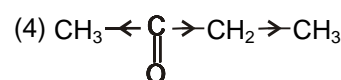
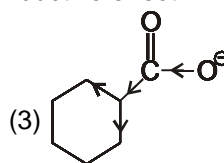
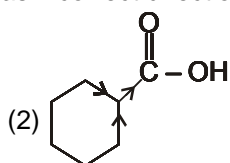
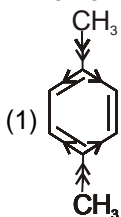




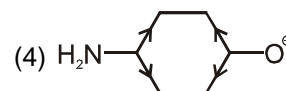
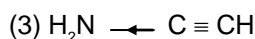
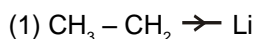
DPP-01 : Inductive effect :

- Inductive effect involves :
 - (1) delocalisation of σ -electrons
 - (2) delocalisation of π -electrons
 - (3) displacement of σ -electrons
 - (4) displacement of π -electrons
- Which statement is correct regarding Inductive effect ?
 - (1) Electron displacement along a carbon chain and develops partial charges on atoms.
 - (2) Complete transfer of one of the shared pair of electrons to one of the atom joined by a double bond.
 - (3) Implies transfer of lone pair of electron from more electronegative atom to the less electronegative atom.
 - (4) I effect increases with increase in the distance.
- Select the correct statement about Inductive effect :
 - (1) Inductive effect transfer electrons from one carbon atom to another.
 - (2) Inductive effect is the polarisation of σ bond electrons.
 - (3) Net charge develops in the molecule by inductive effect.
 - (4) Inductive effect is distance independent.

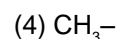
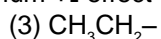
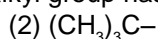
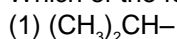
4. Which of the following has incorrect direction of Inductive effect.



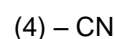
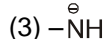
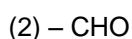
5. Which of the following has correct direction of Inductive effect.



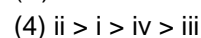
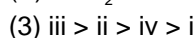
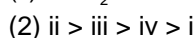
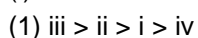
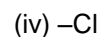
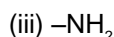
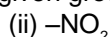
6. Which of the following alkyl group has the maximum +I effect ?



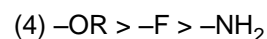
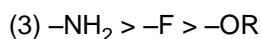
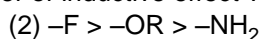
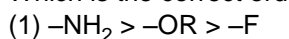
7. Which of the following group shows + I effects :



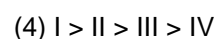
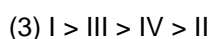
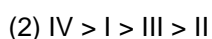
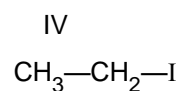
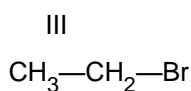
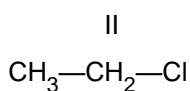
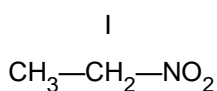
8. Decreasing -I effect of given groups is :




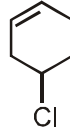

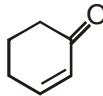

9. Which is the correct order of inductive effect ?

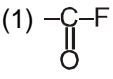
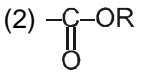
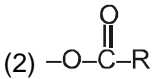
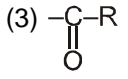
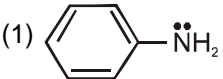
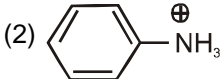
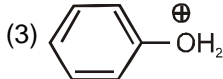
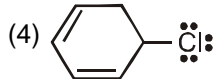
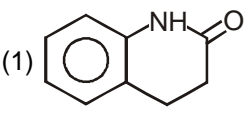
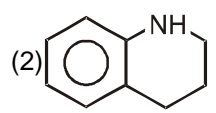
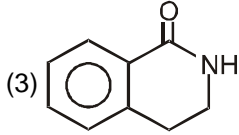
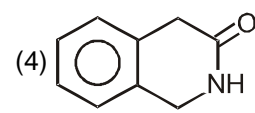
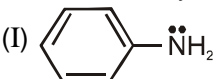
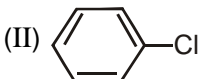
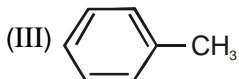
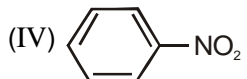


10. Arrange following compounds in decreasing order of their dipole moment.



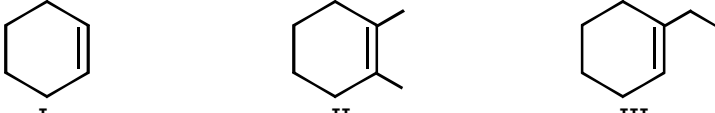

DPP-02 : Resonance

- Resonance effect involves :
 - (1) Delocalization of π -electrons along a conjugated system.
 - (2) Delocalization of lone pair along a conjugated system.
 - (3) Delocalization of negative charge along a conjugated system.
 - (4) All are correct.
- Resonance structures of a molecule do not have :
 - (1) Identical bonding
 - (2) Identical arrangement of atoms
 - (3) The same number of paired electrons
 - (4) Nearly the same energy content
- In which of the following delocalisation of π -electron is possible.
 - (1) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CHO}$
 - (2) $\text{CH}_2 = \text{CH} - \text{CH} = \text{O}$
 - (3) $\text{CH}_3 - \underset{\text{OH}}{\text{CH}} - \text{CH}_3$
 - (4) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH} = \text{CH}_2$
- Which of the following compound show resonance ?
 - (1) 
 - (2) 
 - (3) 
 - (4) 
- In which compound delocalisation is not possible :
 - (1) 2-Butene
 - (2) 1, 3-Butadiene
 - (3) 1, 3, 5-Hexatriene
 - (4) Benzene
- Which of the following pairs are resonating structures ?
 - (1) $\text{CH}_3 - \overset{+}{\text{N}} \begin{array}{l} \diagup \text{O} \\ \diagdown \text{O}^- \end{array} & \text{CH}_3 - \text{O} - \text{N} = \text{O}$
 - (2) $\text{CH}_2 = \text{CH} - \overset{+}{\text{N}} \begin{array}{l} \diagup \text{O} \\ \diagdown \text{O}^- \end{array} & \overset{+}{\text{C}}\text{H}_2 - \text{CH} = \overset{+}{\text{N}} \begin{array}{l} \diagup \text{O}^- \\ \diagdown \text{O}^- \end{array}$
 - (3) $\text{CH}_3 - \overset{\text{O}}{\parallel}{\text{C}} - \text{CH}_3 & \text{CH}_3 - \underset{\text{OH}}{\text{C}} = \text{CH}_2$
 - (4) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3 & \text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH}_2$
- Stability of $\overset{+}{\text{C}}\text{H}_2 - \text{CH} = \text{CH}_2$ can be explained by :
 - (1) Inductive effect
 - (2) Electromeric effect
 - (3) Resonance
 - (4) Polar effect
- How many equally stable resonating structures are possible for  (tropylium cation) ?
 - (1) 2
 - (2) 4
 - (3) 5
 - (4) 7
- Which of the following is not acceptable resonating structure of Buta-1, 2, 3-triene.
 - (1) $\overset{\ominus}{\text{C}}\text{H}_2 - \text{C} \equiv \text{C} - \overset{\oplus}{\text{C}}\text{H}_2$
 - (2) $\text{CH}_2 = \text{C} = \text{C} = \text{CH}_2$
 - (3) $\overset{\oplus}{\text{C}}\text{H}_2 - \text{C} \equiv \text{C} - \overset{\ominus}{\text{C}}\text{H}_2$
 - (4) $\overset{\cdot}{\text{C}}\text{H}_2 - \text{C} \equiv \text{C} - \overset{\cdot}{\text{C}}\text{H}_2$
- The least and most stable resonating structure respectively are :
 - (a) $\text{CH}_2 = \text{CH} - \overset{\oplus}{\text{C}}\text{H} - \overset{\oplus}{\text{C}}\text{H} - \overset{\text{O}}{\parallel}{\text{C}} - \text{CH}_3$
 - (b) $\text{CH}_2 = \text{CH} - \overset{\oplus}{\text{C}}\text{H} - \text{CH} = \overset{\text{O}^{\oplus}}{\text{C}} - \text{CH}_3$
 - (c) $\overset{\oplus}{\text{C}}\text{H}_2 - \overset{\ominus}{\text{C}}\text{H} - \text{CH} = \text{CH} - \overset{\text{O}}{\parallel}{\text{C}} - \text{CH}_3$
 - (d) $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH} - \overset{\text{O}}{\parallel}{\text{C}} - \text{CH}_3$
 - (1) a, d
 - (2) b, c
 - (3) d, a
 - (4) c, b

