strong and weak electrolytes
- (D) To non-electrolytes

**Answer (C)**

**Sol. Kohlrausch law of independent migration of ions :** The law states that limiting molar conductivity of an electrolyte can be represented as the sum of the individual contributions of the anion and cation of the electrolyte.

**Question ID:692727**

In the first order reaction the concentration of the reactant is reduced  $\frac{1}{4}$ th in 60 minutes, what will be its half-life?

- (A) 120 minutes
- (B) 40 minutes
- (C) 30 minutes
- (D) 25 minutes

**Answer (C)**

**Sol.** For first order reaction

$$t_{1/4} = 2t_{1/2}$$

$$2t_{1/2} = 60$$

$$t_{1/2} = 30 \text{ min}$$

**Question ID:692728**

Which of the following is the correct relationship between time required for completion of 99.9% of a first order reaction and its half-life?

$$(A) t_{\frac{1}{2}} = 5 \times t_{99.9\%} \quad (B) t_{99.9\%} = 10 \times t_{\frac{1}{2}}$$

$$(C) t_{99.9\%} = 2t_{\frac{1}{2}} \quad (D) t_{99.9\%} = t_{\frac{1}{2}}$$

**Answer (B)**

**Sol.** For first order reaction

$$t = \frac{2.303}{k} \log \left( \frac{a_0}{a_0 - x} \right)$$

if  $a_0 = 100 \text{ M}$

at  $t = t_{99.9\%}$

$x = 99.9 \text{ M}$

$$t_{99.9} = \frac{2.303}{k} \log \left( \frac{100}{100 - 99.9} \right)$$

$$= \frac{3 \times 2.303}{k} = \frac{6.93}{k}$$

$$\text{Since } t_{\frac{1}{2}} = \frac{0.693}{k}$$

$$t_{99.9} = \left( \frac{0.693}{k} \right) \times 10$$

$$t_{99.9} = 10t_{\frac{1}{2}}$$

**Question ID:692729**

A catalyst increases the rate of reaction by:

- (A) Decreasing enthalpy of reactants
- (B) Increasing internal energy of reactants
- (C) Decreasing activation energy of reaction
- (D) Increasing activation energy of reaction

**Answer (C)**

- Sol.** • Catalyst affects activation energy of any chemical reaction.
- It increases rate of reaction by decreasing the activation energy of reaction.

**Question ID:6927210**

Match List-I with List-II.

	List-I		List-II
A.	Gem stone	I.	Emulsion
B.	Milk	II.	Solid sol
C.	Cloud	III.	Foam
D.	Froth	IV.	Aerosol

Choose the correct answer from the options given below:

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

**Answer (B)**

**Sol.**

	List-I	List-II
A.	Gem stone	Solid sol
B.	Milk	Emulsion
C.	Cloud	Aerosol
D.	Froth	Foam

**Question ID:6927211**

Consider the case when a highly diluted solution of KI is added to  $\text{AgNO}_3$  solution. Arrange the following in the increasing order of ease of coagulation of the resulting sol.

- A.  $\text{BaSO}_4$   
 B.  $\text{NaCl}$   
 C.  $\text{Na}_3\text{PO}_4$   
 D.  $\text{K}_4[\text{Fe}(\text{CN})_6]$

Choose the correct answer from the options given below:

- (A)  $A < C < B < D$       (B)  $D < C < A < B$   
 (C)  $A < B < C < D$       (D)  $B < A < C < D$

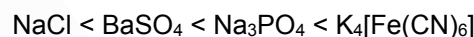
**Answer (D)**

**Sol.** Since highly diluted KI is added into  $\text{AgNO}_3$  solution, the resultant colloidal solution will be positive charged due to excess  $\text{Ag}^+$ .

This positively charged sol will be coagulated by anion of electrolyte.

Electrolyte having anion with higher negative charge will have more ease of coagulation.

Hence order will be

**Question ID:6927212**

Which of the following conditions can be used to change physical adsorption of a gas to chemical adsorption?

