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CUET Chemistry - 2022

Q.1 Among the following statements, choose the correct statements.

- A. In Ionic solid, ions are the constituent particles.
- B. Ionic solids are soft.
- C. Ionic solid are electrical insulators in the solid state.
- D. Ionic solid conduct electricity in molten state.
- E. Tonic solid have low melting and boiling points.

Choose the correct answer from the options given below:

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

Q.2 Atoms of element B form hcp lattice and those of the element A occupy $\frac{2}{3}$ rd of tetrahedral voids.

What is the formula of the compound formed by the elements A and B?

- (A) $A_3 B_4$
- (B) $A_4 B_3$
- (C) $A_2 B_3$
- (D) $A_3 B_2$

Q.3 Consider the 1M aqueous solution of the following compounds and arrange them in the increasing order of elevation in the boiling points.

- A. $C_6 H_{12} O_6$
- B. NaCl
- C. $MgCl_2$

D. $Al_2 (SO_4)_3$

E. $A l_2 (SO_4)_3$

Choose the correct answer from the options given below:

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

Q.4 Calculate the molarity of a solution containing 5g of NaOH in 450 mL solution

- (A) 0.278×10^{-3}
- (B) 0.278
- (C) $0.278 \times 10^{-3} M$
- (D) 0.278M

Q.5 Among the following statements related to ionic conductance, choose the correct statements.

- A, Tonic conductance depends on the nature of electrolyte.
- B. Ionic conductance is due to the movements of electrons
- C. Ionic conductance is also called electronic conductance
- D. Ionic conductance depends on temperature
- E. Ionic conductance also depends on the nature of solvent

Choose the correct answer from the options given below:

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



Q.6 A degree m NaCl, HCl and NaOAc are 126.4, 425.9 and 91.0 S cm² mol⁻¹ respectively.

Calculate A° for HOAc

- (A) 390.5 S cm² mol⁻¹
- (B) 643.3 S cm² mol⁻¹
- (C) 461.3 S cm² mol⁻¹
- (D) 208.5 S cm² mol⁻¹

Q.7 How much charge is required for the reduction of 1 mol of MnO₄⁻; to Mn²⁺?

- (A) 1F
- (B) 5E
- (C) 3R
- (D) 6F

Q.8 The products formed at cathode and anode by electrolysis of aqueous NaCl solution respectively are

- (A) Na, Cl₂
- (B) Na, O₂
- (C) H₂, Cl₂
- (D) H₂, O₂

Q.9 The artificial sweetener used only for cold food is

- (A) Alitame
- (B) Sucralose
- (C) Aspartame
- (D) Saccharin

Q.10 Rate constant 'k' for a certain reaction is

$$k = 2.3 \times 10^{-5}$$

L mol⁻¹

2-1 Order of the reaction is:

- (A) 0
- (B) 1
- (C) 2
- (D) 3

Q.11 The decomposition of NH₃ on platinum surface is zero order reaction.

If k = 2.5 × 10⁻⁴ mol L⁻¹s⁻¹ the rate of production of H₂ is

- (A) 2.5 × 10⁻⁴ mol L⁻¹s⁻¹
- (B) 7.5 × 10⁻⁴ mol L⁻¹s⁻¹
- (C) 5.0 × 10⁻⁴ mol L⁻¹s⁻¹
- (D) 10.0 × 10⁻⁴ mol L⁻¹s⁻¹

Q.12 The molecularity of the following elementary reaction is



- (A) Zero
- (B) One
- (C) Two
- (D) Three

Q.13 Which of the following is not the characteristic of physisorption?

- (A) It arises because of vander Waals forces.
- (B) It is not specific in nature.
- (C) Enthalpy of adsorption is high.
- (D) It results into multi molecular layers on adsorbent surface under high pressure.

Q.14 Which one of the following is an emulsion?

- (A) Smoke
- (B) Hair cream
- (C) Paint
- (D) Cheese



Q.15 Caprolactam is the starting material for

- (A) Nylon 6.6
- (B) Nylon 6
- (C) Nylon 2.6
- (D) Dacron

Q.16 Which of the following is a positively charged Sol?

- (A) Starch
- (B) Gum
- (C) Gold Sol
- (D) Blood

Q.17 Match list I with list II

List -I	List -II
(A) Siderite	(I) Aluminium
(B) Malachite	(II) Iron
(C) Calamine	(III) Copper
(D) Bauxite	(IV) Zinc

Choose the correct answer from the options given below:

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

Q.18 The metal refined by Van Arkel method is

- (A) Ni
- (B) Zr
- (C) Cu
- (D) Sn

Q.19 Arrange the following hydrides in increasing order of thermal stability.

