

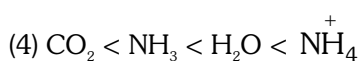
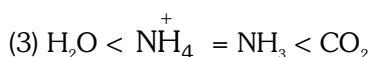
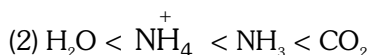
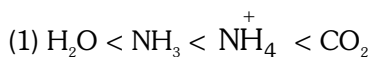
FINAL NEET(UG)-2022 (RE-EXAMINATION)

(Held On Sunday 4th SEPTEMBER, 2022)

CHEMISTRY

SECTION-A

51. The correct order of bond angles in the following compounds/species is:

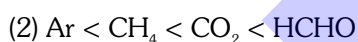
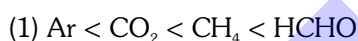


Ans. (1)

52. K_H value for some gases at the same temperature 'T' are given :

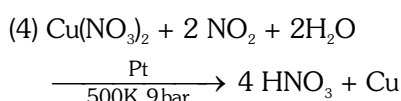
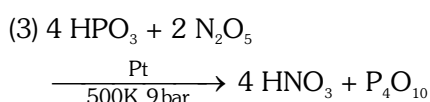
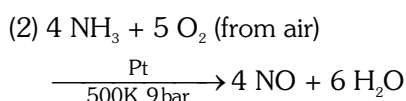
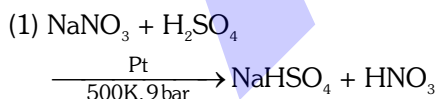
gas	$K_H/\text{k bar}$
Ar	40.3
CO_2	1.67
HCHO	1.83×10^{-5}
CH_4	0.413

where K_H is Henry's Law constant in water. The order of their solubility in water is :



Ans. (1)

53. Which of the following reactions is a part of the large scale industrial preparation of nitric acid ?



Ans. (2)

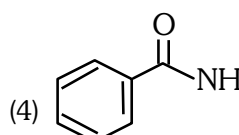
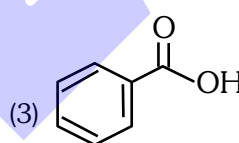
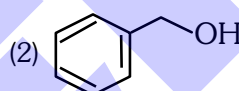
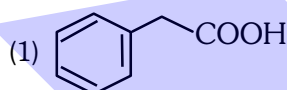
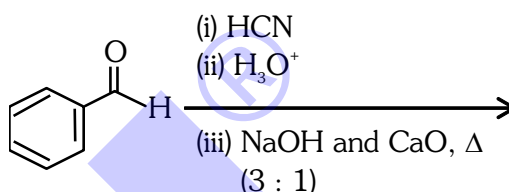
TEST PAPER WITH ANSWER

54. CaCl_2 and $\text{Ca}(\text{OCl})_2$ are components of :

- (1) gypsum (2) Portland cement
(3) bleaching powder (4) lime water

Ans. (3)

55. The product formed from the following reaction sequence is :



Ans. (2)

56. Match List - I with List - II :

List - I (Reaction)	List - II (Product formed)
(a) Gabriel synthesis	(i) Benzaldehyde
(b) Kolbe synthesis	(ii) Ethers
(c) Williamson synthesis	(iii) Primary amines
(d) Etard reaction	(iv) Salicylic acid

Choose the correct answer from the options given below :

- (1) (a) - (iii), (b) - (i), (c) - (ii), (d) - (iv)
 (2) (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv)
 (3) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
 (4) (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)

Ans. (4)

57. Match List - I with List - II

List - I	List - II
(a) Sodium laurylsulphate	(i) Toilet soap
(b) Cetyltrimethyl ammonium chloride	(ii) Non-ionic detergent
(c) Sodium stearate	(iii) Anionic detergent
(d) Polyethyleneglycol stearate	(iv) Cationic detergent

Choose the correct answer from the options given below :

- (1) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
 (2) (a) - (i), (b) - (iv), (c) - (ii), (d) - (iii)
 (3) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)
 (4) (a) - (iii), (b) - (i), (c) - (ii), (d) - (iv)

Ans. (3)