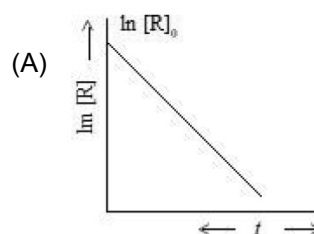
- (A) Decrease in temperature  
 (B) Increase in temperature  
 (C) Using catalyst  
 (D) Increasing surface area of adsorbent

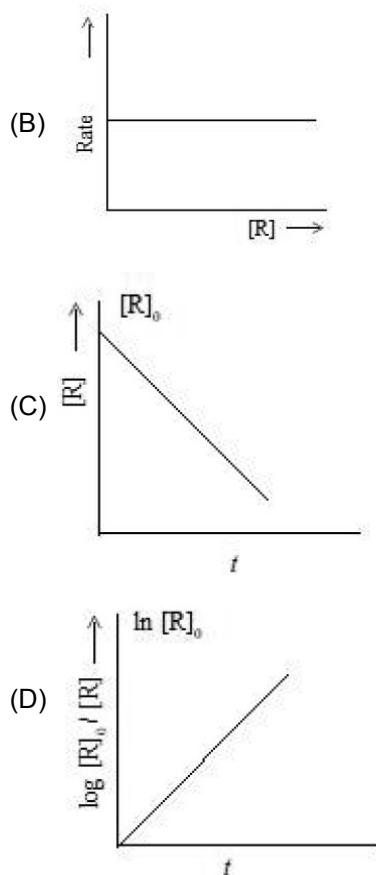
**Answer (B)**

**Sol.** A physical adsorption at low temperature may pass into chemisorption as the temperature is increased. For example, dihydrogen is first adsorbed on nickel by van der Waals' force. Molecules of hydrogen then dissociate to form hydrogen atoms which are held on the surface by chemisorption.

**Question ID:6927213**

Which of the following graph(s) are for First Order Reactions?

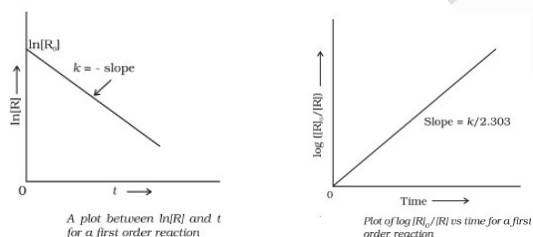




- (A) A and D only  
(B) B and C only  
(C) A, D and E only  
(D) C and E only

**Answer (NA)**

**Sol.** For first order reaction



**Question ID:6927214**

Consider the statements for the metallurgical processes and select the correct statements:

- (A) Malachite is an ore of copper  
(B) Bauxite is an ore of aluminium  
(C) Calamine is an ore of Zinc  
(D) Haematite is an ore of iron  
(E) Siderite is an ore of Zinc

Choose the correct statement from the options given below

- (A) A, B, E and D only  
(B) A and B only  
(C) A, B, C and D only  
(D) A only

**Answer (C)**

**Sol.**

Name	Formula	Ore of
Malachite	$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$	Cu
Bauxite	$\text{AlOx}(\text{OH})_{3-2x}$	Al
Calamine	$\text{ZnCO}_3$	Zn
Haematite	$\text{Fe}_2\text{O}_3$	Fe
Siderite	$\text{FeCO}_3$	Fe

**Question ID:6927215**

Arrange the following molecules in the increasing order of number of P – OH bonds present in it

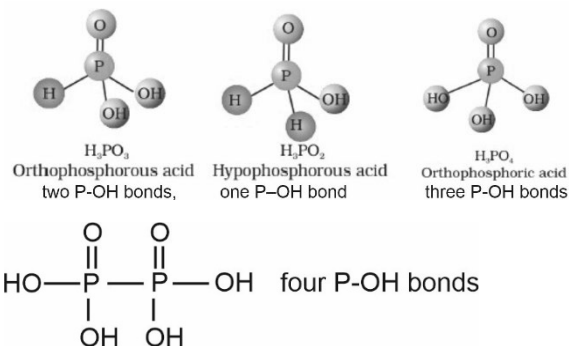
- (A)  $\text{H}_4\text{P}_2\text{O}_6$  (B)  $\text{H}_3\text{PO}_2$   
(C)  $\text{H}_3\text{PO}_4$  (D)  $\text{H}_3\text{PO}_3$