4. Which of the following group show +m and -I effect ?
 (1)  (2)  (3) $-\text{O}^\ominus$ (4) $-\text{OH}$
5. Which of the following group show +m > -I effect ?
 (1) $-\text{CH}_3$ (2)  (3)  (4) $-\text{COOH}$
6. Which of the following group show -m and -I effect ?
 (1) $-\text{NO}_2$ (2) $-\text{NH}_2$ (3) $-\text{OH}$ (4) $-\text{F}$
7. The weakest + m group of the given species is :
 (1) $-\text{OCH}_3$ (2) $-\text{F}$ (3) $-\text{I}$ (4) $-\text{N}(\text{CH}_3)_2$
8. Arrange the following groups in order of decreasing -m effect.
 (i) NO_2 (ii) COOH (iii) CN (iv) CHO
 (1) $i > \text{iii} > \text{ii} > \text{iv}$ (2) $i > \text{ii} > \text{iii} > \text{iv}$ (3) $i > \text{iii} > \text{iv} > \text{ii}$ (4) $\text{iv} > \text{iii} > \text{ii} > \text{i}$
9. Arrange the following groups in order of decreasing +m effect.
 (i) $-\overset{\ominus}{\text{O}}$ (ii) $-\text{NH}_2$ (iii) $-\text{OH}$ (iv) $-\text{NHCOCH}_3$
 (1) $i > \text{ii} > \text{iii} > \text{iv}$ (2) $\text{iv} > \text{iii} > \text{ii} > \text{i}$ (3) $i > \text{iii} > \text{ii} > \text{iv}$ (4) $i > \text{iv} > \text{iii} > \text{ii}$
10. In which of the following molecule, the mesomeric effect is present ?
 (1)  (2)  (3)  (4) 
11. In which of the following molecule, the mesomeric effect is not with the benzene nucleus ?
 (1)  (2)  (3)  (4) 
12. Electron density order in the benzene nucleus is
 (I)  (II)  (III)  (IV) 
 (1) $\text{I} > \text{II} > \text{III} > \text{IV}$ (2) $\text{I} > \text{III} > \text{II} > \text{IV}$ (3) $\text{IV} > \text{II} > \text{III} > \text{I}$ (4) $\text{I} > \text{IV} > \text{II} > \text{III}$
13. Rank the following compounds in order of decreasing electron density in the benzene nucleus.
 (I) Chlorobenzene (II) 4-nitrochlorobenzene
 (III) 2, 4-dinitrochlorobenzene (IV) 2, 4, 6-trinitrochlorobenzene
 (1) $\text{I} > \text{II} > \text{III} > \text{IV}$ (2) $\text{I} > \text{III} > \text{II} > \text{IV}$ (3) $\text{III} > \text{I} > \text{IV} > \text{II}$ (4) $\text{IV} > \text{III} > \text{II} > \text{I}$

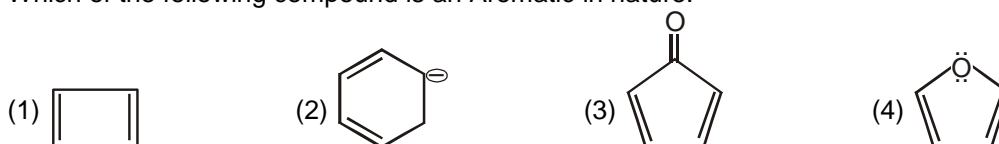
DPP-04: Hyperconjugation effect

1. Hyperconjugation effect involves :
 (1) Delocalization of lone pair into an adjacent π -bond.
 (2) Delocalization of π -electrons into an adjacent double bond.
 (3) Delocalization of σ -electrons into an adjacent π -bond.
 (4) All are true.

2. In hyperconjugation there is overlap between :
 (1) p- and π -orbitals (2) 2 π - orbitals (3) d-and- π -orbital (4) σ -and p - orbitals
3. Which of the following group has the maximum hyperconjugation effect ?
 (1) CH_3- (2) CH_3CH_2- (3) $(\text{CH}_3)_2\text{CH}-$ (4) $(\text{CH}_3)_3\text{C}-$
4. Hyperconjugation is possible in which of the following species ?
 (1) $\text{CH}_3-\overset{\ominus}{\text{C}}\text{H}_2$ (2) $\text{C}_6\text{H}_5 - \text{CH}_3$ (3) $\text{CH}_2 = \text{CH}_2$ (4) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}-\text{CH}=\text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$
5. Which of the following alkenes will show maximum number of hyperconjugation forms ?
 (1) $\text{CH}_2 = \text{CH}_2$ (2) $\text{CH}_3-\text{CH}=\text{CH}_2$ (3) $\text{CH}_3-\text{CH}_2-\text{CH}=\text{CH}_2$ (4) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{CH}-\text{CH}=\text{CH}_2 \end{array}$
6. Which of the following cannot exhibit hyperconjugation ?
 (1) $\text{CH}_3-\overset{\cdot}{\text{C}}\text{H}_2$ (2) $\begin{array}{c} \text{CH}_3 \\ \diagup \\ \text{CH}_3 \end{array} \text{CH}^+$ (3) $\text{CH}_3\text{CH} = \text{CH}_2$ (4) $(\text{CH}_3)_3\text{C}-\overset{\oplus}{\text{C}}\text{H}_2$
7. The C-C bond length in propene is little shorter (1.49 \AA) than the C-C bond length (1.54 \AA) in ethane. This is due to
 (1) +I effect of CH_3 (2) Mesomeric effect (3) Resonance effect (4) Hyperconjugation effect
8. Among the following alkenes the order of decreasing stability is :
 (I) 1-Butene (II) Cis-2-butene (III) Trans-2-butene
 (1) II > I > III (2) III > I > II (3) I > II > III (4) III > II > I
9. Arrange in the stability order of following :

 (1) I < II < III (2) II < I < III (3) I < III < II (4) II < III < I
10. The order of heat of hydrogenation in following compound is :

 (1) I < II < IV < III (2) III < IV < II < I (3) II < III < I < IV (4) II < IV < I < III

DPP-05 : Aromaticity

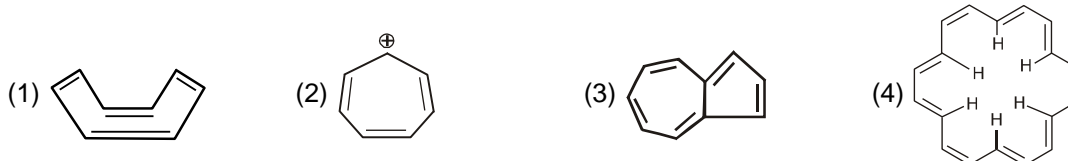
1. Point out the wrong statement in relation to the structure of benzene
 (1) It is aromatic compound.
 (2) The C - C bond distance in benzene is uniformly 1.397 \AA
 (3) It is a resonance hybrid of a number of canonical forms
 (4) It has three delocalised - molecular orbitals
2. Which of the following compound is an Aromatic in nature.