58. Which of the following reactions is a decomposition redox reaction ?

- (1) $2 \text{Pb}(\text{NO}_3)_2(\text{s}) \rightarrow 2 \text{PbO}(\text{s}) + 4 \text{NO}_2(\text{g}) + \text{O}_2(\text{g})$
 (2) $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2 \text{NO}(\text{g})$
 (3) $\text{Cl}_2(\text{g}) + 2\text{OH}^-(\text{aq}) \rightarrow \text{ClO}^-(\text{aq}) + \text{Cl}^-(\text{aq}) + \text{H}_2\text{O}(\text{l})$
 (4) $\text{P}_4(\text{s}) + 3\text{OH}^-(\text{aq}) + 3\text{H}_2\text{O}(\text{l}) \rightarrow \text{PH}_3(\text{g}) + 3\text{H}_2\text{PO}_2^-(\text{aq})$

Ans. (1)59. If first ionization enthalpies of element X and Y are 419 kJ mol^{-1} and 590 kJ mol^{-1} , respectively and second ionization enthalpies of X and Y are 3069 kJ mol^{-1} and 1145 kJ mol^{-1} , respectively.

Then **correct** statement is :-

- (1) X is an alkali metal and Y is an alkaline earth metal.
 (2) X is an alkaline earth metal and Y is an alkali metal.
 (3) Both X and Y are alkali metals.
 (4) Both X and Y are alkaline earth metals.

Ans. (1)60. Predict the order of reactivity of the following four isomers towards $\text{S}_\text{N}2$ reaction.

- (I) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$
 (II) $\text{CH}_3\text{CH}_2\text{CH}(\text{Cl})\text{CH}_3$
 (III) $(\text{CH}_3)_2\text{CHCH}_2\text{Cl}$
 (IV) $(\text{CH}_3)_3\text{CCl}$
 (1) (IV) > (III) > (II) > (I) (2) (I) > (II) > (III) > (IV)
 (3) (I) > (III) > (II) > (IV) (4) (IV) > (II) > (III) > (I)

Ans. (3)

61. Match List-I with List-II :

	List-I (Molecules)		List-II (Shape)
(a)	NH_3	(i)	Square pyramidal
(b)	ClF_3	(ii)	Trigonal bipyramidal
(c)	PCl_5	(iii)	Trigonal pyramidal
(d)	BrF_5	(iv)	T-shape

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

- (1) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)
 (2) (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)
 (3) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
 (4) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

Ans. (2)

62. Which among the following is a thermoplastic polymer ?

- (1) Bakelite
 (2) Polythene
 (3) Urea-formaldehyde resin
 (4) Melamine polymer

Ans. (2)

63. Match List-I with List-II :

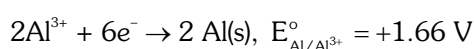
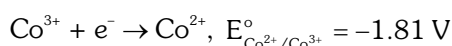
	List-I (Compounds)		List-II (Molecular formula)
(a)	Borax	(i)	NaBO_2
(b)	Kernite	(ii)	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$
(c)	Orthoboric acid	(iii)	H_3BO_3
(d)	Borax bead	(iv)	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$

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

- (1) (a) - (iv), (b) - (ii), (c) - (iii), (d) - (i)
 (2) (a) - (ii), (b) - (iv), (c) - (iii), (d) - (i)
 (3) (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)
 (4) (a) - (i), (b) - (iii), (c) - (iv), (d) - (ii)

Ans. (1)

64. Two half cell reactions are given below :



The standard EMF of a cell with feasible redox reaction will be :

- (1) +7.09 V (2) +0.15 V
 (3) +3.47 V (4) -3.47 V

Ans. (3)

65. The element used for welding metals with high melting points is :

- (1) Cl_2 (2) H_2 (3) Ne (4) He

Ans. (2)

66. $\text{Na}_2\text{B}_4\text{O}_7 \xrightarrow{\text{heat}} \text{X} + \text{NaBO}_2$
in the above reaction the product "X" is :

- (1) H_3BO_3 (2) B_2O_3
(3) $\text{Na}_2\text{B}_2\text{O}_5$ (4) NaB_3O_5

Ans. (2)

67. The correct order of first ionization enthalpy for the given four element is :

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

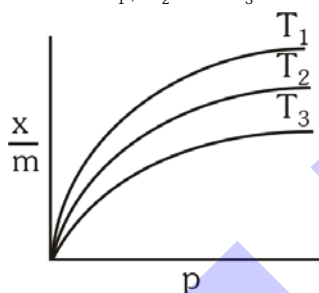
Ans. (3)

