

DATE : 04/05/2025

Test Booklet Code



45

ARMADAN

Corporate Office : 3rd Floor, Incuspaze Campus-2, Plot No. 13,
Sector-18, Udyog Vihar, Gurugram, Haryana - 122015

Answers & Solutions

Time : 3 hrs.

for

M.M.: 720

NEET (UG)-2025

Important Instructions:

1. The test is of **3 hours** duration and the Test Booklet contains **180** multiple choice questions (Four options with a single correct answer) from **Physics, Chemistry and Biology (Botany and Zoology)**.
2. Each question carries **4 marks**. For each correct response, the candidate will get **4 marks**. For every wrong response **1 mark** shall be deducted from the total scores. The maximum marks are **720**.
3. Use **Blue / Black Ball Point Pen only** for writing particulars on this page / marking responses on Answer Sheet.
4. Rough work is to be done in the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate **must hand over the Answer Sheet (ORIGINAL and OFFICE Copy)** to the Invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is **45**.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet. Use of white fluid for correction is **NOT** permissible on the Answer Sheet.
8. Each candidate must show on-demand his/her Admit Card to the Invigilator.
9. No candidate, without special permission of the Centre Superintendent or Invigilator, would leave his/her seat.
10. Use of Electronic/Manual Calculator is prohibited.
11. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Room/Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination along with Public Examinations (Prevention of unfair means act 2024).
12. **No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.**
13. The candidates will write the Correct Test Booklet Code as given in the Test Booklet / Answer Sheet in the Attendance Sheet.

CHEMISTRY

46. The ratio of the wavelengths of the light absorbed by a Hydrogen atom when it undergoes $n = 2 \rightarrow n = 3$ and $n = 4 \rightarrow n = 6$ transitions, respectively, is

- (1) $\frac{1}{36}$ (2) $\frac{1}{16}$
 (3) $\frac{1}{9}$ (4) $\frac{1}{4}$

Answer (4)

Sol. $\Delta E = \frac{hc}{\lambda} = E_{\text{final}} - E_{\text{initial}} \quad \left(E_n = \frac{-R_H}{n^2} \right)$

$$\begin{aligned} \Delta E_{2 \rightarrow 3} &= \frac{hc}{\lambda_{2 \rightarrow 3}} = E_3 - E_2 = \frac{-R_H}{3^2} - \left(\frac{-R_H}{2^2} \right) \\ &= R_H \left(\frac{1}{4} - \frac{1}{9} \right) \\ &= R_H \times \frac{5}{36} \end{aligned}$$

$$\therefore \lambda_{2 \rightarrow 3} = \frac{hc \cdot 36}{R_H \cdot 5}$$

$$\Delta E_{4 \rightarrow 6} = E_6 - E_4 = \frac{-R_H}{36} + \frac{R_H}{16} = \frac{R_H \times 20}{36 \times 16}$$

$$\frac{hc}{\lambda_{4 \rightarrow 6}} = \frac{R_H \times 20}{36 \times 16}$$

$$\lambda_{4 \rightarrow 6} = \frac{hc \times 36 \times 16}{R_H \cdot 20}$$

$$\frac{\lambda_{2 \rightarrow 3}}{\lambda_{4 \rightarrow 6}} = \frac{\frac{hc \cdot 36}{R_H \cdot 5}}{\frac{hc \times 36 \times 16}{R_H \cdot 20}}$$

$$= \frac{1}{4}$$

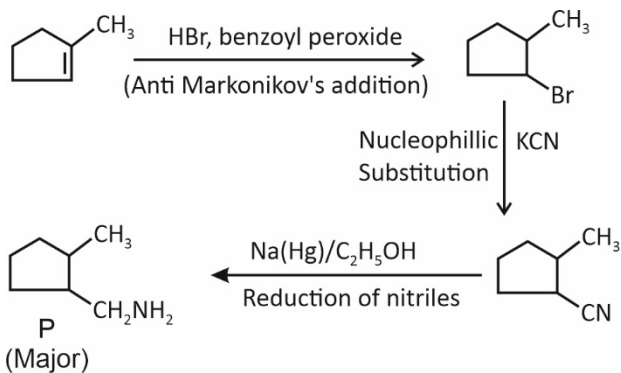
47. Which of the following statements are true?
- A. Unlike Ga that has a very high melting point, Cs has a very low melting point.
 B. On Pauling scale, the electronegativity values of N and Cl are not the same.
 C. Ar, K^+ , Cl^- , Ca^{2+} , and S^{2-} are all isoelectronic species.
 D. The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is $Si > Al > Mg > Na$.
 E. The atomic radius of Cs is greater than that of Li and Rb.