- A. H_2O
- B. H_2Se
- C. H_2Po
- D. H_2Te
- E. H_2S

Choose the correct answer from the options given below:

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

Q.20 Match list I with list II

List -I	List -II
(A) Ammonia	(I) Ostwald's process
(B) Chlorine	(II) Contact process
(C) Sulphuric Acid	(III) Deacon process
(D) Nitric Acid	(IV) Haber's process

Q.21 The formula of a noble gas species which is isostructural with BrO_3^-

- (A) $XeOF_4$
- (B) XeF_2
- (C) XeO_3
- (D) XeF_4

Q.22 Match list I with list II



List –I (Transition Metals)	List–II (Maximum Oxidation State)
(A) Ti	(I) 7
(B) V	(II) 4
(C) Mn	(III) 5
(D) Cu	(IV) 2

Choose the correct answer from the options given below:

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

Q.23 The metal from first transition series having positive $E_{M^{2+}/M}$ value:

- (A) Cr
 (B) V
 (C) Cu
 (D) Ni

Q.24 Magnetic moment of a divalent ion in aqueous solution of an element with atomic number 25 is:

- (A) 2.84 BM
 (B) 3.87BM
 (C) 4.90 BM
 (D) 5.92BM

Q.25 ‘Which one of the following transition metal ion is colourless?’

- (A) Sc^{3+}

- (B) V^{2+}
 (C) Mn^{2+}
 (D) Co^{3+}

Q.26 Among the following statements, choose the correct statements.

- A. SN reaction proceeds with stereo chemical inversion.
 B. The process of conversion of Racemic mixture into enantiomer is known as Racemisation
 C. A mixture containing 2 enantiomers in equal proportions is known as Racemic mixture.
 D. The stereoisomers related to each other as superimposable mirror image are called enantiomers.

E. The objects which are non superimposable on their mirror image are said to be chiral and this property is known as chirality.

Choose the correct answer from the options given below:

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

Q.27 TUPAC name of neopentyl chloride is

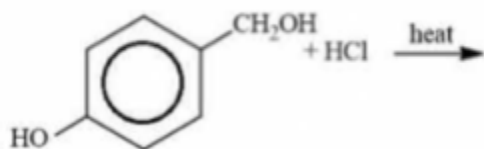
- 1- Chloro — 2, 2 — dimethylpropane
 2 - Chloro — 2, 2 — dimethylpropane
 2 - Chloro — 2 – Methylbutane
 2 - Chloro — 2 — Methylpentane

Q.28 The structure of major monohalo product in the

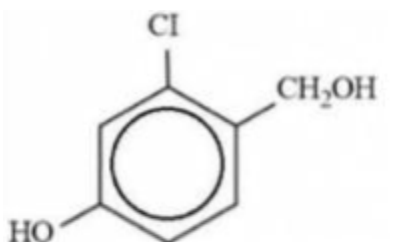


following reaction is

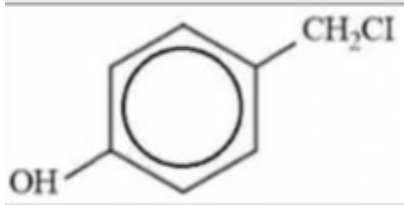
(A)



(B)



(C)



(D)



E. The high boiling points of alcohols are mainly due to the presence of intramolecular hydrogen bonding.

Choose the correct answer from the options given below:

(A) A, D and E only

(B) A, B and C only

(C) B, C and D only

(D) C, D and E only

Q.30 Arrange the following compounds in increasing order of their acid strength:

A. Propan-1-ol

B. 3-nitrophenol

C. 3,5-dinitrophenol

D. Phenol

E. 4-Methylphenol

Choose the correct answer from the options given below:

(A) A<B<C<D<E

(B) C<B<D,E<A

(C) A<B<C<D<A

(D) A<E<D<B<C

Q.29 Among the following statements, choose the correct statements.