68. 0.01 M acetic acid solution is 1% ionised, then pH of this acetic acid solution is :

- (1) 3 (2) 2 (3) 4 (4) 1

Ans. (3)

69. Shown below are adsorption isotherms for a gas 'X' at temperatures T_1 , T_2 and T_3 :



p and $\frac{x}{m}$ represent pressure and extent of adsorption, respectively. The correct order of temperatures for the given adsorption is:

- (1) $T_1 > T_2 > T_3$ (2) $T_3 > T_2 > T_1$
(3) $T_1 = T_2 = T_3$ (4) $T_1 = T_2 > T_3$

Ans. (2)

70. The half life of a first order reaction is 2000 years. If the concentration after 8000 years is 0.02 M, then the initial concentration was :

- (1) 0.16 M (2) 0.32 M
(3) 0.08 M (4) 0.04 M

Ans. (2)

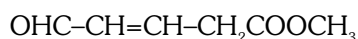
71. One mole of an ideal gas at 300 K is expanded isothermally from 1 L to 10 L volume. ΔU for this process is

(Use $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$)

- (1) 1260 J (2) 2520 J (3) 5040 J (4) 0 J

Ans. (4)

72. What is the hybridization shown by C_1 and C_2 carbons, respectively in the given compound ?



- (1) sp^2 and sp^3 (2) sp^2 and sp^2
(3) sp^3 and sp^2 (4) sp^3 and sp^3

Ans. (1)

73. The density of the solution is 2.15 g mL^{-1} , then mass of 2.5 mL solution in correct significant figures is

- (1) $5375 \times 10^{-3} \text{ g}$ (2) 5.4 g
(3) 5.38 g (4) 53.75 g

Ans. (2)

74. Flourine is a stronger oxidising agent than chlorine because :

- (a) F-F bond has a low enthalpy of dissociation.
(b) Flouride ion (F^-) has high hydration enthalpy.
(c) Electron gain enthalpy of flourine is less negative than chlorine.
(d) Flourine has a very small size.

Choose the most appropriate answer from the options given :

- (1) (a) and (b) only
(2) (a) and (c) only
(3) (a) and (d) only
(4) (b) and (c) only

Ans. (1)

75. Match List-I with List-II :

List-I	List-II
(Complexes)	(Types)
(a) $[\text{Co}(\text{NH}_3)_5\text{NO}_2]\text{Cl}_2$ and $[\text{Co}(\text{NH}_3)_5\text{ONO}]\text{Cl}_2$	(i) ionisation isomerism
(b) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ and $[\text{Cr}(\text{CN})_6]^{3-}$	(ii) coordination isomerism
(c) $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Br}$ and $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$	(iii) linkage isomerism
(d) $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ and $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2 \cdot \text{H}_2\text{O}$	(iv) solvate isomerism

Choose the correct answer from the options given below :

- (1) (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)
(2) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
(3) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)
(4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

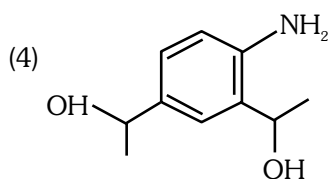
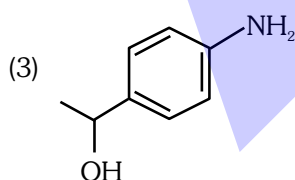
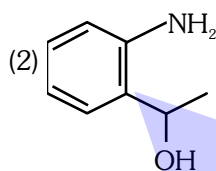
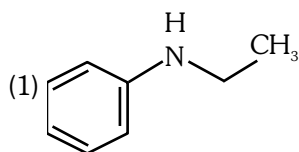
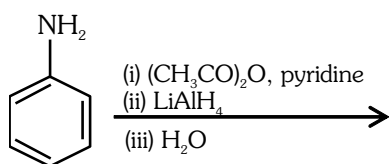
Ans. (3)

76. The incorrect statement about denaturation of proteins is

- (1) It results due to change of temperature and/or pH
- (2) It results in loss of biological activity of proteins.
- (3) A protein is formed from amino acids linked by peptide bonds.
- (4) Uncoiling of the helical structure takes place.