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

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

Answer (2)

Sol.



50. Energy and radius of first Bohr orbit of He^+ and Li^{2+} are
 [Given $R_H = 2.18 \times 10^{-18}$ J, $a_0 = 52.9$ pm]

- (1) $E_n(\text{Li}^{2+}) = -19.62 \times 10^{-18}$ J;
 $r_n(\text{Li}^{2+}) = 17.6$ pm
 $E_n(\text{He}^+) = -8.72 \times 10^{-18}$ J;
 $r_n(\text{He}^+) = 26.4$ pm
- (2) $E_n(\text{Li}^{2+}) = -8.72 \times 10^{-18}$ J;
 $r_n(\text{Li}^{2+}) = 26.4$ pm
 $E_n(\text{He}^+) = -19.62 \times 10^{-18}$ J;
 $r_n(\text{He}^+) = 17.6$ pm
- (3) $E_n(\text{Li}^{2+}) = -19.62 \times 10^{-16}$ J;
 $r_n(\text{Li}^{2+}) = 17.6$ pm
 $E_n(\text{He}^+) = -8.72 \times 10^{-16}$ J;
 $r_n(\text{He}^+) = 26.4$ pm
- (4) $E_n(\text{Li}^{2+}) = -8.72 \times 10^{-16}$ J;
 $r_n(\text{Li}^{2+}) = 17.6$ pm
 $E_n(\text{He}^+) = -19.62 \times 10^{-16}$ J;
 $r_n(\text{He}^+) = 17.6$ pm

Answer (1)

Sol. $E_n = \frac{-2.18 \times 10^{-18} \times z^2}{n^2}$ J; $r_n = \frac{52.9 \times n^2}{z}$ pm

For He^+

$$E_{\text{He}^+} = -2.18 \times 10^{-18} \times 4 = -8.72 \times 10^{-18} \text{ J}$$

$$r_{\text{He}^+} = \frac{52.9 \times 1}{2} = 26.45 \text{ pm}$$

For Li^{2+}

$$E_{\text{Li}^{2+}} = -2.18 \times 10^{-18} \times 9 = -19.62 \times 10^{-18} \text{ J}$$

$$r_{\text{Li}^{2+}} = \frac{52.9 \times 1}{3} = 17.63 \text{ pm}$$

51. Which of the following are paramagnetic?

- A. $[\text{NiCl}_4]^{2-}$
- B. $\text{Ni}(\text{CO})_4$
- C. $[\text{Ni}(\text{CN})_4]^{2-}$
- D. $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$
- E. $\text{Ni}(\text{PPh}_3)_4$

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

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

Answer (3)

Sol.

- A. $[\text{NiCl}_4]^{2-}$; Ni^{+2} ; $3d^8$; sp^3 hybridisation; 2 unpaired electrons; paramagnetic
- B. $\text{Ni}(\text{CO})_4$; Ni; $3d^8 4s^2$; sp^3 hybridisation; Zero unpaired electron; diamagnetic
- C. $[\text{Ni}(\text{CN})_4]^{2-}$; Ni^{+2} ; $3d^8$; dsp^2 hybridisation; Zero unpaired electron; diamagnetic
- D. $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$; Ni^{2+} ; $3d^8$; sp^3d^2 hybridisation; Two unpaired electron; paramagnetic
- E. $\text{Ni}(\text{PPh}_3)_4$; Ni; $3d^8 4s^2$; sp^3 hybridisation; zero unpaired electron; Diamagnetic

52. Given below are two statements :

Statement I : Like nitrogen that can form ammonia, arsenic can form arsine.

Statement II : Antimony cannot form antimony pentoxide.