A. Boiling point of alcohols increases with increase in the number of carbon atoms.

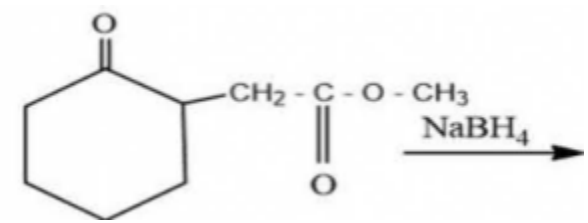
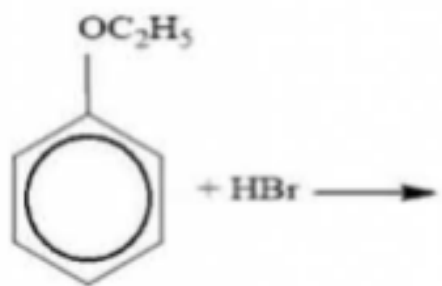
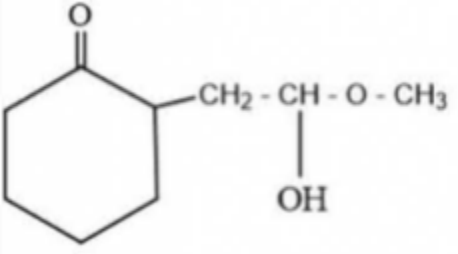
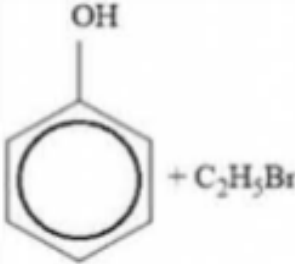
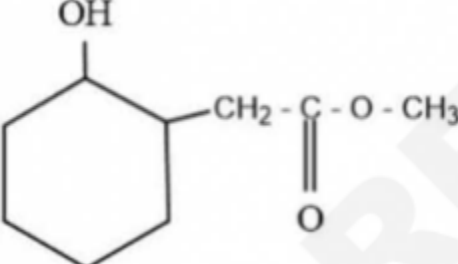
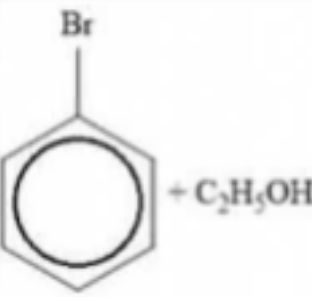
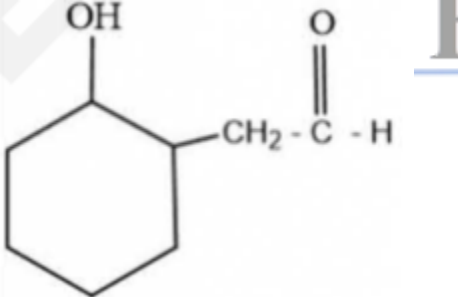

B. In alcohols, boiling points increases with increase of branching in carbon chain.

C. Boiling points of alcohols are lesser in comparison to haloalkanes of comparable molecular mass.

D. Boiling points of alcohols are higher in comparison to hydrocarbons of comparable molecular mass.

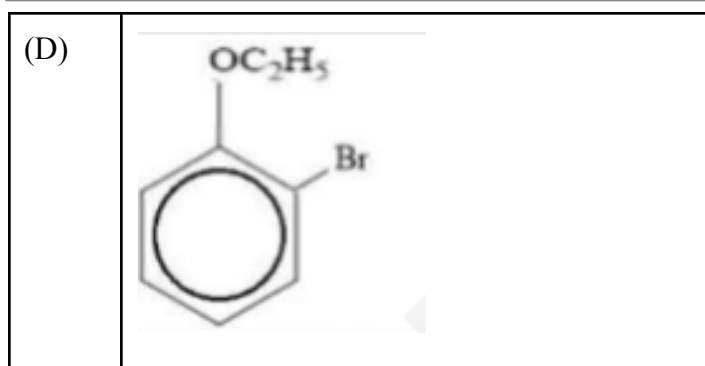
Q.31 The structure of the product of the following reaction is:



<p>(A)</p> 	
<p>(B)</p> 	<p>(A)</p> 
<p>(C)</p> 	<p>(B)</p> 
<p>(D)</p> 	<p>(C)</p> 

Q.32 The product of the following reaction is:





Q.33 Amino acid in zwitter ionic form show (A)

