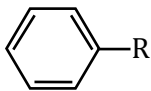


EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

Inductive Effect

- Which statement is correct for inductive effect :
 (A) It is a permanent effect
 (B) It is the property of single bond
 (C) It causes permanent polarisation in the molecule
 (D) All are correct
CED091
- Inductive effect involves
 (A) displacement of σ -electron
 (B) delocalisation of π -electron
 (C) delocalisation of σ -electrons
 (D) displacement of π -electrons
CED092
- Most stable carbocation is
 (A) $\text{CH}_3 - \overset{\oplus}{\text{C}}\text{H}_2$ (B) $\overset{\oplus}{\text{C}}\text{H}_2\text{CHCl}_2$ (C) $\text{Cl} - \text{CH}_2 - \overset{\oplus}{\text{C}}\text{H}_2$ (D) $\text{O}_2\text{N} - \text{CH}_2 - \overset{\oplus}{\text{C}}\text{H}_2$
CED093
- A carbocation in which no dispersal of charge occurs is
 (A) $\text{R}_3\text{C}^{\oplus}$ (B) $\text{R}_2\text{CH}^{\oplus}$ (C) $\text{RCH}_2^{\oplus}$ (D) $^{\oplus}\text{CH}_3$
CED094
- In the following benzyl/allyl system
 $\text{R}-\text{CH}=\text{CH}_2$ or 
 (R is alkyl group)
 decreasing order of inductive effect is :
 (A) $(\text{CH}_3)_3\text{C}- > (\text{CH}_3)_2\text{CH}- > \text{CH}_3\text{CH}_2-$ (B) $\text{CH}_3\text{CH}_2- > (\text{CH}_3)_2\text{CH}- > (\text{CH}_3)_3\text{C}-$
 (C) $(\text{CH}_3)_2\text{CH}- > \text{CH}_3\text{CH}_2- > (\text{CH}_3)_3\text{C}-$ (D) $(\text{CH}_3)_2\text{C}- > \text{CH}_3\text{CH}_2- > (\text{CH}_3)_3\text{CH}-$
CED095
- $\text{CH}_3\text{CH}_2\text{Cl}$ undergoes homolytic fission to produce :-
 (A) $\text{CH}_3\dot{\text{C}}\text{H}_2$ and $\dot{\text{C}}\text{Cl}$ (B) $\text{CH}_3\dot{\text{C}}\text{H}_2$ and $\text{Cl}^{\ominus}$
 (C) $\text{CH}_3\overset{\oplus}{\text{C}}\text{H}_2$ and $\text{Cl}^{\ominus}$ (D) $\text{CH}_3\overset{\ominus}{\text{C}}\text{H}_2$ and $\text{Cl}^{\oplus}$
CED097
- Which of the following intermediate has complete octet :-
 (A) Carbocation (B) Carbanion (C) Free radical (D) Carbene
CED098

8. Most stable carbocation is :

- (A) $\text{CH}_3-\overset{\oplus}{\text{C}}\text{H}_2$ (B) $\text{Br}-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}_2$ (C) $\text{Cl}-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}_2$ (D) $\text{F}-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}_2$

CED099

9. Most stable carbanion is :

- (A) $\overset{\ominus}{\text{C}}\text{H}_2-\text{CH}_2-\text{NO}_2$ (B) $\overset{\ominus}{\text{C}}\text{H}_2-\text{CH}_2-\text{CN}$
 (C) $\overset{\ominus}{\text{C}}\text{H}_2-\text{CH}_2-\text{COOH}$ (D) $\overset{\ominus}{\text{C}}\text{H}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{F}$

CED100

10. Give decreasing order of basic strength of following :

- (a) $\text{CH}_3^\ominus$ (b) $\text{NH}_2^\ominus$ (c) $\text{OH}^\ominus$ (d) $\text{F}^\ominus$
 (A) $a > b > c > d$ (B) $a > c > b > d$ (C) $b > a > c > d$ (D) $d > c > a > b$