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

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

Answer (3)

Sol. All the elements of group 15 form hydrides of EH_3 type. Nitrogen forms ammonia (NH_3) while Arsenic forms Arsine (AsH_3)

All the elements of group 15 form two types of oxides : E_2O_3 and E_2O_5

Antimony forms antimony pentoxide Sb_2O_5

Hence, statement I is correct and statement II is incorrect

53. Which among the following electronic configurations belong to main group elements?

- A. $[\text{Ne}]3s^1$
- B. $[\text{Ar}]3d^34s^2$
- C. $[\text{Kr}]4d^{10} 5s^2 5p^5$
- D. $[\text{Ar}]3d^{10} 4s^1$
- E. $[\text{Rn}]5f^9 6d^2 7s^2$

Choose the correct answer from the option given below :

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

Answer (2)

- Sol.** (A) [Ne]3s¹; Na (s-block)
 (B) [Ar]3d³4s²; V (d-block)
 (C) [Kr]4d¹⁰5s²5p⁵; I (p-block)
 (D) [Ar]3d¹⁰4s¹; Cu (d-block)
 (E) [Rn]5f⁰6d²7s²; Th (f-block)

Main group elements (A and C only)

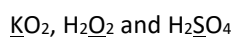
54. Dalton's Atomic theory could not explain which of the following?

- (1) Law of conservation of mass (2) Law of constant proportion
 (3) Law of multiple proportion (4) Law of gaseous volume

Answer (4)

Sol. Dalton's theory could explain the laws of chemical combination. However, it could not explain the laws of gaseous volumes.

55. Consider the following compounds :



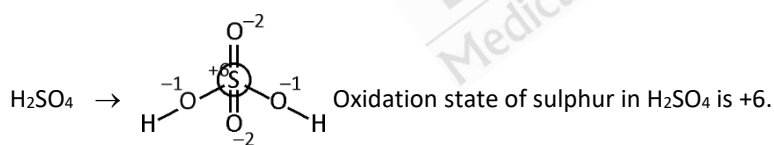
The oxidation state of the underlined elements in them are, respectively,

- (1) +1, -1, and +6 (2) +2, -2, and +6
 (3) +1, -2, and +4 (4) +4, -4, and +6

Answer (1)

Sol.

KO₂ → Alkali metal always shows +1 oxidation state. Therefore oxidation state of K is +1.



56. If the half-life (t_{1/2}) for a first order reaction is 1 minute, then the time required for 99.9% completion of the reaction is closest to :

- (1) 2 minutes (2) 4 minutes
 (3) 5 minutes (4) 10 minutes

Answer (4)

Sol. For 1st order reaction

$$kt = 2.303 \log \frac{A_0}{A_t} \quad A_0 = \text{initial concentration}$$

A_t = Final concentration

$$t_{99.9\%} = 10 t_{1/2}$$

$$t_{99.9\%} = 10 \times 1 \text{ minute} = 10 \text{ minutes}$$

61. If the molar conductivity (Λ_m) of a 0.050 mol L⁻¹ solution of a monobasic weak acid is 90 S cm² mol⁻¹, its extent (degree) of dissociation will be

[Assume $\Lambda_+^\circ = 349.6$ S cm² mol⁻¹ and $\Lambda_-^\circ = 50.4$ S cm² mol⁻¹.]

- (1) 0.115 (2) 0.125
(3) 0.225 (4) 0.215

Answer (3)

Sol. Degree of dissociation (α) is given as

$$\alpha = \frac{\Lambda_m}{\Lambda_m^\circ}$$

$$\Lambda_m^\circ = \Lambda_+^\circ + \Lambda_-^\circ$$

$$= 349.6 + 50.4$$

$$= 400 \text{ S cm}^2 \text{ mol}^{-1}$$

$$\alpha = \frac{\Lambda_m}{\Lambda_m^\circ} = \frac{90}{400} = 0.225$$

62. Given below are two statements :

Statement I : A hypothetical diatomic molecule with bond order zero is quite stable.

Statement II : As bond order increases, the bond length increases.

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

- (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

Answer (2)

- Sol.**
- A positive bond order means a stable molecule while a negative or zero bond order means an unstable molecule.
 - When bond order increases, the bond length decreases.

63. Out of the following complex compounds, which of the compound will be having the minimum conductance in solution?

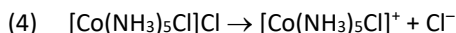
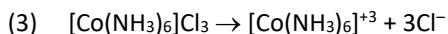
- (1) $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]$ (2) $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]$
(3) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$ (4) $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}$

Answer (1, 2)

Sol. Conductance of any complex depends on the following factor.

- (1) Number of ions produced by complex.
(2) If number of ions are same then we will check charge on complex unit.

