

Chemistry

Group Number :	7
Group Id :	46419934
Group Maximum Duration :	60
Group Minimum Duration :	60
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200

Chemistry

Section Id :	46419942
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	40
Section Marks :	200
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	464199117
Question Shuffling Allowed :	Yes

Question Number : 301 Question Id : 4641991805 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which among the following is super cooled liquid ?

- (1) Diamond
- (2) Graphite
- (3) Copper
- (4) Glass

Question Number : 302 Question Id : 4641991806 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Dry ice is :

- (1) Lead monoxide
- (2) Silicon carbide
- (3) Solid carbon dioxide
- (4) Glacier ice

Question Number : 303 Question Id : 4641991807 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which kind of defect is observed in AgBr ?

- (1) Vacancy defect
- (2) Interstitial defect
- (3) Both Frenkel and Schottky defects
- (4) Only Schottky defect

Question Number : 304 Question Id : 4641991808 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which of the following is an example of solid solution ?

- (1) Camphor in N₂ gas
- (2) Oxygen gas in water
- (3) Ethanol in water
- (4) Amalgam of mercury with sodium

Question Number : 305 Question Id : 4641991809 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What is the formula of urea ?

- (1) NH₂CONH₂
- (2) NH₄HSO₄
- (3) C₂H₅OH
- (4) NH₄OH

Question Number : 306 Question Id : 4641991810 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

For $p = K_H \times x$. Here K_H is :

- (1) Cryoscopic constant
- (2) Henry's Law constant
- (3) Boyle's constant
- (4) Rate constant

Question Number : 307 Question Id : 4641991811 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What kind of problem arises when bubbles of nitrogen gas dissolves in blood ?

- (1) Anoxia
- (2) Red fever
- (3) Sleeping sickness
- (4) Bends

Question Number : 308 Question Id : 4641991812 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

A perfectly ideal solution is rare but some solution behave nearly ideal. Which of the following does **not** fall in this category ?

- (1) n-hexane and n-heptane
- (2) Ethanol and acetone
- (3) Benzene and toluene
- (4) Bromoethane and chloroethane

Question Number : 309 Question Id : 4641991813 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Which among the following life processes is electrochemical in origin ?

- (1) Breathing
- (2) Digestion
- (3) Transmission of sensory signals
- (4) Blood circulation

Question Number : 310 Question Id : 4641991814 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

The standard electrode potential for Daniell cell is 1.1 V. The standard Gibbs free energy for the reaction $\text{Zn(s)} + \text{Cu}^{2+}(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu(s)}$ is approximately :

- (1) -212.27 J/mol
- (2) -21.22 J/mol
- (3) -212271.4 J/mol
- (4) -2.1227 J/mol

Question Number : 311 Question Id : 4641991815 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Which metal is the most powerful reducing agent in aqueous solution ?

- (1) Potassium
- (2) Sodium
- (3) Barium
- (4) Lithium

Question Number : 312 Question Id : 4641991816 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

What is the over all order of reaction which has the following rate expression ?

$$\text{Rate} = k[A]^{1/2} [B]^{3/2}$$

- (1) One
- (2) Two
- (3) Zero
- (4) Three

Question Number : 313 Question Id : 4641991817 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Inversion of cane sugar is a :

- (1) Zero order reaction
- (2) Pseudo first order reaction
- (3) Second order reaction
- (4) Third order reaction

Question Number : 314 Question Id : 4641991818 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Which term from the following is **not** related to adsorption ?

- (1) Adsorbent
- (2) Effluent
- (3) Adsorbate
- (4) Desorption

Question Number : 315 Question Id : 4641991819 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Which statement is **not** true for physisorption ?

- (1) It is not specific in nature.
- (2) It is reversible in nature.
- (3) Enthalpy of adsorption is low.
- (4) Chemical bond is responsible.

Question Number : 316 Question Id : 4641991820 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Which among the following chemicals is used for control of humidity ?

- (1) Charcoal
- (2) Silica gel
- (3) Ammonia gas
- (4) Sodium chloride

Question Number : 317 Question Id : 4641991821 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which among the following chemicals is used as catalytic promoter in Haber's process ?