Ans. (3)

77. The product formed from the following reaction sequence is



Ans. (1)

78. Match List-I with List-II :

List-I
(Defects)

- (a) Frenkel defect
- (b) Schottky defect
- (c) Vacancy defect
- (d) Interstitial defect

List-II
(shown by)

- (i) non-ionic solids and density of the solid decreases
- (ii) non-ionic solids and density of the solid increases
- (iii) ionic solids and density of the solid decreases.
- (iv) ionic solids and density of the solid remains constant.

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

- (1) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
- (2) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
- (3) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
- (4) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

Ans. (4)

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

Assertion (A) : Chlorine is an electron withdrawing group but it is ortho, para directing in electrophilic aromatic substitution.

Reason (R) :

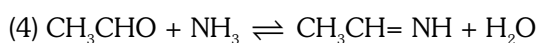
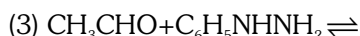
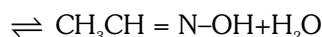
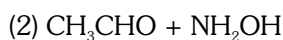
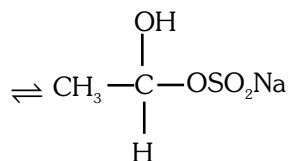
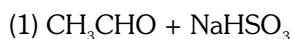
Inductive effect of chlorine destabilises the intermediate carbocation formed during the electrophilic substitution, however due to the more pronounced resonance effect, the halogen stabilises the carbocation at ortho and para positions.

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

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

Ans. (1)

80. Which of the following reactions is not an example for nucleophilic addition – elimination reaction ?



Ans. (1)

81. Four gas cylinders containing He, N_2 , CO_2 and NH_3 gases separately are gradually cooled from a temperature of 500 K. Which gas will liquify first ? (Given T_c in K – He : 5.3, N_2 : 126, CO_2 : 304.1 and NH_3 : 405.5)



Ans. (4)

82. Decrease in size from left to right in actinoid series is greater and gradual than that in lanthanoid series due to :

(1) 4 f orbitals are penultimate

(2) 4 f orbitals have greater shielding effect

(3) 5 f orbitals have poor shielding effect

(4) 5 f orbitals have greater shielding effect

Ans. (3)

83. The decreasing order of boiling points of the following alkanes is :

(a) Heptane

(b) butane

(c) 2-methylbutane

(d) 2-methylpropane

(e) hexane

Choose the correct answer from the options given below :

(1) (a) > (c) > (e) > (d) > (b)

(2) (c) > (d) > (a) > (e) > (b)

(3) (a) > (e) > (b) > (c) > (d)

(4) (a) > (e) > (c) > (b) > (d)

Ans. (4)

84. Match the reagents (List-I) with the product (List-II) obtained from phenol.

	List-I		List-II
(a)	(i) NaOH (ii) CO_2 (iii) H^+	(i)	Benzoquinone
(b)	(i) Aqueous NaOH + CHCl_3 (ii) H^+	(ii)	Benzene
(c)	Zn duct, Δ	(iii)	Salicyl aldehyde
(d)	$\text{Na}_2\text{Cr}_2\text{O}_7$, H_2SO_4	(iv)	Salicylic acid

Choose the correct answer from the options given below :

(1) (a) – (iii), (b) – (iv), (c) – (i), (d) – (ii)

(2) (a) – (ii), (b) – (i), (c) – (iv), (d) – (iii)

(3) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)

(4) (a) – (iv), (b) – (ii), (c) – (i), (d) – (iii)

Ans. (3)

85. Match List-I with List-II :

	List-I (quantum number)		List-II (Orbital)
(a)	$n = 2, \ell = 1$	(i)	2 s
(b)	$n = 3, \ell = 2$	(ii)	3 s
(c)	$n = 3, \ell = 0$	(iii)	2 p
(d)	$n = 2, \ell = 0$	(iv)	3 d

Choose the correct answer from the options given below :

(1) (a) – (iii), (b) – (iv), (c) – (i), (d) – (ii)

(2) (a) – (iv), (b) – (iii), (c) – (i), (d) – (ii)