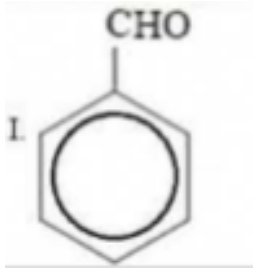
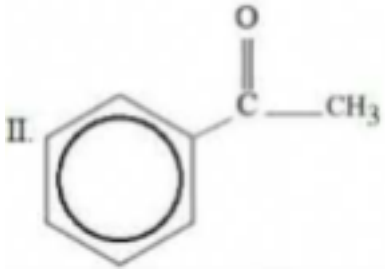
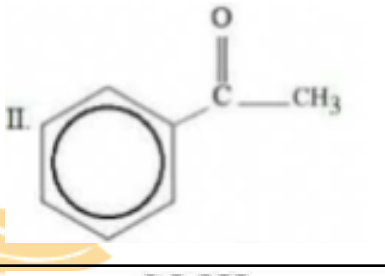
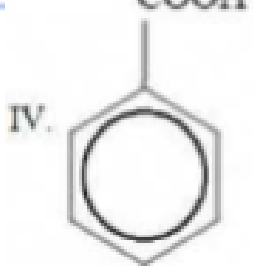
Acid Behaviour

(B) Basic Behaviour

(C) Amphoteric Behaviour

(D) Neutral Behaviour

Q.34 Match list I with list II

List I (Nomenclature)	List II (Structure)
1. Acetophenone	I. 
2. Benzaldehyde	II. 
3. Benzoic acid	III. 
4. Benzophenone	IV. 

Choose the correct answer from the options given below:

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

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

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

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



Q.35 Which simple chemical test is used to distinguish between ethanal & propanal?

- (A) Iodoform test
- (B) Tollen's test
- (C) Fehling's test
- (D) Lucas test

Q.36 'Which of the following compound would undergo Aldol condensation?

- (A) Methanal
- (B) Benzaldehyde
- (C) 2, 2- Dimethylbutanal
- (D) Phenylacetaldehyde

Q.37 Among the following statements choose the correct statements

- A. Analgesics reduce or abolish pain without causing impairment of consciousness, mental confusion.
- B. Tranquilizers are neurological inactive drugs.
- C. Morphine is the example of non- narcotic analgesics.
- D. Disinfectants are applied to inanimate objects whereas antiseptics are applied to the living tissues.
- E. Same substance can act as an antiseptic as well as disinfectant by varying the concentration.

Choose the correct answer from the options given below:

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

Q.38 Out of the following artificial sweetening agents, which one has highest sweetness value in comparison to cane sugar?

- (A) Saccharin
- (B) Alitame
- (C) Sucralose
- (D) Aspartame

Q.39 Among the following polymers, which one is the copolymer?

- (A) Polypropene
- (B) Polystyrene
- (C) Polyvinyl chloride
- (D) Glyptal

Q.40 Among the following, which one is a disaccharide?

- (A) Glucose
- (B) Glycogen
- (C) Maltose
- (D) Starch

Q.41 The reaction of amines with mineral acids to form ammonium salt shows that these are basic in nature. Amines have an unshared pair of electron on nitrogen atom due to which they behave as lewis base. Basicity of amines is related to their structure. Basic character of an amine depends upon the ease of formation of cation by accepting a proton from the acid. The more stable the cation is relative to the amine, more basic is the amine.



Structure of ammonium salt when ethylamine reacts with one mole of HCl?:

- (A) $C_2H_5 - NH^+_3 Cl^-$
- (B) $(C_2H_5)_2 - NH^+_2 Cl^-$
- (C) $(C_2H_5)_3 - NH^+ Cl^-$
- (D) $(C_2H_5)_4 - N^+ Cl^-$

Q.42 The reaction of amines with mineral acids to form ammonium salt shows that these are basic in nature. Amines have an unshared pair of electron on nitrogen atom due to which they behave as Lewis base. Basicity of amines is related to their structure. Basic character of an amine depends upon the ease of formation of cation by accepting a proton from the acid. The more stable the cation is relative to the amine, more basic is the amine.

Among the following amines, which one is most basic (in aqueous solution)?

- (A) NH_3
- (B) $C_2H_5NH_2$
- (C) $(C_2H_5)_2NH$
- (D) $(C_2H_5)_3N$

Q.43 The reaction of amines with mineral acids to form ammonium salt shows that these are basic in nature. Amines have an unshared pair of electron on nitrogen atom due to which they behave as Lewis base. Basicity of amines is related to their structure. Basic character of an amine depends upon the ease of formation of cation by accepting a proton from the acid. The more stable the cation is relative to the amine, more basic is the amine.