Choose the correct answer from the options given below

- (A)  $B < C < D < A$   
(B)  $B < D < C < A$   
(C)  $D < B < A < C$   
(D)  $D < C < B < A$

**Answer (B)**

**Sol.**



**Question ID:6927216**

Arrange the following in the decreasing order of acidity:

- (A)  $\text{H}_2\text{O}$  (B)  $\text{H}_2\text{S}$   
(C)  $\text{H}_2\text{Te}$  (D)  $\text{H}_2\text{Se}$

Choose the correct answer from the options given below:

- (A)  $\text{D} > \text{C} > \text{B} > \text{A}$  (B)  $\text{C} > \text{D} > \text{B} > \text{A}$   
(C)  $\text{A} > \text{B} > \text{C} > \text{D}$  (D)  $\text{A} > \text{B} > \text{D} > \text{C}$

**Answer (B)**

**Sol.** Acidic character increases from  $\text{H}_2\text{O}$  to  $\text{H}_2\text{Te}$ . The increase in acidic character can be explained in terms of decrease in bond enthalpy for the dissociation of H-E bond down the group. Owing to the decrease in enthalpy for the dissociation of H-E bond down the group, the thermal stability of hydrides also decreases from  $\text{H}_2\text{O}$  to  $\text{H}_2\text{Te}$ .

**Question ID:6927217**

Which of the following molecules have linear shape?

- (A)  $\text{XeF}_2$  (B)  $\text{XeF}_4$   
(C)  $\text{XeF}_6$  (D)  $\text{XeO}_3$

**Answer (A)**

**Sol.**  $\text{XeF}_2 \rightarrow sp^3d \rightarrow \text{linear}$

$\text{XeF}_4 \rightarrow sp^3d^2 \rightarrow \text{square planar}$

$\text{XeF}_6 \rightarrow sp^3d^3 \rightarrow \text{Distorted octahedral}$

$\text{XeO}_3 \rightarrow sp^3 \rightarrow \text{Pyramidal}$

**Question ID:6927218**

Which of the following statements about d-block elements are NOT correct?

- (A) They show variable oxidation states  
(B) They exhibit paramagnetic and diamagnetic properties  
(C) All of their ions are coloured  
(D) They exhibit catalytic property

**Answer (C)**

**Sol.** All of the ion of d-block element are not coloured, those with  $d^0$  or  $d^{10}$  configuration are generally colourless.

**Question ID:6927219**

The spin only magnetic moment of  $\text{Cr}^{3+}$  ion in BM is:

- (A) 1.73 (B) 3.87  
(C) 4.89 (D) 3.57

**Answer (B)**

**Sol.**  $\text{Cr}^{3+} \Rightarrow [\text{Ar}]3d^3$

$\boxed{1} \boxed{1} \boxed{1} \boxed{\phantom{0}} \boxed{\phantom{0}}$

3 unpaired electrons

$$\begin{aligned}\mu &= \sqrt{3(3+2)} \text{ BM} \\ &= \sqrt{15} \text{ BM} \\ &= 3.87 \text{ BM}\end{aligned}$$

**Question ID:6927220**

Select the correct statements for the d-block and f-block elements:

- A. The maximum oxidation state shown by manganese is +6.  
B.  $\text{Sc}^{3+}$  (Scandium) is colourless  
C. Brass is an alloy of Copper and Zinc  
D. Lanthanide series included a total of 15 elements  
E.  $\text{V}_2\text{O}_5$  (Vanadium Pentaoxide) is used in the manufacturing of sulphuric acid (by contact process).

Choose the correct answer from the options given below:

- (A) A and B only (B) A, B and E only  
(C) B, C and E only (D) B, C and D only

**Answer (C)**

**Sol.** • Mn can show +7 as maximum oxidation state e.g.  $\text{KMnO}_4$   
•  $\text{Sc}^{3+}$  is colourless due to  $d^0$  configuration

- Brass consist 60% Cu and 40% Zn
- Lanthanide series consists 14 elements
- $V_2O_5$  is used as a catalyst in manufacturing of sulphuric acid by contact process.