- (1) Ni
- (2) MnO_2
- (3) Fe
- (4) Mo

Question Number : 318 Question Id : 4641991822 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which of the following metal's ore can be concentrated by magnetic separation method?

- (1) Aluminium
- (2) Cadmium
- (3) Iron
- (4) Zinc

Question Number : 319 Question Id : 4641991823 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which of the following is a polyhydric alcohol?

- (1) Ethanol
- (2) Glycerol
- (3) Propanol
- (4) Phenol

Question Number : 320 Question Id : 4641991824 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What is the other term used for thermal reductions ?

- (1) Hydrometallurgy
- (2) Leaching
- (3) Froth floatation
- (4) Pyrometallurgy

Question Number : 321 Question Id : 4641991825 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which member of 15 group elements **does not** show allotropy ?

- (1) Nitrogen
- (2) Phosphorus
- (3) Arsenic
- (4) Antimony

Question Number : 322 Question Id : 4641991826 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What is the colour of product when ammonia reacts with a solution of Cu^{2+} ?

- (1) Orange
- (2) Green
- (3) Deep blue
- (4) Yellow

Question Number : 323 Question Id : 4641991827 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What is the co-ordination number of metal in $[\text{Fe}(\text{C}_2\text{O}_4)_3]^{3-}$?

- (1) Two
- (2) Three
- (3) Six
- (4) Four

Question Number : 324 Question Id : 4641991828 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which among the following compounds is most soluble in water ?

- (1) Ethanol
- (2) Ethane
- (3) Phenol
- (4) Ethylene glycol

Question Number : 325 Question Id : 4641991829 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which important compound is prepared by using cumene ?

- (1) Ethanol
- (2) Phenol
- (3) Propanone
- (4) Propene

Question Number : 326 Question Id : 4641991830 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which of the following reaction is shown by aldehydes that do not have alpha H-atom?

- (1) Aldol condensation
- (2) Cross aldol condensation
- (3) Cannizzaro reaction
- (4) Kolbe's reaction

Question Number : 327 Question Id : 4641991831 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What is the measurement of C – O – C bond angle in methoxymethane ?

- (1) 108°
- (2) 111.7°
- (3) 90°
- (4) 60°

Question Number : 328 Question Id : 4641991832 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which among the following compounds is **not** an artificial sweetener ?

- (1) Aspartame
- (2) Alitame
- (3) Sucralose
- (4) Sodium benzoate

Question Number : 329 Question Id : 4641991833 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

What is Aspirin chemically ?

- (1) Salicylic acid
- (2) Ethyl Salicylic acid
- (3) Methyl Salicylic acid
- (4) Acetyl Salicylic acid

Question Number : 330 Question Id : 4641991834 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Match List-I with List-II.

List-I	List-II
Ions	No. of unpaired electrons
(A) Zn^{2+}	(I) 0
(B) Cu^{2+}	(II) 4
(C) Ni^{2+}	(III) 1
(D) Fe^{2+}	(IV) 2

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

Question Number : 331 Question Id : 4641991835 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Increasing order of ionic radii of the followings :

- (A) Eu^{3+}
- (B) Lu^{3+}
- (C) Y^{3+}
- (D) La^{3+}

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

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

Question Number : 332 Question Id : 4641991836 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Match List-I with List-II.

List-I	List-II
Types of hybridisation	Distribution of hybrid orbitals in space
(A) sp^3	(I) Trigonal bipyramidal
(B) dsp^2	(II) Octahedral
(C) sp^3d	(III) Tetrahedral
(D) sp^3d^2	(IV) Square Planar

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

Question Number : 333 Question Id : 4641991837 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Increasing order of crystal field splitting power of following ligands will be :

- (A) CN^-
- (B) Cl^-
- (C) F^-
- (D) H_2O

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

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

Question Number : 334 Question Id : 4641991838 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Match List-I with List-II.