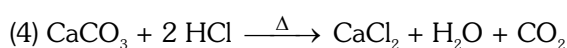
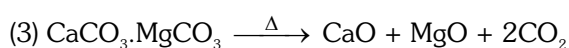
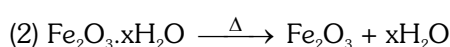
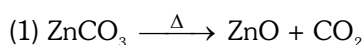
(3) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)

(4) (a) – (iii), (b) – (iv), (c) – (ii), (d) – (i)

Ans. (4)

SECTION-B

86. Which one of the following is not a calcination reaction?



Ans. (4)

87. When electromagnetic radiation of wavelength 300 nm falls on the surface of a metal, electrons are emitted with the kinetic energy of $1.68 \times 10^5 \text{ J mol}^{-1}$. What is the minimum energy needed to remove an electron from the metal ?

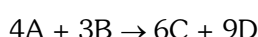
$$(h = 6.626 \times 10^{-34} \text{ Js}, c = 3 \times 10^8 \text{ ms}^{-1},$$

$$N_A = 6.022 \times 10^{23} \text{ mol}^{-1})$$

- (1) $2.31 \times 10^6 \text{ J mol}^{-1}$
 (2) $3.84 \times 10^4 \text{ J mol}^{-1}$
 (3) $3.84 \times 10^{-19} \text{ J mol}^{-1}$
 (4) $2.31 \times 10^5 \text{ J mol}^{-1}$

Ans. (4)

88. For a chemical reaction



rate of formation of C is $6 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and rate of disappearance of A is $4 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$. The rate of reaction and amount of B consumed in interval of 10 seconds, respectively will be :

- (1) $1 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $30 \times 10^{-2} \text{ mol L}^{-1}$
 (2) $10 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $10 \times 10^{-2} \text{ mol L}^{-1}$
 (3) $1 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $10 \times 10^{-2} \text{ mol L}^{-1}$
 (4) $10 \times 10^{-2} \text{ mol L}^{-1} \text{ s}^{-1}$ and $30 \times 10^{-2} \text{ mol L}^{-1}$

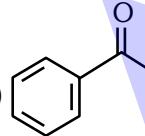
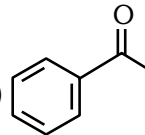
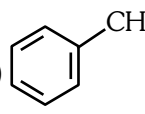
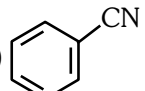
Ans. (1)

89. The incorrect method for the synthesis of alkenes is:

- (1) treatment of alkynes with Na in liquid NH_3
 (2) heating alkyl halides with alcoholic KOH
 (3) treating alkyl halides in aqueous KOH solution
 (4) treating vicinal dihalides with Zn metal

Ans. (3)

90. The incorrect method to synthesize benzaldehyde is:

- (1)  Cl, H_2 , Pd-BaSO₄
 (2)  OC₂H₅, DIBAL-H, followed by H_2O
 (3)  CH₃, CrO_2Cl_2 , followed by H_3O^+ in CS_2
 (4)  CN, CH_3MgBr , followed by H_3O^+

Ans. (4)

91. What fraction of Fe exists as Fe(III) in $\text{Fe}_{0.96}\text{O}$?

(Consider $\text{Fe}_{0.96}\text{O}$ to be made up of Fe(II) and Fe(III) only)

- (1) $\frac{1}{12}$ (2) 0.08 (3) $\frac{1}{16}$ (4) $\frac{1}{20}$

Ans. (1)

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

Assertion (A) :

The metal carbon bond in metal carbonyls possesses both σ and π character.

Reason (R) :

The ligand to metal bond is a π bond and metal to ligand bond is a σ bond.

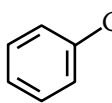
In the light of the above statements, choose the most appropriate answer from the options given below :

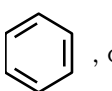
- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A)
 (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
 (3) (A) is correct but (R) is not correct.
 (4) (A) is not correct but (R) is correct.