CED109

11. Give correct order of acidic strength of following compounds :

- (a) $\text{NO}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$ (b) $\text{F}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$
 (c) $\text{Ph}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$ (d) $\text{CH}_3-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$
 (A) $a > b > c > d$ (B) $a > c > b > d$ (C) $b > a > c > d$ (D) $d > c > a > b$

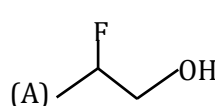
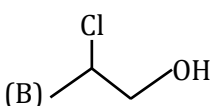
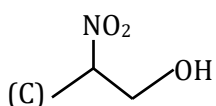
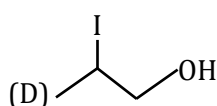
CED110

12. Which among the following is more basic ?

- (A) $\text{HC}\equiv\text{C}^\ominus$ (B) $\text{C}_6\text{H}_5^\ominus$ (C) $(\text{CH}_3)_3\text{C}-\text{CH}_2^\ominus$ (D) $(\text{CH}_3)_2\text{C}=\text{CH}^\ominus$

CED111

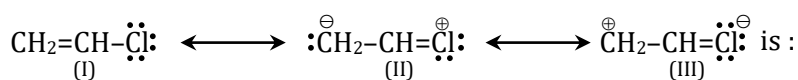
13. Which of the following is strongest acid.

- (A)  (B)  (C)  (D) 

CED113

Resonance

14. The decreasing order of stability of the following resonating structures



- (A) $\text{I} > \text{II} > \text{III}$ (B) $\text{II} > \text{III} > \text{I}$ (C) $\text{III} > \text{II} > \text{I}$ (D) $\text{I} > \text{III} > \text{II}$

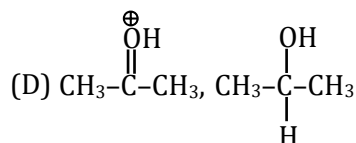
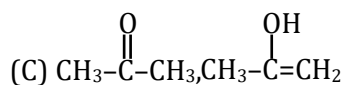
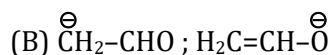
CED115

15. If A is $\text{Ph}\overset{\ominus}{\text{C}}\text{H}_2$ and B is $\text{CH}_2=\text{CH}-\overset{\ominus}{\text{C}}\text{H}_2$, the greater number of resonating structure is of -

- (A) A (B) B (C) both A and B (D) None of these

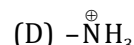
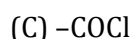
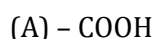
CED116

16. Which of the following pairs represent resonance ?



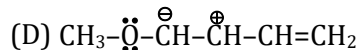
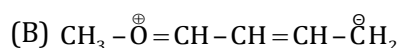
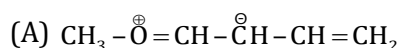
CED117

17. Which of the following groups cannot participate in resonance with other suitable group :



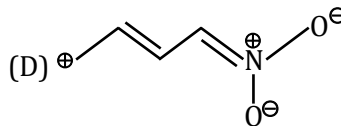
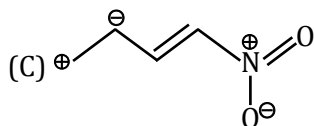
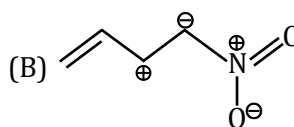
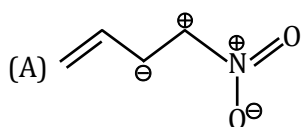
CED119

18. Which of the following is least stable :



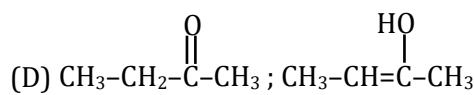
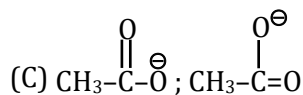
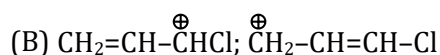
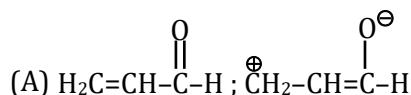
CED121

19. Among the following, the least stable resonance structure is -

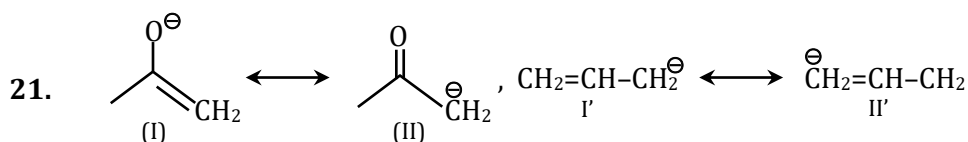


CED122

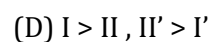
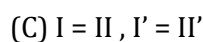
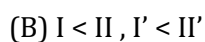
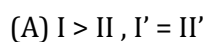
20. Which one of the following pair of structures does not represent the phenomenon of resonance?