List-I	List-II
Vitamins	Deficiency Diseases
(A) Vitamin B ₆	(I) Cheilosis
(B) Vitamin B ₂	(II) Osteomalacia
(C) Vitamin D	(III) Anaemia
(D) Vitamin B ₁₂	(IV) Convulsions

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

Question Number : 335 Question Id : 4641991839 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Reactivity order of following towards nucleophilic substitution reactions will be :

- (A) 4-Nitro-1-chlorobenzene
- (B) 2,4-Dinitro-1-chlorobenzene
- (C) Chlorobenzene
- (D) 2,4,6-Trinitro-1-chlorobenzene

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

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

Question Number : 336 Question Id : 4641991840 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Which of the following gives positive Tollens test ?

- (A) Phenylethanal
- (B) Acetophenone
- (C) Formic acid
- (D) Benzene carbaldehyde

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

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

Question Number : 337 Question Id : 4641991841 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Match **List-I** with **List-II**.

List-I	List-II
Compound	Product in Basic Medium (in NaOH + Heat)
(A) Ethanal	(I) Benzoic acid + Phenylmethanol
(B) Methanal	(II) 3-Hydroxybutanal + But-2-enal
(C) Benzenecarbaldehyde	(III) 4-Hydroxy-4-methylpentan-2-one + 4-Methylpent-3-en-2-one
(D) Acetone	(IV) Formic acid + Methanol

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

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

Question Number : 338 Question Id : 4641991842 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Which of the following on reaction with NaOI will give yellow precipitates ?

- (A) Phenylethanone
- (B) Sec-Butyl alcohol
- (C) Phenylethanal
- (D) Methyl n-propylketone

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

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

Question Number : 339 Question Id : 4641991843 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

The correct order of increasing pK_a values of the compounds :

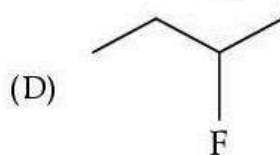
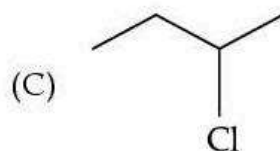
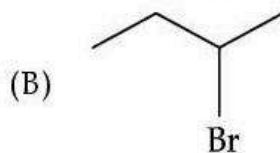
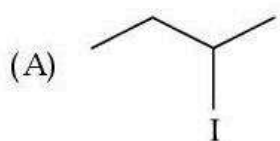
- (A) CH_3COOH
- (B) $\text{CH}_3\text{OCH}_2\text{COOH}$
- (C) Cl_3COOH
- (D) $(\text{CH}_3)_3\text{CCOOH}$

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

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

Question Number : 340 Question Id : 4641991844 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Reactivity order of the following alkyl halides towards dehydrohalogenation is :



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

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

Sub-Section Number :

2

Sub-Section Id :

464199118

Question Shuffling Allowed :

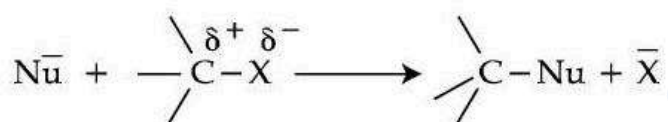
No

Question Number : 341 Question Id : 4641991845 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions.

Nucleophiles attack at that part of the substrate molecule which is electron deficient. The reaction in which a nucleophile replaces already existing nucleophile in a molecule is called nucleophilic substitution reaction. Haloalkanes are substrates in these reactions. In this type of reaction, a nucleophile reacts with haloalkane (the substrate) having a partial positive charge on the carbon atom bonded to halogen. A substitution reaction takes place and halogen atom, called leaving group departs as halide ion. Since the substitution reaction is initiated by a nucleophile, it is called nucleophilic substitution reaction.



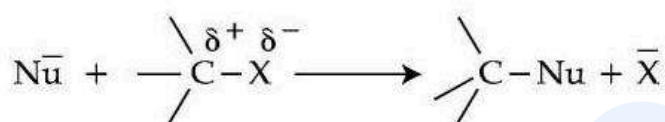
When NaOH reacts with R-X, what is the major product ?

- (1) Alcohol
- (2) Ether
- (3) Ester
- (4) Acid

Question Number : 342 Question Id : 4641991846 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions.