3. Which of the following ion is nonaromatic in nature.



4. Which of the following compound is not aromatic in nature.



5. Which of the following molecules have all C–C bonds are of equal length?



6. The hybridisation of nitrogen in  (pyrrole) is :

- (1) sp^3 (2) sp^2 (3) sp (4) Can't be predicted

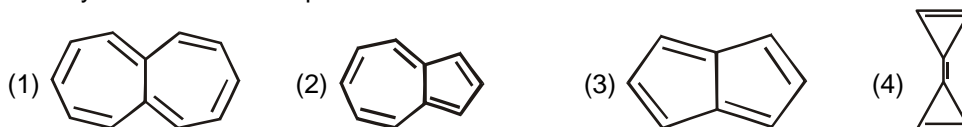
7. In the compound C_6H_5Z which of the following set of groups is predominately ortho/para directing ?

- (1) $Z = -NO_2, -Cl, -OH$ (2) $Z = -OMe, -CN, -NH_2$
 (3) $Z = -NHCOCH_3, -Cl, -COOH$ (4) $Z = -NHCOCH_3, -CH_3, -OH$

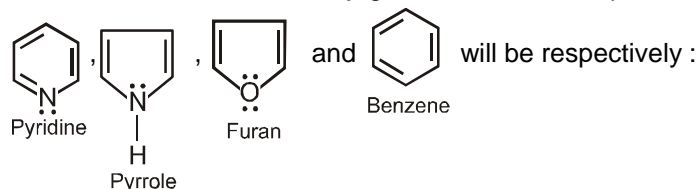
8. Which of the following is aromatic hydrocarbon ?



9. Identify the aromatic compound ?



10. Number of π electrons in conjugation for these compounds



- (1) 8, 6, 6, 6 (2) 6, 4, 6, 6 (3) 6, 6, 6, 6 (4) 6, 6, 8, 6

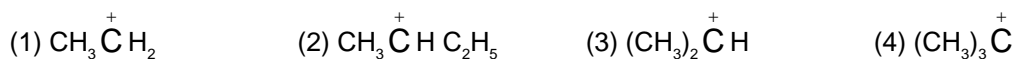
DPP-06 : Carbon free radicals & carbocations :

1. Heterolysis of a carbon-carbon bond gives :

- (1) Carbanion (2) Carbocation
 (3) Both carbanion and carbocation (4) Free radical

2. In $\text{CH}_3\text{CH}_2\text{OH}$, the bond that undergoes heterolytic cleavage most readily is :
 (1) C—C (2) C—O (3) C—H (4) O—H
3. The geometry of a methyl carbocation and methyl carbanion is likely to be respectively :
 (1) Octahedral & linear (2) Tetrahedral & planar
 (3) Planar & tetrahedral (4) Linear & tetrahedral
4. The stability of given free radicals in decreasing order is :
 (i) $\text{CH}_3-\dot{\text{C}}\text{H}_2$ (ii) $\text{CH}_3-\dot{\text{C}}\text{H}-\text{CH}_3$ (iii) $\text{CH}_3-\overset{\cdot}{\underset{\text{CH}_3}{\text{C}}}-\text{CH}_3$ (iv) $\dot{\text{C}}\text{H}_3$
 (1) iii > iv > i > ii (2) i > ii > iii > iv (3) iii > ii > iv > i (4) iii > ii > i > iv
5. Stability of carbocations can be explained on the basis of ?
 (1) Inductive effect (2) Hyperconjugative effect
 (3) Resonance effect (4) All the three

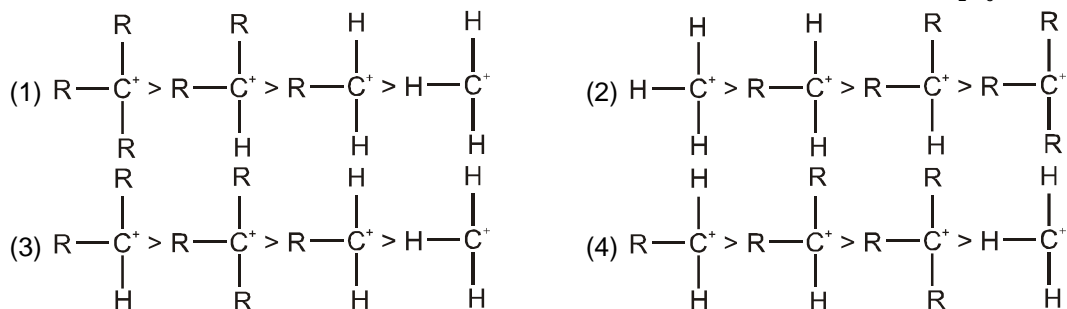
6. Which one is a 1° carbocation ?



7. The most stable carbocation is :



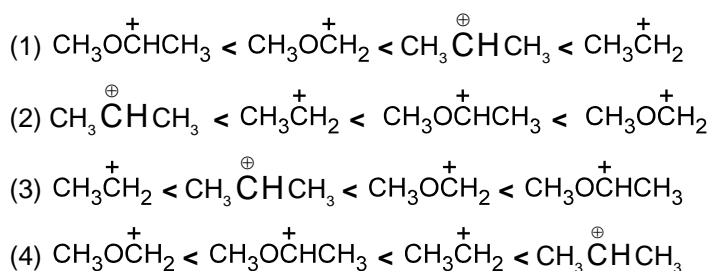
8. The decreasing order of stability of alkyl carbonium ion is in the order of : ($\text{R} = \text{C}_2\text{H}_5$)



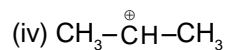
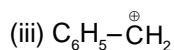
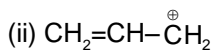
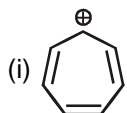
9. Which of the following statement is correct ?

- (1) Allyl carbocation ($\text{H}_2\text{C}=\text{CH}-\overset{+}{\text{C}}\text{H}_2$) is more stable than propyl carbocation.
 (2) Ethyl carbocation is more stable than allyl carbocation.
 (3) Vinyl carbocation is more stable than ethyl carbocation.
 (4) Benzyl carbocation is more stable than cyclopropyl methyl carbocation.