**Question ID:6927221**

The IUPAC name of  $[Pt(NH_3)_2Cl_2]$  is:

- (A) Diammine dichlorido platinum (II)  
(B) Diammine dichlorido platinum (IV)  
(C) Diammine dichlorido platinum (0)  
(D) Diimine dichlorido platinum (IV)

**Answer (A)**

**Sol.**  $[Pt(NH_3)_2Cl_2]$

IUPAC - Diammine dichlorido platinum (II)

**Question ID:6927222**

Match List I with List II

List I: (Property)	List II: (Reason)
A. Transition metal can act as catalyst	I. Due to their high ionic charges, small size and availability of $d$ -orbitals
B. Zr and Hf have similar atomic radii	II. Unpaired electrons in $d$ -orbitals of metal ions
C. Transition metals form complex compounds	III. Ability to adopt multiple oxidation states and to form complexes
D. Transition metals ions are coloured	IV. As consequence of Lanthanoid contraction

Choose the correct answer from the option given below:

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

**Answer (C)**

**Sol.**

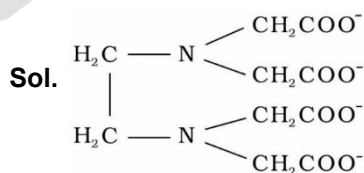
List I: (Property)	List II: (Reason)
A. Transition metal can act as catalyst	Ability to adopt multiple oxidation states and to form complexes
B. Zr and Hf have similar atomic radii	As consequence of Lanthanoid contraction
C. Transition metal form complex compounds	Due to their high ionic charges, small size and availability of $d$ -orbitals
D. Transition metals ions are coloured	Unpaired electrons in $d$ -orbitals of metal ions

**Question ID:6927223**

The donor atoms in ethylene diamine tetra acetate ions are:

- (A) Two N and two O atoms  
(B) Two N and four O atoms  
(C) Four N and two O atoms  
(D) Three N and Three O atoms

**Answer (B)**



Donor atoms are two N and four O atoms

**Question ID:6927224**

Indicate the complex ion which does not show geometrical isomerism:

- (A)  $[Cr(H_2O)_4Cl_2]^+$  (B)  $[Pt(NH_3)_2Cl_2]$   
(C)  $[Pt(NH_3)_6]^{3+}$  (D)  $[Co(CN)_4(NC)_2]^{3-}$

**Answer (C)**

**Sol.**  $[M(A)_6]$

Type of complex cannot show geometrical isomerism



## Question ID:6927225

Which of the following is the electronic configuration of the central metal atom/ion of  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$  complex ion?

- (A)  $t_{2g}^6 e_g^1$  (B)  $t_{2g}^4 e_g^3$   
(C)  $t_{2g}^5 e_g^2$  (D)  $t_{2g}^6 e_g^0$

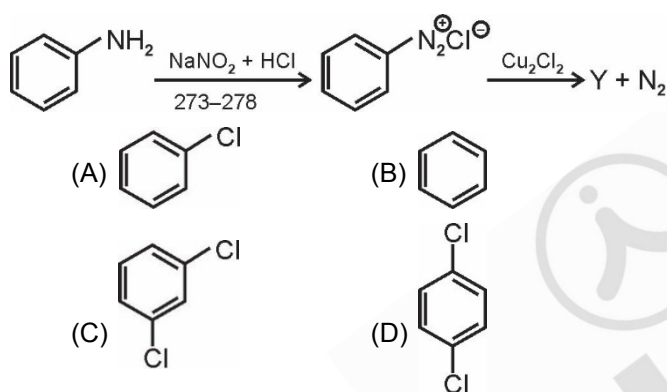
## Answer (C)

**Sol.** For  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$

$\text{H}_2\text{O}$  will be weak field ligand as Co is present in +2 oxidation state. Hence electronic configuration is,  $t_{2g}^5 e_g^2$