CED123

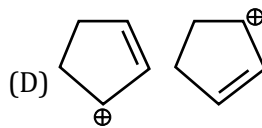
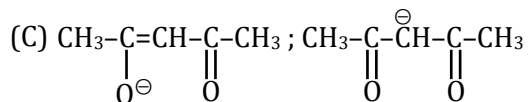
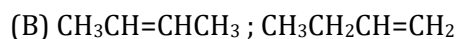


The correct order of stability -



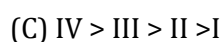
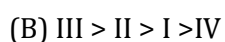
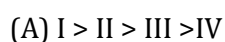
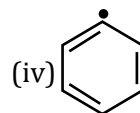
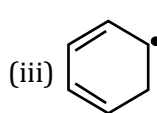
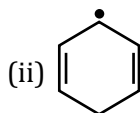
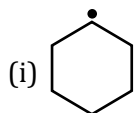
CED124

22. Which of the following pairs of structure is not a pair of resonating structure ?



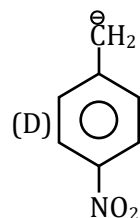
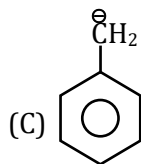
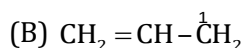
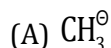
CED127

23. The increasing order of stability of the following free radicals is



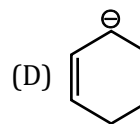
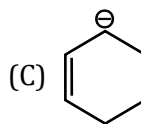
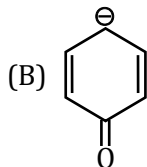
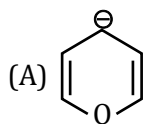
CED129

24. Most stable carbanion is :



CED130

25. Identify the most stable anion.



CED131

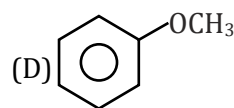
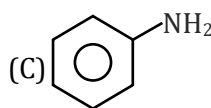
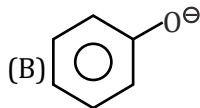
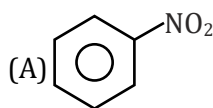
26. In the compound, $\text{CH}_3-\overset{\text{I}}{\text{CH}}=\overset{\text{II}}{\text{CH}}-\overset{\text{III}}{\text{C}}\equiv\overset{\text{IV}}{\text{N}}$, the most electronegative carbon is :



CED132

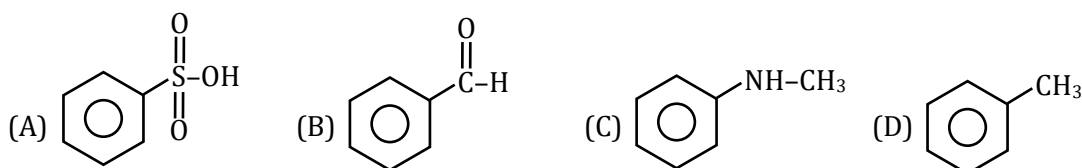
Mesomeric Effect

27. In which of the following molecules π - electron density in ring is maximum :



CED134

28. Which of the following contains group with +M effect?



CED135

29. Which of the following shows correct order of -M effect



CED136

30. Match the column :

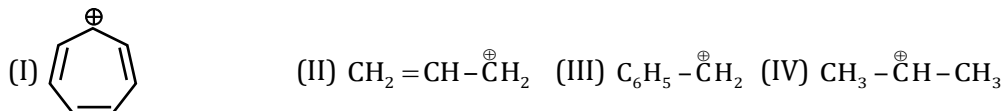
Column-I	Column-II
(A) Group donate e^- inductively but does not donate / withdraw by resonance	(P) $-\text{OH}$
(B) Group withdraw e^- inductively but does not donate / withdraw by resonance	(Q) $-\text{NO}_2$
(C) Group withdraw e^- inductively & donate e^- by resonance	(R) $-\text{CH}_2-\text{CH}_3$
(D) Group withdraw e^- inductively & withdraw e^- by resonance	(S) $-\text{NH}_3^+$
	(T) $-\text{NH}_2$