10. Which of the following shows the correct order of stability -



11. Decreasing order of stability of given carbocations is as :



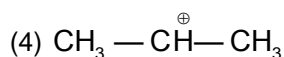
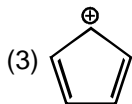
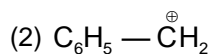
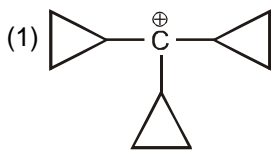
(1) $\text{iii} > \text{ii} > \text{iv} > \text{i}$

(2) $\text{i} > \text{iii} > \text{iv} > \text{ii}$

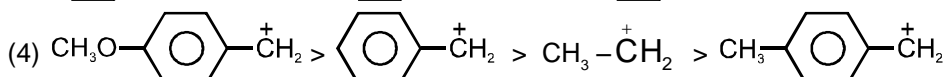
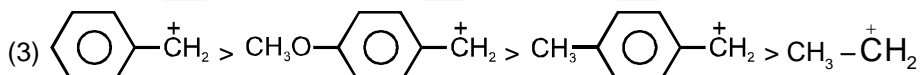
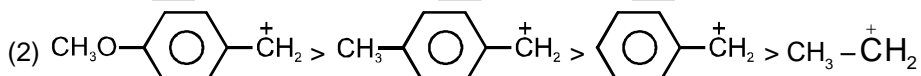
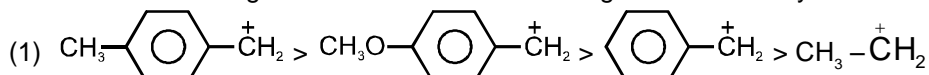
(3) $\text{i} > \text{iii} > \text{ii} > \text{iv}$

(4) $\text{iii} > \text{ii} > \text{i} > \text{iv}$

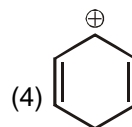
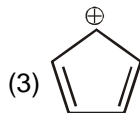
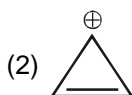
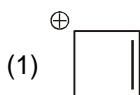
12. Which one of the following carbocations is most stable ?



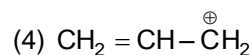
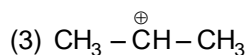
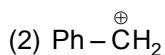
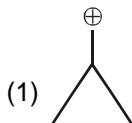
13. Which of the following shows the correct decreasing order of stability ?



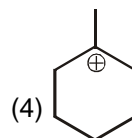
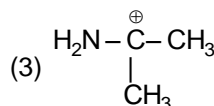
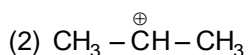
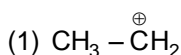
14. Which is least stable carbocation :



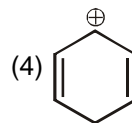
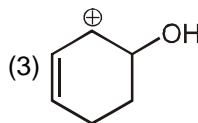
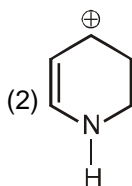
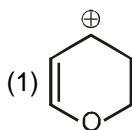
15. Which is most stable carbocation :



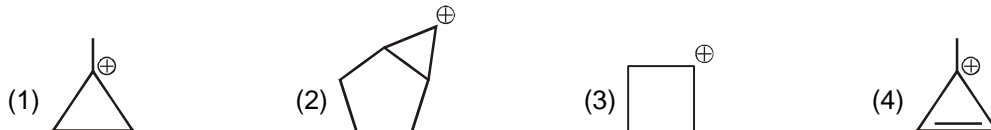
16. Which one is 3° carbocation :



17. Which one is most stable carbocation :



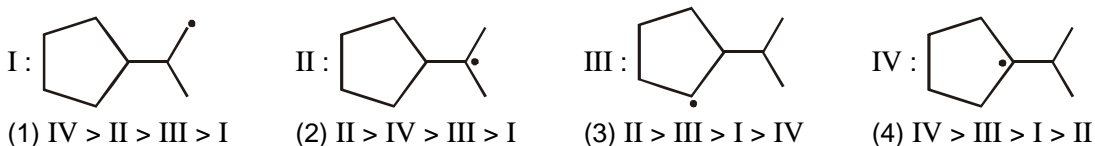
18. Which one will not undergo in rearrangement :



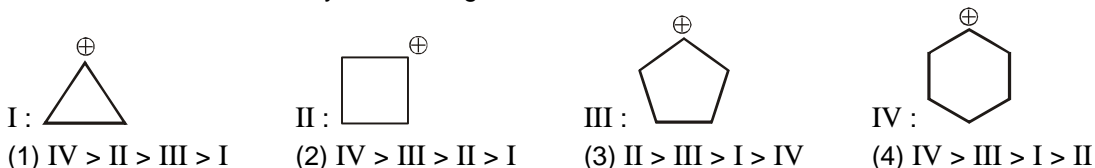
19. Which one is least stable free radical



20. The correct order of stability of following free radical is :



21. The correct order of stability of following carbocation :



DPP-07: Carbanions:

1. Which of the following intermediates have the complete octet around the carbon atom ?

- (1) Carbonium ion (2) Carbanion (3) Free radical (4) Carbene

2. Which of the following is the least stable carbanion ?

- (1) $\text{HC} \equiv \text{C}^-$ (2) $(\text{C}_6\text{H}_5)_3\text{C}^-$ (3) $(\text{CH}_3)_3\text{C}^-$ (4) CH_3^-

3. Arrange the following carbanions in decreasing order of stability :

- (i) $\text{CH}_3 - \text{CH}_2 - \overset{\ominus}{\text{C}}\text{H}_2$ (ii) $\text{CH}_2 = \text{CH} - \overset{\ominus}{\text{C}}\text{H}_2$ (iii) $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH} - \overset{\ominus}{\text{C}}\text{H}_2$
 (1) (i) > (ii) > (iii) (2) (ii) > (iii) > (i) (3) (iii) > (ii) > (i) (4) (ii) > (i) > (iii)


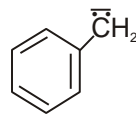
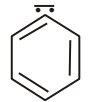
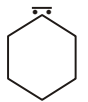
4. Arrange the following carbanions in decreasing order of stability :

- (i) $\text{CH}_2 = \text{CH} - \overset{\ominus}{\text{C}}\text{H}_2$ (ii) $\text{CH}_3 - \overset{\ominus}{\text{C}} - \text{CH}_2$ (iii) $\text{CH}_3 - \overset{\ominus}{\text{C}} - \text{CH} - \text{C} - \text{CH}_3$
 (1) (i) > (ii) > (iii) (2) (ii) > (iii) > (i) (3) (iii) > (ii) > (i) (4) (ii) > (i) > (iii)

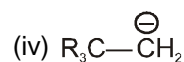
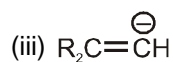
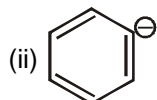
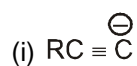
5. Arrange the following carbanions in decreasing order of stability :

- (i) $\text{CH} \equiv \text{C}^-$ (ii) $\text{CH}_2 = \overset{\ominus}{\text{C}}\text{H}$ (iii) $\text{CH}_3 - \overset{\ominus}{\text{C}}\text{H}_2$
 (1) (i) > (ii) > (iii) (2) (ii) > (iii) > (i) (3) (iii) > (ii) > (i) (4) (ii) > (i) > (iii)

6. Arrange the following carbanions in decreasing order of stability :

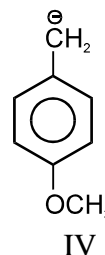
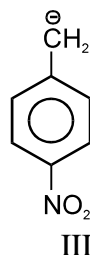
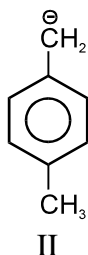
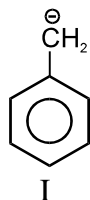
- (i)  (ii)  (iii)  (iv) 
 (1) (i) > (ii) > (iii) > (iv) (2) (ii) > (iii) > (i) > (iv) (3) (iii) > (iv) > (ii) > (i) (4) (iv) > (ii) > (i) > (iii)

7. The stability order of the following carbanions is : (R = CH₃)



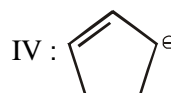
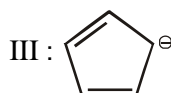
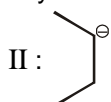
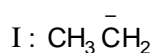
(1) (i) > (ii) > (iii) > (iv) (2) (ii) > (iii) > (iv) > (i) (3) (iv) > (ii) > (iii) > (i) (4) (i) > (iii) > (ii) > (iv)