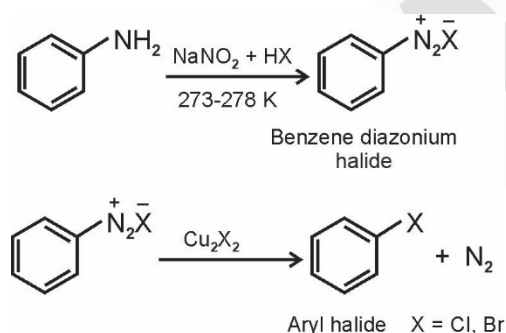
## Question ID:6927226

Identify the compound Y in the following reaction :



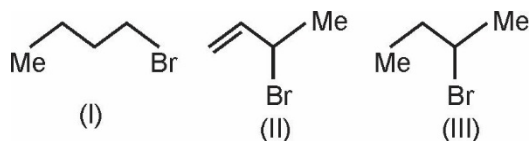
## Answer (A)

**Sol.** Sandmeyer's reaction :



## Question ID:6927227

Consider the following bromides :

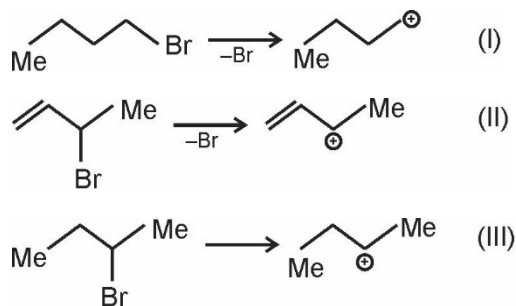


The correct order of reactivity towards  $\text{S}_{\text{N}}1$  reaction is :

- (A)  $\text{I} > \text{II} > \text{III}$  (B)  $\text{II} > \text{III} > \text{I}$   
(C)  $\text{II} > \text{I} > \text{III}$  (D)  $\text{III} > \text{II} > \text{I}$

## Answer (B)

**Sol.** Reactivity towards  $\text{S}_{\text{N}}1$  depends upon stability of carbocation



Order of stability

$\text{II} > \text{III} > \text{I}$

## Question ID:6927228

Aryl halides can not be prepared by the reaction of aryl alcohols with  $\text{PCl}_3$ ,  $\text{PCl}_5$  or  $\text{SOCl}_2$  because :

- (A) Phenols are highly stable compounds  
(B) Carbon-oxygen bond in phenols has a partial double bond character  
(C) Carbon-oxygen bond is highly polar  
(D) Phenyl cation is stabilised by resonance

## Answer (B)

**Sol.** Carbon-oxygen bond in phenol has a partial double bond character due to resonance, so it is very difficult to break. Hence it cannot be used for preparation of aryl halide by  $\text{PCl}_3$ ,  $\text{PCl}_5$  or  $\text{SOCl}_2$

## Question ID:6927229

Jones Reagent is :

- (A)  $\text{KMnO}_4 \mid \text{H}_2\text{SO}_4$   
(B)  $\text{K}_2\text{Cr}_2\text{O}_7 \mid \text{H}_2\text{SO}_4$   
(C)  $\text{CrO}_3 \mid \text{H}_2\text{SO}_4$   
(D)  $\text{KMnO}_4 \mid \text{KOH}$

## Answer (C)

**Sol.** Chromium trioxide ( $\text{CrO}_3$ ) in acidic media (Jones reagent).

**Question ID:6927230**

Match List I with List II

List I : Names of drug	List II : Class of drugs
A. Ranitidine	I. Tranquilizer
B. Valium	II. Narcotic Analgesic
C. Codeine	III. Antibiotic
D. Chloramphenicol	IV. Antacid

Choose the correct answer from the options given below :

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

**Answer (A)**

**Sol.**

List I : Names of drug	List II : Class of drugs
A. Ranitidine	Antacid
B. Valium	Tranquilizer
C. Codeine	Narcotic Analgesic
D. Chloramphenicol	Antibiotic

**Question ID:6927231**

Match List I with List II

List-I Given pair of organic compounds can be distinguished by	List-II Tests
1. Ethanal/Propanal	I. Sodium Hydrogen carbonate test
2. Ethanol/Ethanoic acid	II. Fehling's Test
3. Butanal/Butan-2-one	III. Tollen's Test
4. Benzaldehyde/Ethanal	IV. Iodoform Test