- (1) $[\text{Co}^{+3}(\text{NH}_3)_3\text{Cl}_3]$ }
(2) $[\text{Co}^{+2}(\text{NH}_3)_4\text{Cl}_2]$ } Both complex units have no charge. Therefore both complex units have same conductance.



64. Match List-I with List-II

	List-I		List-II
A.	XeO ₃	(I)	sp ³ d; linear
B.	XeF ₂	(II)	sp ³ ; pyramidal
C.	XeOF ₄	(III)	sp ³ d ³ ; distorted octahedral
D.	XeF ₆	(IV)	sp ³ d ² ; square pyramidal

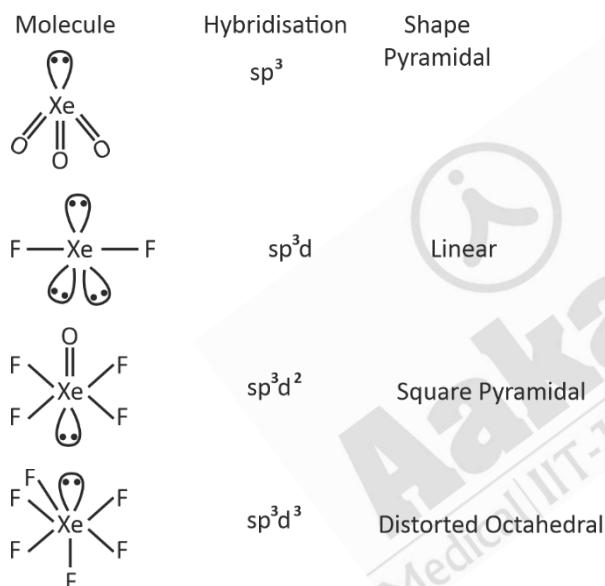
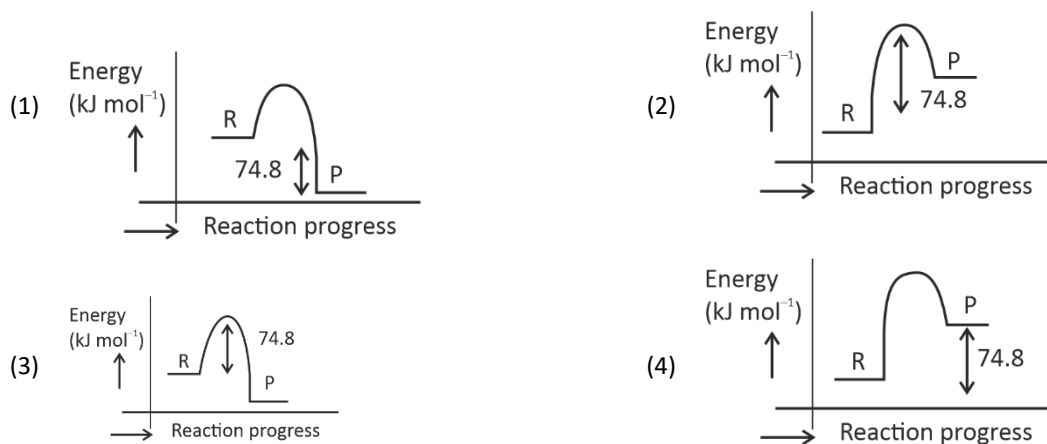
Choose the **correct** answer from the options given below :

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

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

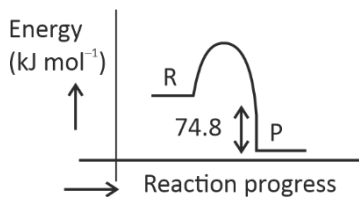
(3) A-IV, B-II, C-III, D-I

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

Answer (1)**Sol.**65. $C(s) + 2H_2(g) \rightarrow CH_4(g)$; $\Delta H = -74.8 \text{ kJ mol}^{-1}$. Which of the following diagrams gives an accurate representation of the above reaction? [R \rightarrow reactants; P \rightarrow products]**Answer (1)**

Sol. $\Delta H = -74.8 \text{ kJ mol}^{-1}$, it is an exothermic reaction.

So, accurate representation is



66. Match List-I with List-II

List-I (Example)	List-II (Type of Solution)
A. Humidity	I. Solid in solid
B. Alloys	II. Liquid in gas
C. Amalgams	III. Solid in gas
D. Smoke	IV. Liquid in solid

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

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

Answer (2)

Sol.