- (A) (A) $\rightarrow$ R (B) $\rightarrow$ S (C) $\rightarrow$ P, T (D) $\rightarrow$ Q
 (B) (A) $\rightarrow$ R (B) $\rightarrow$ Q (C) $\rightarrow$ R (D) $\rightarrow$ P, Q
 (C) (A) $\rightarrow$ P (B) $\rightarrow$ Q (C) $\rightarrow$ R (D) $\rightarrow$ S
 (D) (A) $\rightarrow$ P, Q (B) $\rightarrow$ S (C) $\rightarrow$ R (D) $\rightarrow$ Q

CED139

Aromaticity

31. The most stable and the least stable carbocation among



are respectively :

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

CED149

32. Which of the structure below would be aromatic ?



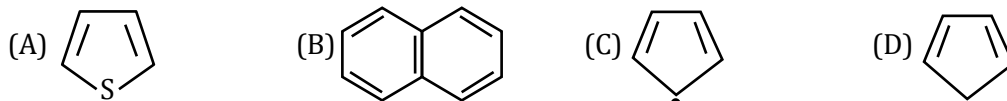
CED152

33. Which of the following carbanion is aromatic ?



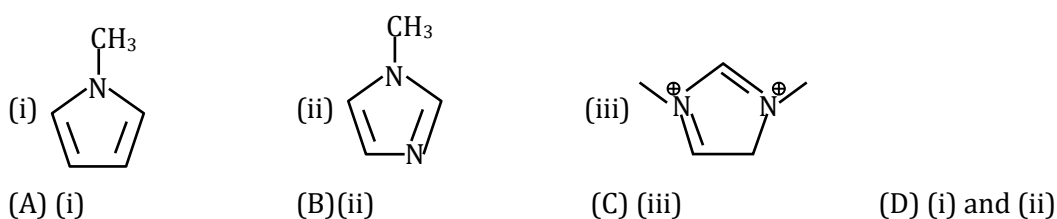
CED153

34. The non-aromatic compound among the following is :



CED154

35. Choose the aromatic nitrogen heterocycles.



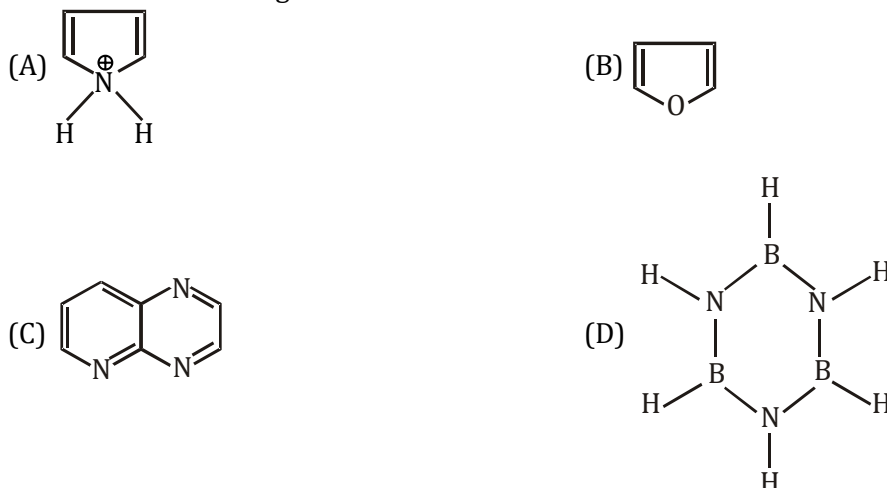
CED156

36. Which species is non-aromatic ?



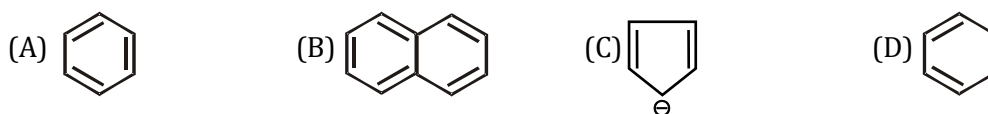
CED157

37. Which of the following is non-aromatic :



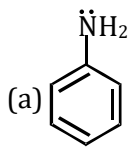
CED158

38. Which of the following is nonaromatic

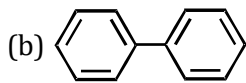


CED159

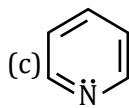
39. Which of the following compounds are aromatic in nature



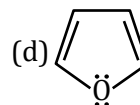
(A) Only a



(B) Only a and b



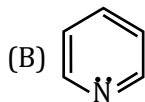
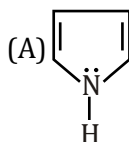