Choose the correct answer from the options given below:

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

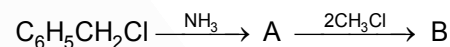
**Answer (C)**

**Sol.**

List-I Given pair of organic compounds can be distinguished by	List-II Tests
1. Ethanal/Propanal	Iodoform Test
2. Ethanol/Ethanoic acid	Sodium Hydrogen carbonate test
3. Butanal/Butan-2-one	Tollen's Test
4. Benzaldehyde/Ethanal	Fehling's Test

**Question ID:6927232**

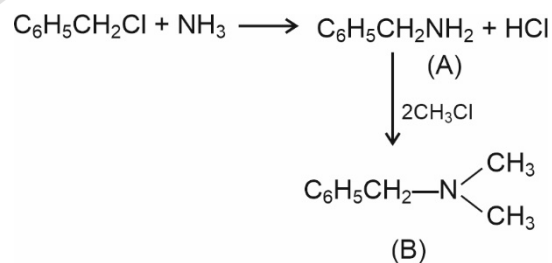
Identify A and B in the following reaction:



- (A) A =  $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$ , B =  $\text{C}_6\text{H}_5\text{CH}_2\text{NH}-\text{CH}_3$   
(B) A =  $\text{C}_6\text{H}_5\text{CH}_3$ , B =  $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_3$   
(C) A =  $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$ , B =  $\text{C}_6\text{H}_5\text{CH}_2-\text{N}(\text{CH}_3)_2$   
(D) A =  $\text{C}_6\text{H}_5\text{CH}_3$ , B =  $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{CH}_3$

**Answer (C)**

**Sol.**



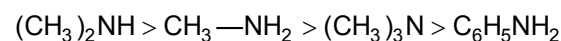
**Question ID:6927233**

Out of the following compounds, which is the most basic in aqueous solution?

- (A)  $\text{CH}_3-\text{NH}_2$  (B)  $(\text{CH}_3)_2\text{NH}$   
(C)  $(\text{CH}_3)_3\text{N}$  (D)  $\text{C}_6\text{H}_5\text{NH}_2$

**Answer (B)**

**Sol.** Order of basic strength in aqueous solution:



**Question ID:6927234**

Arrange the following in increasing order of their boiling points:

- A.  $(C_2H_5)_2NH$                       B.  $n-C_4H_9NH_2$   
 C.  $C_2H_5N(CH_3)_2$                 D.  $n-C_4H_9OH$

Choose the correct answer from the options given below:

- (A)  $B < C < A < D$                 (B)  $C < B < A < D$   
 (C)  $C < A < B < D$                 (D)  $C < D < B < A$

**Answer (C)**

**Sol.** For isomeric Amine order of boiling point is

$$1^\circ > 2^\circ > 3^\circ$$

Alcohol has high BP than amine with same number of carbon due to stronger H-bonding.

Hence order

$$C < A < B < D$$

**Question ID:6927235**

Which of the following is an essential amino acid?

- (A) Glycine                              (B) Alanine  
 (C) Glutamine                          (D) Valine

**Answer (D)**

**Sol.** Valine is an essential amino acid as it cannot be synthesised in body.

**Question ID:6927236**

In nucleic acids, the Nucleotides are joined together by

- (A) Glycosidic linkage  
 (B) Phosphodiester linkage  
 (C) Hydrogen bonds  
 (D) Weak intermolecular forces

**Answer (B)**

**Sol.** Nucleotides are joined together by phosphodiester linkage between 5' and 3' carbon atom of pentose sugar.

**Question ID:6927237**

The letter 'D' in carbohydrates signifies

- (A) Dextrorotatory  
 (B) Configuration  
 (C) Diamagnetic character  
 (D) Optical activity

**Answer (B)**

**Sol.** The letter 'D' in carbohydrates signifies the substitution orientation at a centre of chirality *i.e.*, configuration.