8. Arrange the following carbanions in decreasing order of stability :



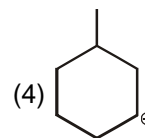
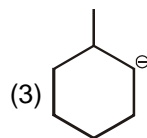
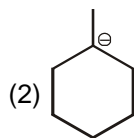
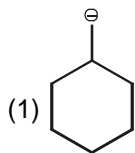
(1) III > I > IV > II (2) III > II > I > IV (3) I > III > II > IV (4) III > I > II > IV

9. The correct order of stability of the following carbanion is :



(1) I > II > III > IV (2) I > III > II > IV (3) IV > III > II > I (4) III > IV > I > II

10. Which one is least stable carbanion :



DPP-08 : Acidic strength :

1. Incorrect statement for acidic strength (K_a) is :

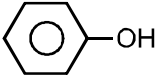
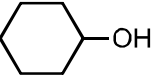
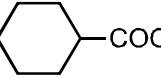
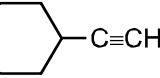
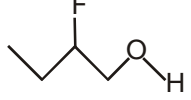

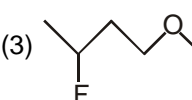
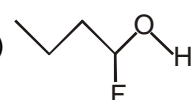
- (1) + I, + M effect increases then K_a will be decreases.
 (2) - I, - M effect increases then K_a will be increases.
 (3) Stability of conjugated base increases then K_a will be increases.
 (4) Hyperconjugation increases then K_a will be increases.

2. Which of the following K_a values, represents the strongest acid ?

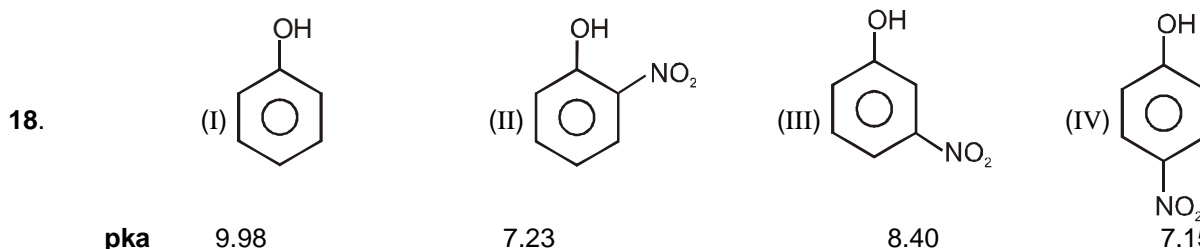
- (1) 10^{-4} (2) 10^{-8} (3) 10^{-5} (4) 10^{-2}

3. Which of the following pKa values, represents the weakest acid :

- (1) 5 (2) 6 (3) 9 (4) 4

4. Which is strongest acid :
 (1) HF (2) HCl (3) HBr (4) HI
5. For which carboxylic acid, the pKa value is the lowest :
 (1) $\text{CH}_3\text{-CH}_2\text{-COOH}$ (2) $\text{CH}\equiv\text{C-COOH}$ (3) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{COOH}$ (4) $\text{CH}_2=\text{CH-COOH}$
6. Strongest acid among the following is :
 (1) CF_3COOH (2) CCl_3COOH (3) CBr_3COOH (4) CH_3COOH
7. What is the correct order of acidic strength in following compounds ?
- | | | |
|--|--|--|
| $\begin{array}{c} \text{CH}_2\text{-CH}_2\text{-COOH} \\ \\ \text{NO}_2 \\ \text{(x)} \end{array}$ | $\begin{array}{c} \text{Cl} \\ \\ \text{CH}_3\text{-C-COOH} \\ \\ \text{Cl} \\ \text{(y)} \end{array}$ | $\begin{array}{c} \text{CH}_2\text{-CH}_2\text{-COOH} \\ \\ \text{Cl} \\ \text{(z)} \end{array}$ |
| (1) $x > y > z$ | (2) $y > x > z$ | (3) $x > z > y$ |
| | | (4) $z > y > x$ |
8. Which of the following option shows the correct order of decreasing acidity :
 (1) $\text{PhCO}_2\text{H} > \text{PhSO}_3\text{H} > \text{PhCH}_2\text{OH} > \text{PhOH}$ (2) $\text{PhSO}_3\text{H} > \text{PhOH} > \text{PhCH}_2\text{OH} > \text{PhCH}_2\text{OH}$
 (3) $\text{PhCO}_2\text{H} > \text{PhOH} > \text{PhCH}_2\text{OH} > \text{PhSO}_3\text{H}$ (4) $\text{PhSO}_3\text{H} > \text{PhCO}_2\text{H} > \text{PhOH} > \text{PhCH}_2\text{OH}$
9. The correct order of relative acidic strength of phenol, ethyl alcohol and water is-
 (1) Phenol > Water > Ethyl alcohol (2) Ethyl alcohol > Water > Phenol
 (3) Ethyl alcohol > Phenol > Water (4) Water > Phenol > Ethyl alcohol
10. Give the correct order of increasing acidity of the following compounds -
- | | | | |
|---|--|--|--|
| (I)  | (II)  | (III)  | (IV)  |
| (1) $\text{II} < \text{I} < \text{IV} < \text{III}$ | (2) $\text{IV} < \text{II} < \text{I} < \text{III}$ | (3) $\text{I} < \text{II} < \text{IV} < \text{III}$ | (4) $\text{IV} < \text{I} < \text{II} < \text{III}$ |
11. In which of the following compounds the hydroxylic proton is the most acidic ?
- | | | | |
|---|---|--|---|
| (1)  | (2)  | (3)  | (4)  |
|---|---|--|---|
12. Which of the following alcohol is the strongest acid ?
 (1) CH_3OH (2) $\text{CH}_3\text{CH}_2\text{OH}$ (3) $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$ (4) $(\text{CH}_3)_3\text{COH}$
13. Which one of the following carboxylic acid is most acidic.
 (1) o-Methyl benzoic acid (2) m-Methyl benzoic acid
 (3) p-Methyl benzoic acid (4) Benzoic acid
14. Arrange the following in the increasing order of acidity ?
 (i) Benzoic acid (ii) p - methoxybenzoic acid (iii) o - methoxybenzoic acid
 (1) (i) < (ii) < (iii) (2) (iii) < (i) < (ii) (3) (ii) < (i) < (iii) (4) (iii) < (ii) < (i).
15. Which of the following is a polybasic acid :
 (1) Acetic acid (2) Benzoic acid (3) Salicylic acid (4) Oxalic acid
16. The ionisation constant of phenol is higher than that of ethanol because
 (1) phenoxide ion is bulkier than ethoxide
 (2) phenoxide ion is stronger base than ethoxide
 (3) phenoxide ion is stabilised through delocalisation
 (4) phenoxide ion is less stable than ethoxide

17. Phenol is less acidic than :
 (1) p-nitrophenol (2) ethanol (3) cresol (4) benzyl alcohol



Mark True and False statements related to the variation in pKa values given for the compounds mentioned above ?

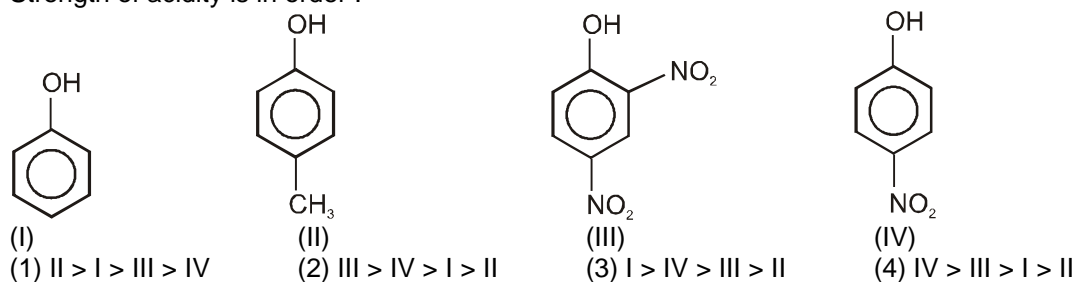
S₁ : III is more acidic than I due to -I effect of -NO₂ group.