- Humidity is a solution of liquid in gas
- Alloy is a solution of solid in solid
- Amalgam is a solution of liquid in solid
- Smoke is a solution of solid in gas

67. The correct order of decreasing basic strength of the given amines is:

- (1) N-methylaniline > benzenamine > ethanamine > N-ethylethanamine
- (2) N-ethylethanamine > ethanamine > benzenamine > N-methylaniline
- (3) N-ethylethanamine > ethanamine > N-methylaniline > benzenamine
- (4) benzenamine > ethanamine > N-methylaniline > N-ethylethanamine

Answer (3)

Sol. Lower is the value of pK_b , higher is the basicity

Also aliphatic amines are stronger bases than aromatic amines.

pK_b : Benzenamine > N-Methylaniline > Ethanamine > N-Ethylethanamine

Basic strength : N-Ethylethanamine > Ethanamine > N-Methylaniline > Benzenamine

68. Among the following, choose the ones with equal number of atoms.

- A. 212 g of $\text{Na}_2\text{CO}_3(\text{s})$ [molar mass = 106 g]
- B. 248 g of $\text{Na}_2\text{O}(\text{s})$ [molar mass = 62 g]
- C. 240 g of $\text{NaOH}(\text{s})$ [molar mass = 40 g]
- D. 12 g of $\text{H}_2(\text{g})$ [molar mass = 2 g]
- E. 220 g of $\text{CO}_2(\text{g})$ [molar mass = 44 g]

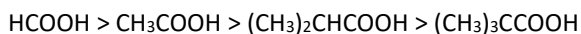
70. The correct order of decreasing acidity of the following aliphatic acids is

- (1) $(\text{CH}_3)_3\text{CCOOH} > (\text{CH}_3)_2\text{CHCOOH} > \text{CH}_3\text{COOH} > \text{HCOOH}$
- (2) $\text{CH}_3\text{COOH} > (\text{CH}_3)_2\text{CHCOOH} > (\text{CH}_3)_3\text{CCOOH} > \text{HCOOH}$
- (3) $\text{HCOOH} > \text{CH}_3\text{COOH} > (\text{CH}_3)_2\text{CHCOOH} > (\text{CH}_3)_3\text{CCOOH}$
- (4) $\text{HCOOH} > (\text{CH}_3)_3\text{CCOOH} > (\text{CH}_3)_2\text{CHCOOH} > \text{CH}_3\text{COOH}$

Answer (3)

Sol. Electron donating group decreases the acidity of carboxylic acids.

So correct order is



71. 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 ($Z = 60$).

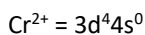
In the light of the above statements, choose the **correct** answer from the options given below :

- (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

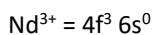
Answer (3)

Sol. Substances which are attracted very strongly in applied magnetic field are termed as ferromagnetic. Infact, ferromagnetism is an extreme form of paramagnetism.

Hence statement I is correct.



Unpaired electrons = 4



Unpaired electrons = 3

Hence, Statement II is incorrect

72. Match **List I** with **List II**

	List-I (Mixture)		List-II (Method of separation)
A.	$\text{CHCl}_3 + \text{C}_6\text{H}_5\text{NH}_2$	(I)	Distillation under reduced pressure
B.	Crude oil in petroleum industry	(II)	Steam distillation
C.	Glycerol from spent-lye	(III)	Fractional distillation
D.	Aniline - water	(IV)	Simple distillation

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

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

Answer (1)

Sol.

		(Method of separation)
(A)	$\text{CHCl}_3 + \text{C}_6\text{H}_5\text{NH}_2$	Simple distillation
(B)	Crude oil in petroleum industry	Fractional distillation
(C)	Glycerol from spent-lye	Distillation under reduced pressure
(D)	Aniline - water	Steam Distillation

73. For the reaction $\text{A}(\text{g}) \rightleftharpoons 2\text{B}(\text{g})$, the backward reaction rate constant is higher than the forward reaction rate constant by a factor of 2500, at 1000 K.