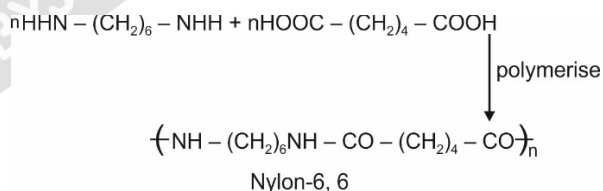
**Question ID:6927238**

Which of the following monomeric pair is used to make polymer Nylon 6, 6?

- (A) Hexane -1, 6 dioic acid and Hexane -1, 6-diamine  
 (B) Ethane-1, 2-dioic acid and Benzene -1, 4-dicarboxylic Acid  
 (C) Urea and Methanal  
 (D) Phenol and Methanol

**Answer (A)**

**Sol.** Nylon-6, 6 is a copolymer of Hexane-1, 6-dioic acid and Hexane-1, 6-diamine.

**Question ID:6927239**

Which amongst the following antibiotics is an example of narrow spectrum antibiotic?

- (A) Vancomycin  
 (B) Chloramphenicol  
 (C) Amoxycillin  
 (D) Penicillin G

**Answer (D)**

**Sol.** Narrow spectrum antibiotics are effective mainly against Gram-positive or gram-negative bacteria. eg: Penicillin G.

**Question ID:6927240**

Which of the following polymers are obtained by chain growth polymerisation?

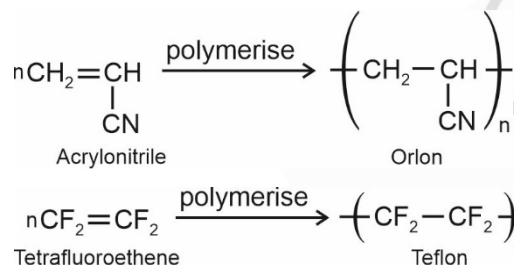
- (A) Orlon
- (B) Nylon
- (C) Teflon
- (D) Nylon 2 - nylon 6
- (E) Dacron

Choose the correct answer from the options given below:

- (A) A, E only
- (B) A, C only
- (C) A, D only
- (D) C, E only

**Answer (B)**

**Sol.** Chain growth polymers or addition polymers are formed by the repeated addition of monomers molecules possessing double or triple bonds.



**Question ID:6927241**

Isotonic solutions are the solutions with:

- (A) Same vapour pressure
- (B) Same temperature
- (C) Same osmotic pressure
- (D) Same volume

**Answer (C)**

**Sol.** Solutions having same osmotic pressure are known as isotonic solutions.

**Question ID:6927242**

An unripe mango placed in a concentrated salt solution to prepare pickle shrivels because:

- (A) It gains water via osmosis
- (B) It loses water via reverse osmosis
- (C) It gains water via reverse osmosis
- (D) It loses water via osmosis

**Answer (D)**

**Sol.** In osmosis flow of solvent take place from dilute solution to concentrated solution.

**Question ID:6927243**

Adding a salt to water leads to increase in the boiling point of solution with respect to water because:

- (A) Vapour pressure of solution is increased
- (B) Solubility of salt in water is increased
- (C) Solubility of salt in water is decreased
- (D) Vapour pressure of solution is decreased

**Answer (D)**

**Sol.** On adding salt to water, chances of vapour formation decreases so vapour pressure decreases as a result boiling point of solution increases.

**Question ID:6927244**

Salt is used to clear snow on the roads covered with snow to:

- (A) Decrease the freezing point
- (B) Increase the boiling point
- (C) Increase the osmotic pressure
- (D) Increase the solubility of salt

**Answer (A)**

**Sol.** Salt is used to clear snow on the roads covered with snow to decrease the freezing point.

**Question ID:6927245**

Which of the following is a colligative property?

- (A) Vapour pressure
- (B) Osmotic pressure
- (C) Freezing point
- (D) Boiling point

**Answer (B)**

**Sol.** Osmotic pressure is a colligative property as it depends on the number of particles present in the solution.

**Passage:**

Ethers are class of organic compounds that contain ether group – an oxygen atom connected to two alkyl groups or aryl groups. They have the general formula  $\text{R}-\text{O}-\text{R}'$ , where R and R' represents the alkyl or aryl groups. Ether, like water have a tetrahedral geometry *i.e.*, oxygen is  $sp^3$  hybridised. The  $\text{C}-\text{O}-\text{C}$  bond angle in ethers is slightly greater than the tetrahedral angle due to repulsive interactions between the two bulky groups when they are attached to oxygen.