Nucleophiles attack at that part of the substrate molecule which is electron deficient. The reaction in which a nucleophile replaces already existing nucleophile in a molecule is called nucleophilic substitution reaction. Haloalkanes are substrates in these reactions. In this type of reaction, a nucleophile reacts with haloalkane (the substrate) having a partial positive charge on the carbon atom bonded to halogen. A substitution reaction takes place and halogen atom, called leaving group departs as halide ion. Since the substitution reaction is initiated by a nucleophile, it is called nucleophilic substitution reaction.



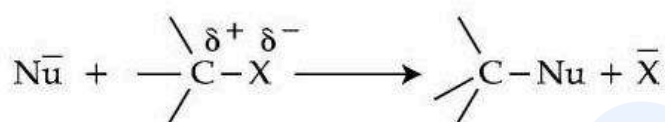
When KCN reacts with R-X, what is the major product ?

- (1) Alcohol
- (2) Ether
- (3) Isonitrile
- (4) Nitrile

Question Number : 343 Question Id : 4641991847 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions.

Nucleophiles attack at that part of the substrate molecule which is electron deficient. The reaction in which a nucleophile replaces already existing nucleophile in a molecule is called nucleophilic substitution reaction. Haloalkanes are substrates in these reactions. In this type of reaction, a nucleophile reacts with haloalkane (the substrate) having a partial positive charge on the carbon atom bonded to halogen. A substitution reaction takes place and halogen atom, called leaving group departs as halide ion. Since the substitution reaction is initiated by a nucleophile, it is called nucleophilic substitution reaction.



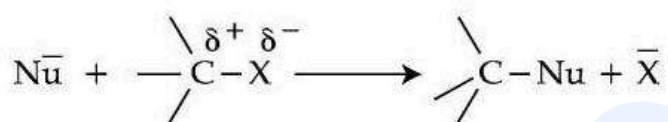
When AgCN reacts with R-X, what is the major product ?

- (1) Alcohol
- (2) Ether
- (3) Isonitrile
- (4) Nitrile

Question Number : 344 Question Id : 4641991848 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions.

Nucleophiles attack at that part of the substrate molecule which is electron deficient. The reaction in which a nucleophile replaces already existing nucleophile in a molecule is called nucleophilic substitution reaction. Haloalkanes are substrates in these reactions. In this type of reaction, a nucleophile reacts with haloalkane (the substrate) having a partial positive charge on the carbon atom bonded to halogen. A substitution reaction takes place and halogen atom, called leaving group departs as halide ion. Since the substitution reaction is initiated by a nucleophile, it is called nucleophilic substitution reaction.



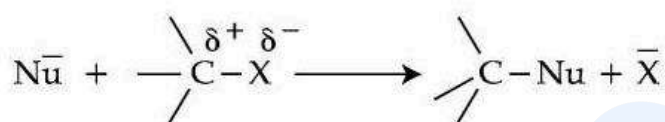
When KNO_2 reacts with R-X , what is the major product ?

- (1) Alcohol
- (2) Nitroalkane
- (3) Isonitrile
- (4) Alkyl nitrite

Question Number : 345 Question Id : 4641991849 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions.

Nucleophiles attack at that part of the substrate molecule which is electron deficient. The reaction in which a nucleophile replaces already existing nucleophile in a molecule is called nucleophilic substitution reaction. Haloalkanes are substrates in these reactions. In this type of reaction, a nucleophile reacts with haloalkane (the substrate) having a partial positive charge on the carbon atom bonded to halogen. A substitution reaction takes place and halogen atom, called leaving group departs as halide ion. Since the substitution reaction is initiated by a nucleophile, it is called nucleophilic substitution reaction.



When NH_3 reacts with R-X , what is the major product ?

- (1) Nitroalkane
- (2) Isonitrile
- (3) Alkyl nitrite
- (4) Primary amine

Sub-Section Number :

3

Sub-Section Id :

464199119

Question Shuffling Allowed :

No

Question Number : 346 Question Id : 4641991850 Question Type : MCQ Option Shuffling : No

Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions

Greater is the stability of the substituted ammonium cation, stronger should be the corresponding amine as a base. Thus, the order of basicity of aliphatic amines should be : primary > secondary > tertiary, which is opposite to the inductive effect based order. Secondly, when the alkyl group is small, like $-\text{CH}_3$ group, there is no steric hinderance to H-bonding. In case the alkyl group is bigger than $-\text{CH}_3$ group, there will be steric hinderance to H-bonding. Therefore, the change of nature of the alkyl group, e.g., from $-\text{CH}_3$ to $-\text{C}_2\text{H}_5$ results in change of the order of basic strength. Thus, there is a subtle interplay of the inductive effect, solvation effect and steric hinderance of the alkyl group which decides the basic strength of alkyl amines in the aqueous medium.