(C) Only a,b,d



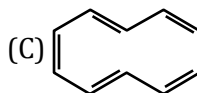
(D) All of these

CED160

40. Which of the following is non-aromatic compound



(B)

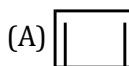


(C)

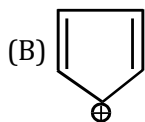
(D) None of these

CED161

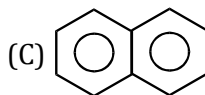
41. Among the following the aromatic compound is -



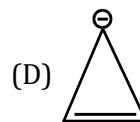
(A)



(B)



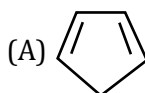
(C)



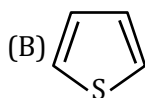
(D)

CED162

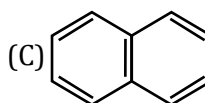
42. The non aromatic compound among the following is :-



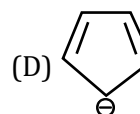
(A)



(B)



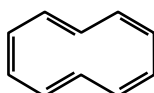
(C)



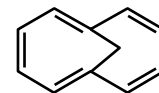
(D)

CED163

43. For the given compounds, the correct order is :



(I)



(II)

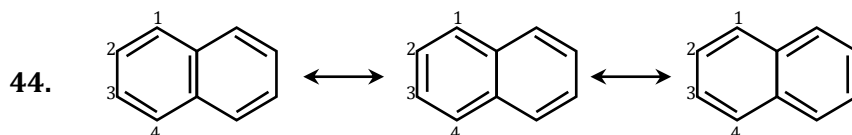
(A) Aromatic, aromatic

(B) non-aromatic, aromatic

(C) anti-aromatic, non-aromatic

(D) Aromatic, non-aromatic

CED164



These are three canonical structures of naphthalene. Examine them and find correct statement among the following :

(A) All C-C bonds are of same length

(B) C₁-C₂ bond is shorter than C₂-C₃ bond.

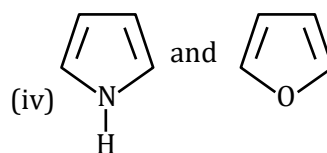
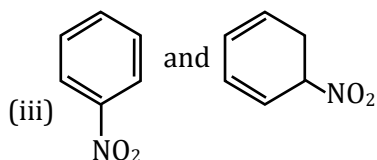
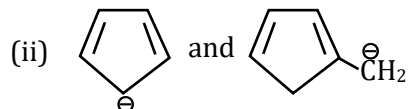
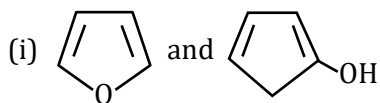
(C) C₁-C₂ bond is longer than C₂-C₃ bond