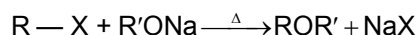
## Questions ID:6927246

Which of the following cannot be made by using Williamson Synthesis?

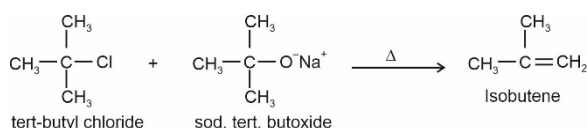
- (A) Methoxybenzene
- (B) Benzyl p-nitro phenyl ether
- (C) tert-Butyl methyl ether
- (D) Di-tert-Butyl ether

## Answer (D)

Sol. Williamson's synthesis:

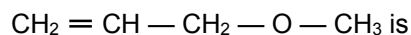


3°-alkyl Halide not form ether actually they undergo elimination reaction.



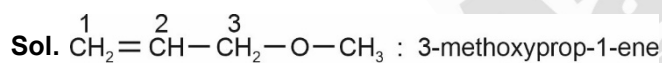
## Questions ID:6927247

The IUPAC name of the ether



- (A) Alkyl methyl ether
- (B) 1-Methoxyprop-2-ene
- (C) 3-Methoxyprop-1-ene
- (D) Vinyl dimethyl ether

## Answer (C)



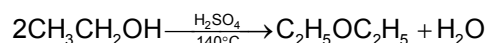
## Questions ID:6927248

Dehydration of alcohol to ethers is catalysed by:

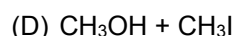
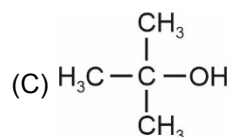
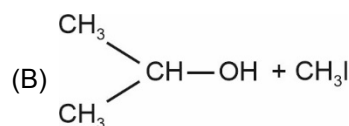
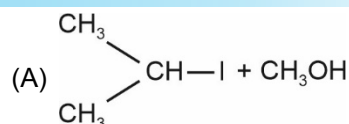
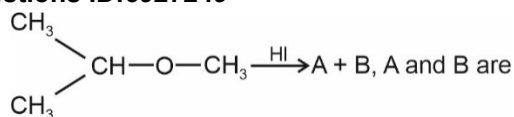
- (A) Conc.  $\text{H}_2\text{SO}_4$  at 413 K
- (B) Hot & NaOH
- (C) Hot & HBr
- (D) Hot &  $\text{HNO}_3$

## Answer (A)

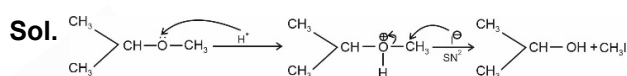
Sol. Dehydration of alcohols into ether take place in presence of Conc.  $\text{H}_2\text{SO}_4$  at  $140^\circ\text{C}$



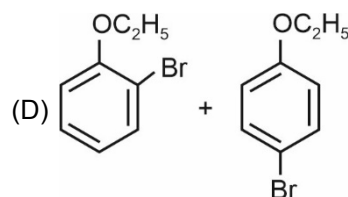
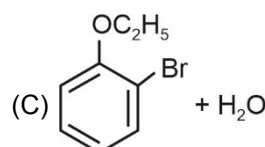
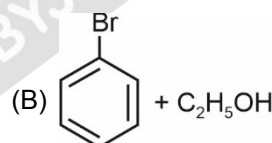
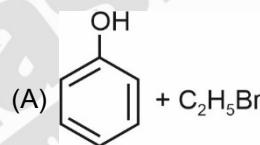
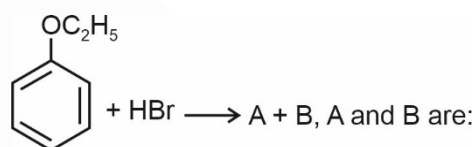
## Questions ID:6927249



## Answer (B)



## Questions ID:6927250



## Answer (A)