Ans. (3)

93. Which one of the following reaction sequence is incorrect method to prepare phenol ?

- (1) Aniline, $\text{NaNO}_2 + \text{HCl}$, H_2O , heating
 (2) Cumene, O_2 , H_3O^+

(3)  Cl, NaOH, STP condition

(4)  , oleum, NaOH, H_3O^+

Ans. (3)

94. A vessel contains 3.2 g of dioxygen gas at STP (273.15 K and 1 atm pressure). The gas is now transferred to another vessel at constant temperature, where pressure becomes one third of the original pressure. The volume of new vessel in L is :

(Given - molar volume at STP is 22.4 L)

- (1) 6.72 (2) 2.24 (3) 22.4 (4) 67.2

Ans. (1)

95. Match List-I with List-II :

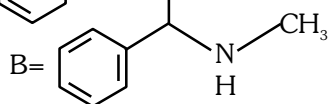
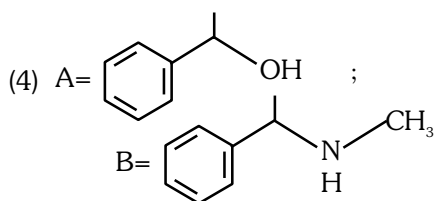
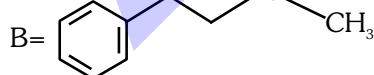
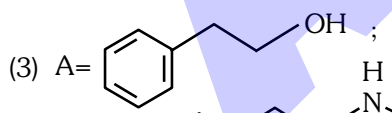
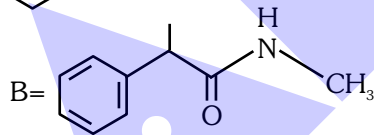
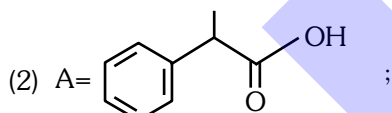
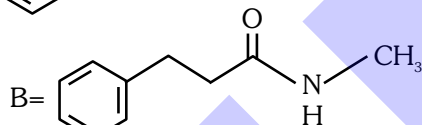
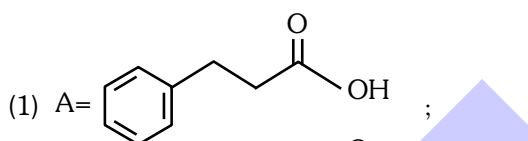
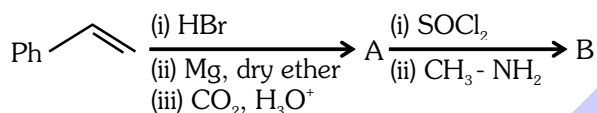
List-I		List-II	
(a)	Biochemical oxygen demand	(i)	Oxidising mixture
(b)	Photochemical smog	(ii)	Polar stratospheric cloud
(c)	Classical smog	(iii)	organic matter in water
(d)	Ozone layer depletion	(iv)	reducing mixture

Choose the correct answer from the options given below :

- (1) (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)
 (2) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
 (3) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
 (4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

Ans. (3)

96. The products A and B in the following reaction sequence are :



Ans. (2)

97. Given below are two statements :

Statement I :

Cr^{2+} is oxidising and Mn^{3+} is reducing in nature.

Statement II :

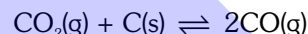
Sc^{3+} compounds are repelled by the applied magnetic field.

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

Ans. (4)

98. K_p for the following reaction is 3.0 at 1000 K.



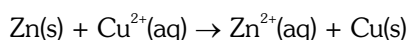
What will be the value of K_c for the reaction at the same temperature ?

(Given - $R = 0.083 \text{ L bar K}^{-1} \text{ mol}^{-1}$)

- (1) 0.36 (2) 3.6×10^{-2}
 (3) 3.6×10^{-3} (4) 3.6

Ans. (2)

99. Standard electrode potential for the cell with cell reaction



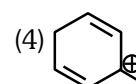
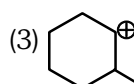
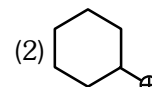
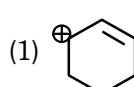
is 1.1 V. Calculate the standard gibbs energy change for the cell reaction.

(Given $F = 96487 \text{ C mol}^{-1}$)

- (1) $-200.27 \text{ kJ mol}^{-1}$
 (2) $-212.27 \text{ kJ mol}^{-1}$
 (3) $-212.27 \text{ J mol}^{-1}$
 (4) $-200.27 \text{ J mol}^{-1}$

Ans. (2)

100. Which of the following is the most stable carbocation?



Ans. (4)