S₂ : Due to H-bonding in II, it is slightly less acidic than IV.

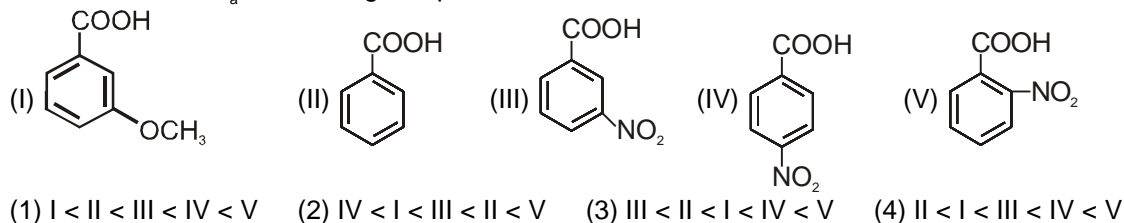
S₃ : Due to presence of -m effect II & IV are more acidic than that of III.

S₄ : Mesomeric effect of -NO₂ group is not operative in case of III with respect to -OH group.

- (1) TTTT (2) TFTF (3) FTFT (4) FFTT
19. Strength of acidity is in order :



20. Find the order of K_a of following compounds :



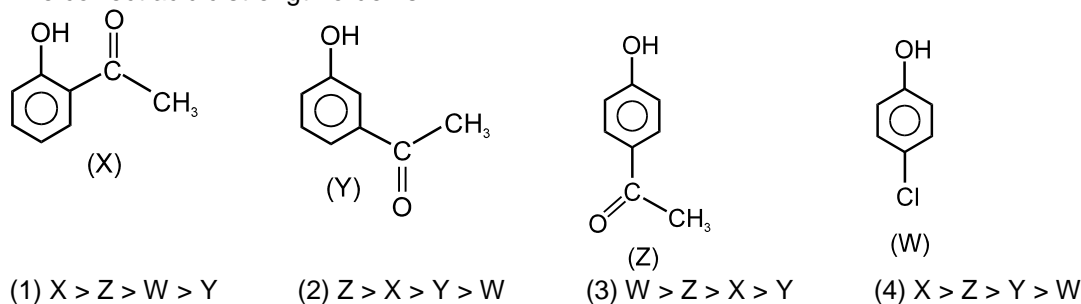
21. Which of the following is not correct decreasing K_a order.

- (1) CH₄ > NH₃ > H₂O > HF (2) CH₃-OH > CH₃-NH₂ > CH₃-F > CH₃-CH₃
 (3) HI > HBr > HCl > HF (4) PhOH > H₂O > C₂H₅OH > CH₃-C≡CH

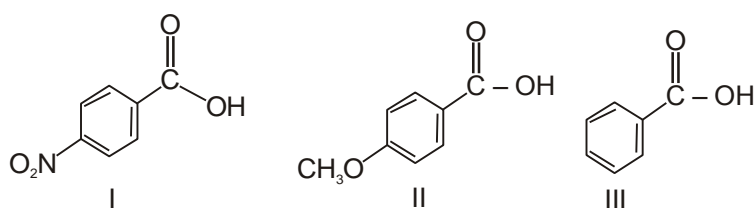
22. Arrange Increasing order of acidic strength of following dibasic acids :

- (I) oxalic acid, (II) succinic acid, (III) malonic acid, (IV) adipic acid
 (1) III < II < I < IV (2) II < III > I > IV (3) I > III > II > IV (4) II > I > III < IV

23. The correct acidic strength order is :



24. Order of K_a of following acids is :



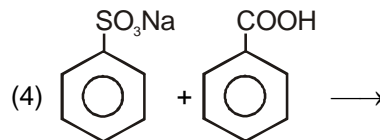
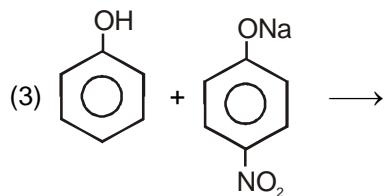
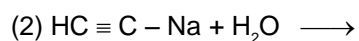
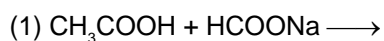
- (1) I > II > III (2) II > I > III (3) I > III > II (4) III > I > II

25. Give the acidic strength order for given compounds :

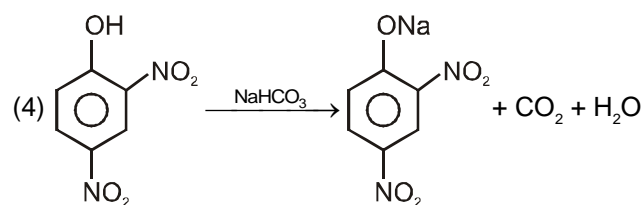
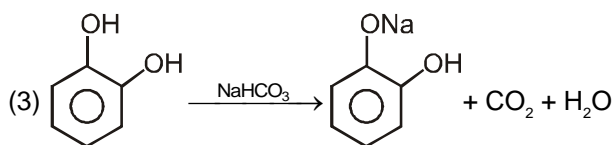
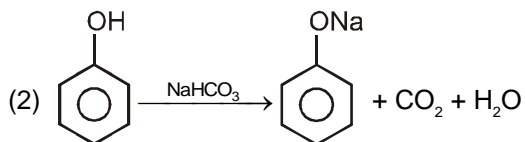
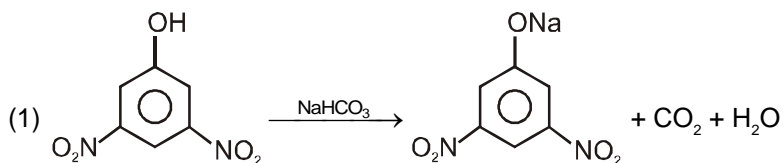


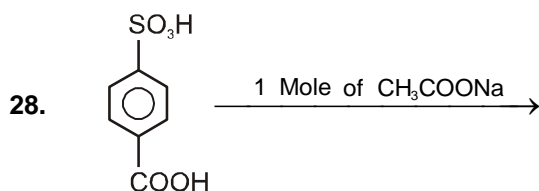
- (1) II > III > I > IV (2) II > IV > III > I (3) III > I > II > IV (4) IV > III > I > II

26. Which of the following reactions is feasible ?

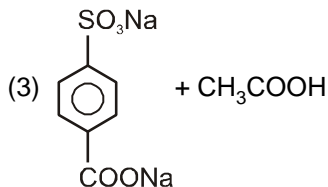
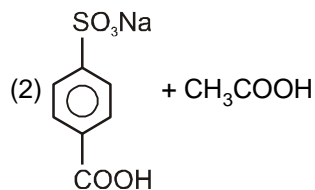
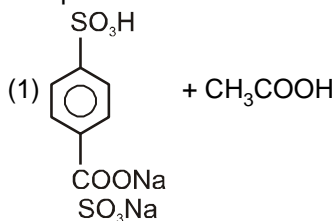


27. Which of the following reaction is feasible :





The products will be :



(4) Reaction is not feasible

DPP-09: Basic strength :