[Given : $R = 0.0831 \text{ L atm mol}^{-1} \text{ K}^{-1}$]

K_p for the reaction at 1000 K is

- (1) 83.1 (2) 2.077×10^5
 (3) 0.033 (4) 0.021

Answer (3)

Sol. $K_C = \frac{k_f}{k_b} = \frac{1}{2500}$

$$K_p = K_C (RT)^{\Delta n_g} \quad (\Delta n_g = 2 - 1 = 1)$$

$$= \frac{1}{2500} \times 0.0831 \times 1000$$

$$= 0.033$$

74. Given below are two statements :

Statement-I : Benzenediazonium salt is prepared by the reaction of aniline with nitrous acid at 273 – 278 K. It decomposes easily in the dry state.

Statement-II : Insertion of iodine into the benzene ring is difficult and hence iodobenzene is prepared through the reaction of benzenediazonium salt with KI.

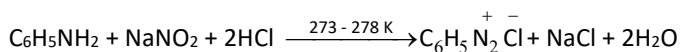
In the light of the above statements, choose the **most appropriate** answer from the options given below :

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

Answer (1)

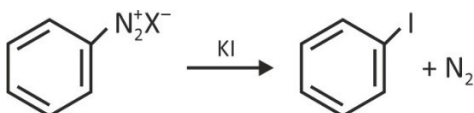
Sol. Benzene diazonium chloride is prepared by the reaction of aniline with nitrous acid at 273-278 K.

Nitrous acid is produced in the reaction mixture by reaction of NaNO_2 with HCl.

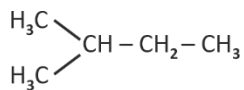


Benzene diazonium chloride decomposes easily in the dry state

Iodobenzene is prepared by shaking benzene diazonium salt with KI because direct insertion of iodine into benzene ring is difficult



75. How many products (including stereoisomers) are expected from monochlorination of the following compound?

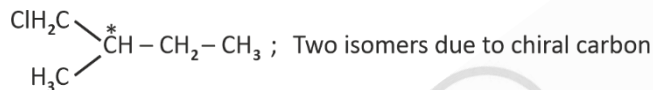
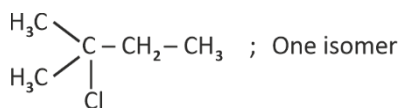
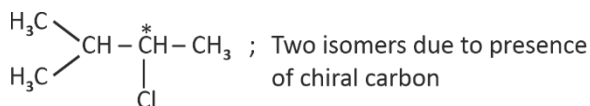
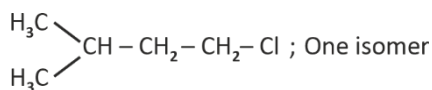


(1) 2 (2) 3

(3) 5 (4) 6

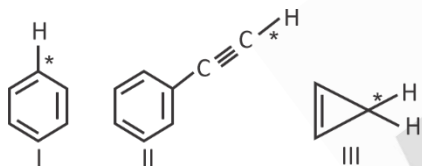
Answer (4)

Sol. Possible monochlorination products :



Total 6 isomers

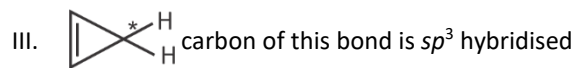
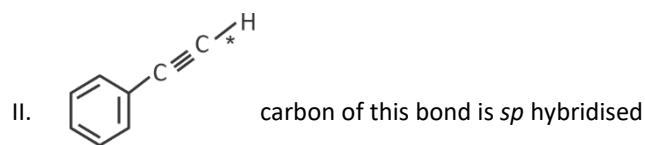
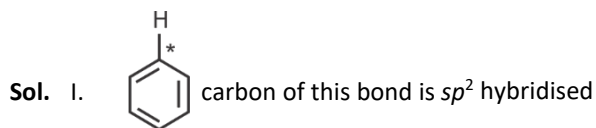
76. Among the given compounds I-III, the correct order of bond dissociation energy of C-H bond marked with * is :



(1) II > I > III (2) I > II > III

(3) III > II > I (4) II > III > I

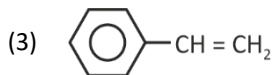
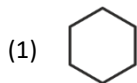
Answer (1)



Higher the percentage s character, stronger is C-H bond. Correct order of bond dissociation energy of C-H bond:

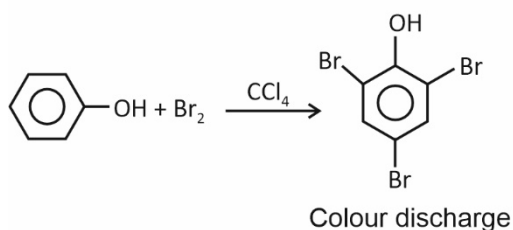
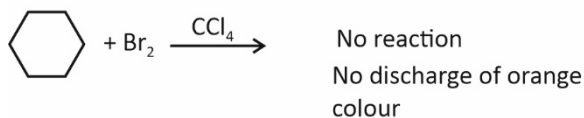
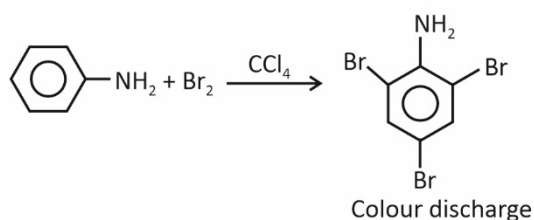
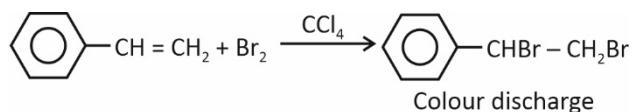
II > I > III

77. Which one of the following compounds **does not** decolourize bromine water?

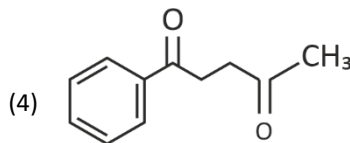
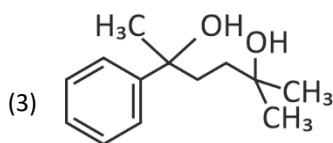
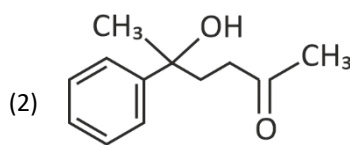
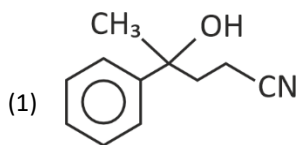
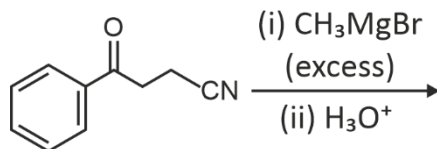


Answer (1)

Sol. Test for unsaturation i.e. Bromine water Reddish orange colour of bromine solution in CCl_4 will discharge when bromine adds to an unsaturation site.



78. The major product of the following reaction is



Answer (2)

Sol.

	Process		Catalyst used
A.	Haber process	I.	Fe catalyst
B.	Wacker oxidation	II.	PdCl ₂
C.	Wilkinson catalyst	III.	[(PPh ₃) ₃ RhCl]
D.	Ziegler catalyst	IV.	TiCl ₄ with Al(CH ₃) ₃

81. 5 moles of liquid X and 10 moles of liquid Y make a solution having a vapour pressure of 70 torr. The vapour pressures of pure X and Y are 63 torr and 78 torr respectively. Which of the following is true regarding the described solution?

- (1) The solution shows positive deviation.
- (2) The solution shows negative deviation.
- (3) The solution is ideal.
- (4) The solution has volume greater than the sum of individual volumes.

Answer (2)

Sol. $P_{\text{total}} = X_x P_x^\circ + X_y P_y^\circ$

$$= \frac{5}{15} \times 63 + \frac{10}{15} \times 78$$

$$= 21 + 52$$

$$= 73 \text{ torr}$$

Observed total pressure of solution is 70 torr.

It is less than calculated total pressure.

Hence, it shows negative deviation.

82. Sugar 'X'

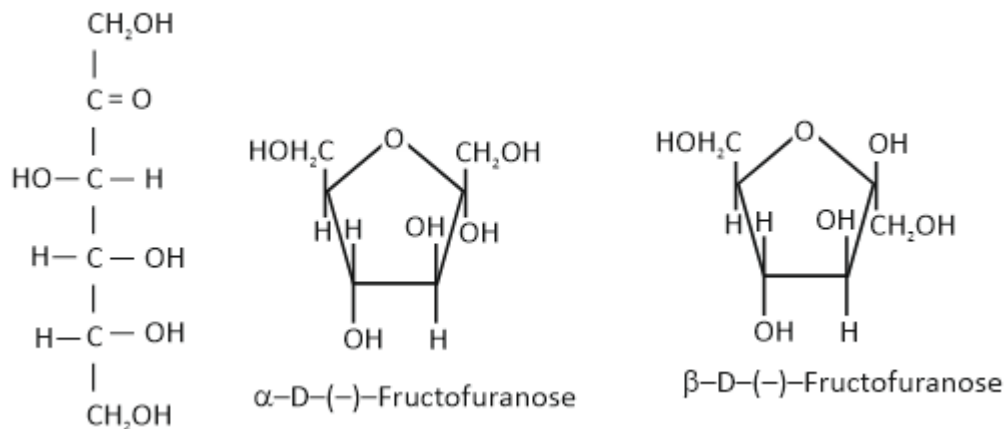
- A. is found in honey
- B. is a keto sugar
- C. exists in α and β – anomeric forms.
- D. Is laevorotatory.