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The correct order of basicity of amines in gas phase

- (A) 1 degree < 3 degree < 2 degree
- (B) 3 degree < 1 degree < 2 degree
- (C) 2 degree < 3 degree < 1 degree
- (D) 1 degree < 2 degree < 3 degree

Q.44 The reaction of amines with mineral acids to form ammonium salt shows that these are basic in nature. Amines have an unshared pair of electron on nitrogen atom due to which they behave as Lewis base. Basicity of amines is related to their structure. Basic character of an amine depends upon the ease of formation of cation by accepting a proton from the acid. The more stable the cation is relative to the amine, more basic is the amine.

Among the following, which one has the highest pK_b value?

- (A) $C_2H_5NH_2$
- (B) $C_6H_5NHCH_3$
- (C) $(C_2H_5)_2NH$
- (D) $(C_2H_5)_3N$

Q.45 The reaction of amines with mineral acids to form ammonium salt shows that these are basic in nature. Amines have an unshared pair of electron on nitrogen atom due to which they behave as Lewis base. Basicity of amines is related to their structure. Basic character of an amine depends upon the ease of formation of cation by accepting a proton from the acid. The more stable the cation is relative to the amine, more basic is the amine.

The correct order of basicity of amines in gas phase



- (A) $C_2H_5NH_2$
 (B) $C_6H_5N(CH_3)_2$
 (C) $(C_2H_5)_2NH$
 (D) CH_3NH_2

Q.46 According to the valence bond theory, the metal atom or ion under the influence of ligands can use its (n-1) d, ns, np, nd orbitals for hybridisation to yield a set of equivalent orbitals of definite geometry. These hybridised orbitals are allowed to

Passage: overlap with ligand orbitals that can donate electron pairs for bonding. It is usually possible to predict the geometry of a complex from the

knowledge of its magnetic behaviour on the basis of the valence bond theory. Consider the formation of $[Co(NH_3)_5Cl]Cl_2$ answer the following question:

The IUPAC name of the above coordination entity is

- (A) Chloride Pentaamminecobaltate (II) chloride
 (B) Chloride Pentaamminecobaltate (II) dichloride
 (C) Pentaamine Chloride Cobaltate (III) chloride
 (D) Pentaamminechlorocobalt (IV) dichloride

Q.47 According to the valence bond theory, the metal atom or ion under the influence of ligands can use its (n-1) d, ns, np, nd orbitals for hybridisation to yield a set of equivalent orbitals of definite geometry. These hybridised orbitals are allowed to

Passage: overlap with ligand orbitals that can donate electron pairs for bonding. It is usually possible to predict the geometry of a complex from the

knowledge of its magnetic behaviour on the basis of

the valence bond theory. Consider the formation of $[Co(NH_3)_5Cl]Cl_2$ answer the following question:

The spin only magnetic moment of the complex $[Co(NH_3)_5Cl]Cl_2$ in BM is

- (A) 1.7
 (B) 0.0
 (C) 3.8
 (D) 4.9

Q.48 According to the valence bond theory, the metal atom or ion under the influence of ligands can use its (n-1) d, ns, np, nd orbitals for hybridisation to yield a set of equivalent orbitals of definite geometry. These hybridised orbitals are allowed to

Passage: overlap with ligand orbitals that can donate electron pairs for bonding. It is usually possible to predict the geometry of a complex from the

knowledge of its magnetic behaviour on the basis of the valence bond theory. Consider the formation of $[Co(NH_3)_5Cl]Cl_2$ answer the following question:

The hybridization of cobalt in the above coordination entity is

- (A) sp^3d^2 (B) d^2sp^3
 (C) sp^2d (D) dsp^3

Q.49 According to the valence bond theory, the metal atom or ion under the influence of ligands can use its (n-1) d, ns, np, nd orbitals for hybridisation to yield a set of equivalent orbitals of definite geometry. These hybridised orbitals are allowed to

Passage: overlap with ligand orbitals that can donate electron pairs for bonding. It is usually possible to



predict the geometry of a complex from the knowledge of its magnetic behaviour on the basis of the valence bond theory. Consider the formation of $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$ answer the following question:

The coordination number of cobalt in the above coordination entity is

- (A) 2
- (B) 4
- (C) 5
- (D) 6

Q.50 According to the valence bond theory, the metal atom or ion under the influence of ligands can use its $(n-1)$ d, ns, np, nd orbitals for hybridisation to yield a set of equivalent orbitals of definite geometry. These hybridised orbitals are allowed to overlap with ligand orbitals that can donate electron pairs for bonding. It is usually possible to predict the geometry of a complex from the knowledge of its magnetic behaviour on the basis of the valence bond theory. Consider the formation of $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$ answer the following question:

The primary valence of Co in above coordination entity is

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



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