Which among the following amines is most basic in aqueous medium ?

- (1) $(\text{C}_2\text{H}_5)_2\text{NH}$
- (2) $(\text{C}_2\text{H}_5)_3\text{N}$
- (3) $\text{C}_2\text{H}_5\text{NH}_2$
- (4) NH_3

Question Number : 347 Question Id : 4641991851 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions

Greater is the stability of the substituted ammonium cation, stronger should be the corresponding amine as a base. Thus, the order of basicity of aliphatic amines should be : primary > secondary > tertiary, which is opposite to the inductive effect based order. Secondly, when the alkyl group is small, like $-\text{CH}_3$ group, there is no steric hinderance to H-bonding. In case the alkyl group is bigger than $-\text{CH}_3$ group, there will be steric hinderance to H-bonding. Therefore, the change of nature of the alkyl group, e.g., from $-\text{CH}_3$ to $-\text{C}_2\text{H}_5$ results in change of the order of basic strength. Thus, there is a subtle interplay of the inductive effect, solvation effect and steric hinderance of the alkyl group which decides the basic strength of alkyl amines in the aqueous medium.

Which base among the following is least basic in aqueous medium ?

- (1) $(\text{CH}_3)_2\text{NH}$
- (2) CH_3NH_2
- (3) $(\text{CH}_3)_3\text{N}$
- (4) NH_3

Question Number : 348 Question Id : 4641991852 Question Type : MCQ Option Shuffling : No
Correct Marks : 5 Wrong Marks : 1

Read the following passage and answer questions

Greater is the stability of the substituted ammonium cation, stronger should be the corresponding amine as a base. Thus, the order of basicity of aliphatic amines should be : primary > secondary > tertiary, which is opposite to the inductive effect based order. Secondly, when the alkyl group is small, like $-\text{CH}_3$ group, there is no steric hinderance to H-bonding. In case the alkyl group is bigger than $-\text{CH}_3$ group, there will be steric hinderance to H-bonding. Therefore, the change of nature of the alkyl group, e.g., from $-\text{CH}_3$ to $-\text{C}_2\text{H}_5$ results in change of the order of basic strength. Thus, there is a subtle interplay of the inductive effect, solvation effect and steric hinderance of the alkyl group which decides the basic strength of alkyl amines in the aqueous medium.

The most basic amine in gaseous medium is :

- (1) $(\text{CH}_3)_2\text{NH}$
- (2) CH_3NH_2
- (3) $(\text{CH}_3)_3\text{N}$
- (4) NH_3

Read the following passage and answer questions

Greater is the stability of the substituted ammonium cation, stronger should be the corresponding amine as a base. Thus, the order of basicity of aliphatic amines should be : primary > secondary > tertiary, which is opposite to the inductive effect based order. Secondly, when the alkyl group is small, like $-\text{CH}_3$ group, there is no steric hinderance to H-bonding. In case the alkyl group is bigger than $-\text{CH}_3$ group, there will be steric hinderance to H-bonding. Therefore, the change of nature of the alkyl group, e.g., from $-\text{CH}_3$ to $-\text{C}_2\text{H}_5$ results in change of the order of basic strength. Thus, there is a subtle interplay of the inductive effect, solvation effect and steric hinderance of the alkyl group which decides the basic strength of alkyl amines in the aqueous medium.

Which factor is **not** responsible for basic strength of amines ?

- (1) Conjugation factor
- (2) Inductive effect
- (3) Solvation effect
- (4) Steric hinderance

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Hinsberg's reagent is :

- (1) 2,4-dinitrophenol
- (2) $\text{NaNO}_2 + \text{HCl}$ mixture
- (3) $\text{HNO}_3 + \text{H}_2\text{SO}_4$ mixture
- (4) Benzenesulphonyl chloride