- The basic character of amines can be explained :
 - Only in terms of Lowry-Bronsted concept.
 - Only in terms of Lewis concept.
 - Both in terms of Arrhenius and Lewis concepts.
 - Both in terms of Lewis and Lowry-Bronsted concepts.
- Which has the highest pK_b value ?
 - R₃N
 - R₂NH
 - RNH₂
 - NH₃
- Amines are more basic than :
 - Alcohols
 - Ethers
 - Ester
 - All of these
- Which of the following shows the correct order of decreasing basicity in gas phase ?
 - (CH₃)₃N > (CH₃)₂NH > CH₃NH₂ > NH₃
 - (CH₃)₂NH > (CH₃)₃N > CH₃NH₂ > NH₃
 - (CH₃)₂NH > CH₃NH₂ > (CH₃)₃N > NH₃
 - (CH₃)₂NH > CH₃NH₂ > NH₃ > (CH₃)₃N
- Which of the following shows the correct order of decreasing basicity in aqueous medium ?
 - (CH₃)₃N > (CH₃)₂NH > CH₃NH₂ > NH₃
 - (CH₃)₂NH > (CH₃)₃N > CH₃NH₂ > NH₃
 - (CH₃)₂NH > CH₃NH₂ > (CH₃)₃N > NH₃
 - (CH₃)₂NH > CH₃NH₂ > NH₃ > (CH₃)₃N
- Which of the following shows the correct order of decreasing basicity in aqueous medium ?
 - (C₂H₅)₃N > (C₂H₅)₂NH > C₂H₅NH₂ > NH₃
 - (C₂H₅)₂NH > (C₂H₅)₃N > C₂H₅NH₂ > NH₃
 - (C₂H₅)₂NH > C₂H₅NH₂ > (C₂H₅)₃N > NH₃
 - (C₂H₅)₂NH > C₂H₅NH₂ > NH₃ > (C₂H₅)₃N
- The correct basic strength order of following anions is :
 - CH₃-CH₂[⊖] > NH₂[⊖] > CH₂=CH[⊖] > CH≡C[⊖] > HO[⊖] > F[⊖]
 - NH₂[⊖] > CH₃-CH₂[⊖] > CH₂=CH[⊖] > CH≡C[⊖] > F[⊖] > HO[⊖]
 - CH₃-CH₂[⊖] > CH₂=CH[⊖] > NH₂[⊖] > CH≡C[⊖] > HO[⊖] > F[⊖]
 - F[⊖] > HO[⊖] > CH≡C[⊖] > CH₂=CH[⊖] > NH₂[⊖] > CH₃-CH₂[⊖]

8. Arrange basicity of the given compounds in decreasing order :

- (i) $\text{CH}_3\text{-CH}_2\text{-NH}_2$ (ii) $\text{CH}_2=\text{CH-NH}_2$ (iii) $\text{CH}\equiv\text{C-NH}_2$
 (1) $i > ii > iii$ (2) $i > iii > ii$ (3) $iii > ii > i$ (4) $ii > iii > i$

9. Which is the correct order of increasing basicity ?

- (1) $\text{CH}_3\text{CH}_2\text{CH}_3 < \text{CH}_3\text{CH}_2\text{SH} < \text{CH}_3\text{CH}_2\text{OH} < \text{CH}_3\text{CH}_2\text{NH}_2$
 (2) $\text{CH}_3\text{CH}_2\text{CH}_3 < \text{CH}_3\text{CH}_2\text{OH} < \text{CH}_3\text{CH}_2\text{SH} < \text{CH}_3\text{CH}_2\text{NH}_2$
 (3) $\text{CH}_3\text{CH}_2\text{NH}_2 < \text{CH}_3\text{CH}_2\text{SH} < \text{CH}_3\text{CH}_2\text{OH} < \text{CH}_3\text{CH}_2\text{CH}_3$
 (4) $\text{CH}_3\text{CH}_2\text{CH}_3 < \text{CH}_3\text{CH}_2\text{OH} < \text{CH}_3\text{CH}_2\text{NH}_2 < \text{CH}_3\text{CH}_2\text{SH}$

10. The strongest base is :

- (1) $\text{CH}_3\text{-N(CH}_3\text{)}_2$ (2) $\text{H}_2\text{N-C(=NH)-NH}_2$ (3) $\text{C}_6\text{H}_5\text{-N(C}_6\text{H}_5\text{)}_2$ (4) $\text{CH}_3\text{-NH-CH}_3$

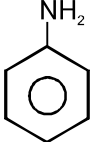
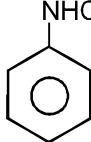
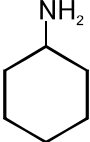
11. Decreasing order of basicity is :

- (i) $\text{C}_6\text{H}_5\text{-NH}_2$ (ii) $\text{C}_6\text{H}_5\text{-NH-C}_6\text{H}_5$ (iii) $\text{C}_6\text{H}_5\text{-N(C}_6\text{H}_5\text{)}_2$ (iv) $\text{CH}_3\text{-CH}_2\text{-NH}_2$
 (1) $i > ii > iii > iv$ (2) $iv > i > ii > iii$ (3) $iii > ii > i > iv$ (4) $iv > iii > ii > i$

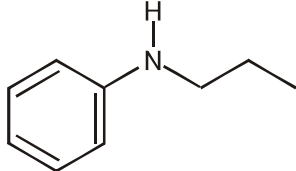
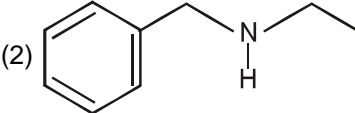
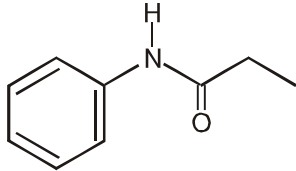
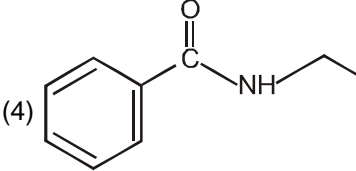
12. The strongest base among the following is :

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

13. Arrange the following in increasing order of pH value :

- I  II  III 
 (1) $II < I < III$ (2) $III < I < II$ (3) $III < II < I$ (4) $II < III < I$

14. Which one of the following compound is most basic ?

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

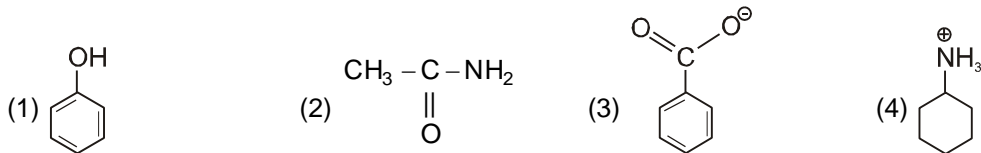
15. Among the following the correct order of basicity is:

- (1) $\text{NH}_2^- > \text{OH}^- > \text{RO}^- > \text{RCOO}^-$ (2) $\text{NH}_2^- > \text{RO}^- > \text{OH}^- > \text{RCOO}^-$
 (3) $\text{RCOO}^- > \text{NH}_2^- > \text{RO}^- > \text{OH}^-$ (4) $\text{RCOO}^- > \text{RO}^- > \text{NH}_2^- > \text{OH}^-$

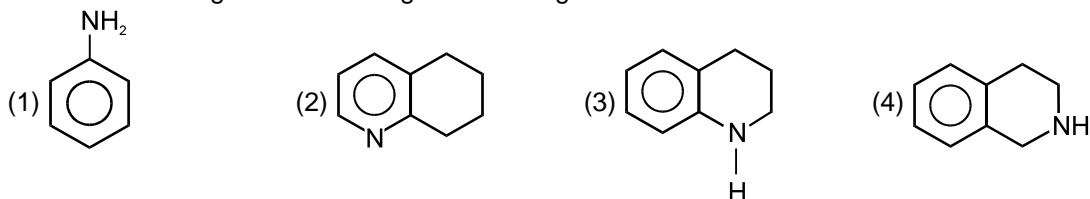
16. Find the order of basic strength. (if R = Me) ?