'X' is :

- (1) D-Glucose
- (2) D-Fructose
- (3) Maltose
- (4) Sucrose

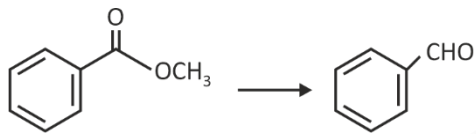
Answer (2)

Sol. D-Fructose is found in honey and is a keto sugar.



D-(-) — Fructose

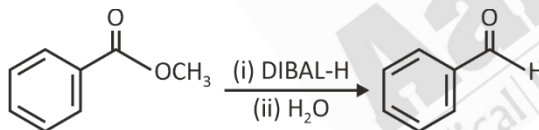
83. Identify the suitable reagent for the following conversion.



- | | |
|---|--|
| (1) (i) LiAlH_4 , (ii) $\text{H}^+/\text{H}_2\text{O}$ | (2) (i) $\text{AlH}(\text{iBu})_2$, (ii) H_2O |
| (3) (i) NaBH_4 , (ii) $\text{H}^+/\text{H}_2\text{O}$ | (4) $\text{H}_2/\text{Pd}-\text{BaSO}_4$ |

Answer (2)

Sol. Esters are reduced to aldehydes with DIBAL-H



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

Assertion (A) : $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{I}$ undergoes $\text{S}_{\text{N}}2$ reaction faster than $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$.

Reason (R) : Iodine is a better leaving group because of its large size.

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 true but **R** is false
- (4) **A** is false but **R** is true

Answer (1)

Sol. Rate of $\text{S}_{\text{N}}2$ reaction of $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{I}$ is faster than $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$.

Because iodine is a good leaving group due to large size of iodine. Which stabilises the I^- ion.

85. The standard heat of formation, in kcal/mol of Ba^{2+} is :
 [Given : standard heat of formation of SO_4^{2-} ion (aq) = -216 kcal/mol, standard heat of crystallisation of $\text{BaSO}_4(\text{s}) = -4.5$ kcal/mol, standard heat of formation of $\text{BaSO}_4(\text{s}) = -349$ kcal/mol]
- (1) -128.5 (2) -133.0
 (3) $+133.0$ (4) $+220.5$

Answer (1)



From equation (1),(2) and (3) we get equation (4). Applying equation (3) – (1) – (2)

So, $-349 - (-4.5) - (-216)$

So $-349 + 4.5 + 216$

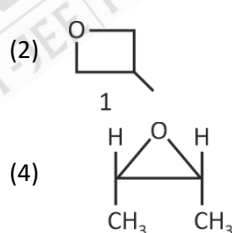
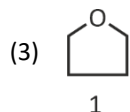
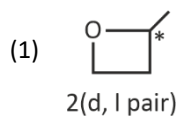
$= -349 + 220.5$

$= -128.5 \text{ kcal/mol}$

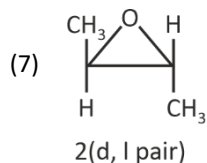
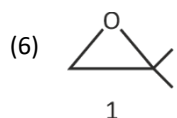
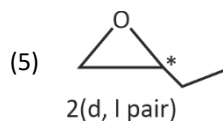
86. Total number of possible isomers (both structural as well as stereoisomers) of cyclic ethers of molecular formula $\text{C}_4\text{H}_8\text{O}$ is :
- (1) 6 (2) 8
 (3) 10 (4) 11

Answer (3)

Sol. For cyclic ethers O should be in ring * carbon here is chiral



Meso compound



Total number of isomers = $2 + 1 + 1 + 1 + 2 + 1 + 2 = 10$