- (I) $\text{R}_4\text{N}^+ \text{OH}^-$ (II) R_3N (III) R_2NH (IV) RNH_2
 (1) $I > III > IV > II$ (2) $IV > III > I > II$ (3) $II > IV > III > I$ (4) $II > IV > I > III$

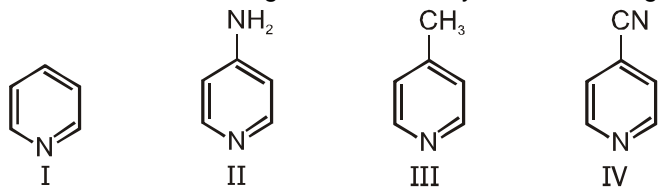
17. Which of the following cannot be a base ?



18. Choose the strongest base among the following :

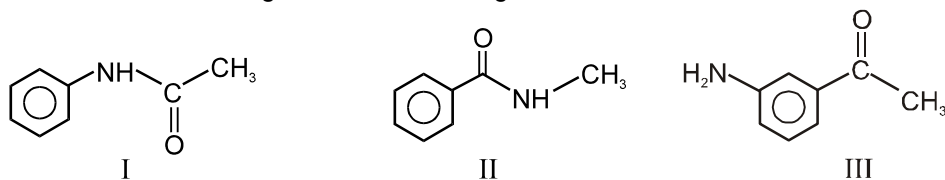


19. The correct decreasing order of basicity in the following compound is :



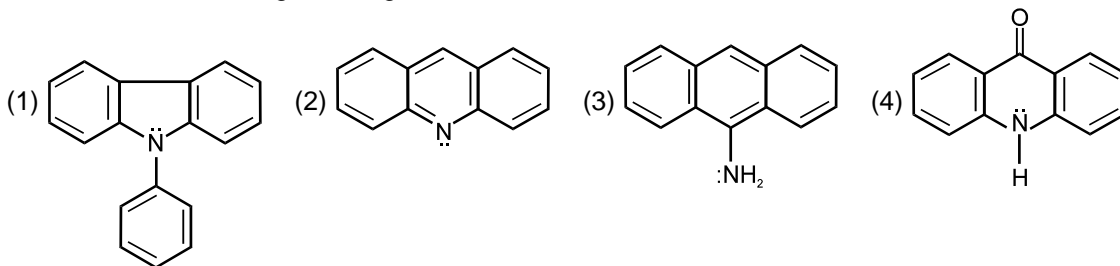
(1) II > III > I > IV (2) II > I > III > IV (3) II > IV > III > I (4) II > IV > I > III

20. Select the basic strength order of following molecules ?

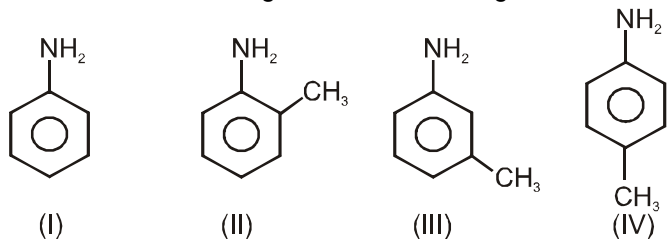


(1) III > II > I (2) II > III > I (3) I > III > II (4) III > I > II

21. In which of the following is strongest base :

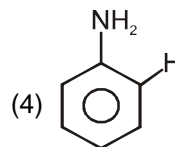
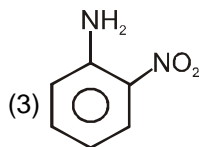
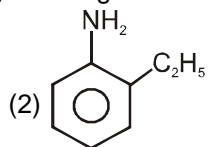
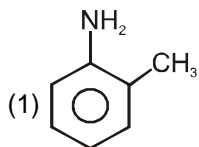


22. Select the basic strength order of following molecule :

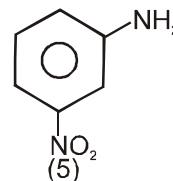
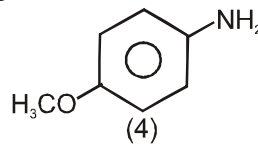
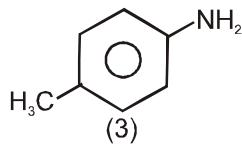
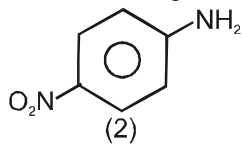
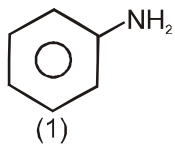


(1) II > III > IV > I (2) II > IV > III > I (3) IV > II > III > I (4) IV > III > I > II

23. In which of the following is strongest base :



24. The correct order of increasing basic nature of the following bases is :



(1) $2 < 5 < 1 < 3 < 4$ (2) $5 < 2 < 1 < 3 < 4$ (3) $2 < 5 < 1 < 4 < 3$ (4) $5 < 2 < 1 < 4 < 3$

Answers

DPP-01

1. (3) 2. (1) 3. (2) 4. (4) 5. (2) 6. (2) 7. (3)
8. (4) 9. (2) 10. (4)

DPP-02

1. (4) 2. (1) 3. (2) 4. (4) 5. (1) 6. (2) 7. (3)
8. (4) 9. (4) 10. (1) 11. (1) 12. (1) 13. (1) 14. (2)
15. (2)

DPP-03

1. (3) 2. (2) 3. (4) 4. (4) 5. (2) 6. (1) 7. (3)
8. (3) 9. (1) 10. (1) 11. (4) 12. (2) 13. (1)

DPP-04

1. (3) 2. (4) 3. (1) 4. (2) 5. (2) 6. (4) 7. (4)
8. (4) 9. (3) 10. (2)

DPP-05

1. (4) 2. (4) 3. (4) 4. (1) 5. (4) 6. (2) 7. (4)
8. (3) 9. (2) 10. (3)

DPP-06

1. (3) 2. (4) 3. (3) 4. (4) 5. (4) 6. (1) 7. (2)
8. (1) 9. (1) 10. (3) 11. (3) 12. (1) 13. (2) 14. (3)
15. (1) 16. (4) 17. (2) 18. (4) 19. (4) 20. (2) 21. (2)

DPP-07

1. (2) 2. (3) 3. (3) 4. (3) 5. (1) 6. (1) 7. (1)
8. (4) 9. (4) 10. (2)

DPP-08

1. (4) 2. (4) 3. (3) 4. (4) 5. (2) 6. (1) 7. (2)
8. (4) 9. (1) 10. (2) 11. (4) 12. (1) 13. (1) 14. (3)
15. (4) 16. (3) 17. (1) 18. (1) 19. (2) 20. (4) 21. (1)
22. (3) 23. (2) 24. (3) 25. (3) 26. (2) 27. (4) 28. (2)

DPP-09

1. (4) 2. (4) 3. (4) 4. (1) 5. (3) 6. (2) 7. (3)
8. (1) 9. (1) 10. (2) 11. (2) 12. (3) 13. (1) 14. (2)
15. (2) 16. (1) 17. (4) 18. (4) 19. (1) 20. (1) 21. (2)
22. (4) 23. (4) 24. (1)