(D) None

CED169

Resonance Energy

45. In the given pair of compounds select the one in which second compound having lesser resonance energy :



(A) i and ii

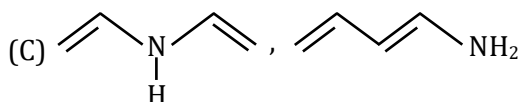
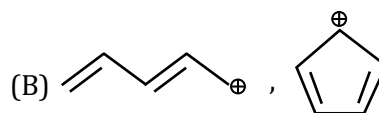
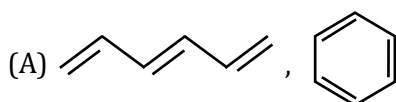
(B) iii

(C) i,ii and iii

(D) i,ii,iii and iv

CED172

46. In which of the following pairs first one is having more resonance energy than the second one -

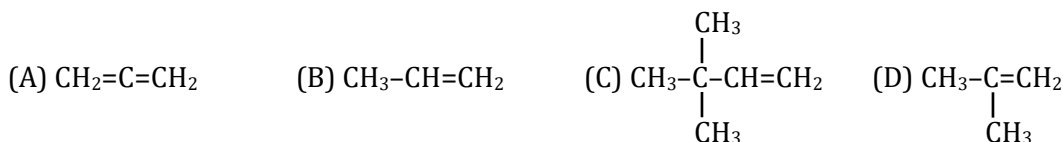


(D) None of these

CED173

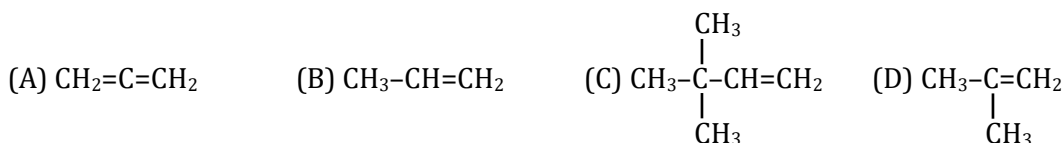
Bond Length

47. Which of the following molecule has longest C=C bond length ?

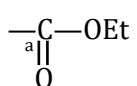
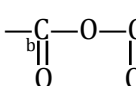


CED170

48. Which of the following molecule has shortest C=C bond length ?



CED171

49. **Statement-I :**   bond length $a < b$

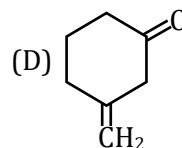
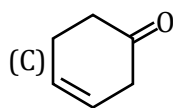
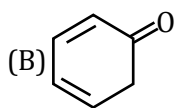
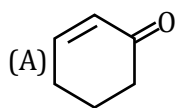
Because

Statement-II : More is the double bond character less is the bond length.

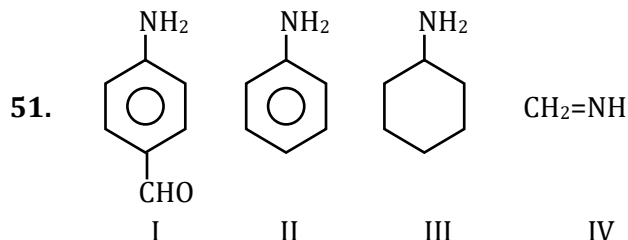
- (A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.
 (B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.
 (C) Statement-1 is true, statement-2 is false.
 (D) Statement-1 is false, statement-2 is true.

CED178

50. Which of the following has longest C-O bond :



CED179

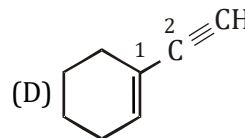
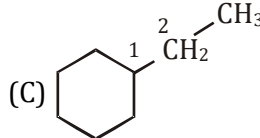
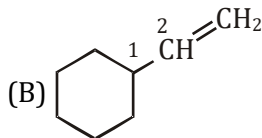
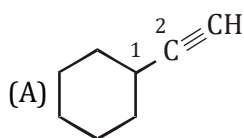


Among these compounds, the correct order of C-N bond lengths is:

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

CED180

52. C₁—C₂ bond is shortest in



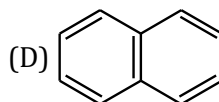
CED181

53. C—C and C=C bond lengths is equal in:

(A) Benzene

(B) 1,3-butadiene

(C) 1,3-cyclohexadiene



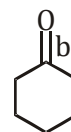
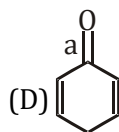
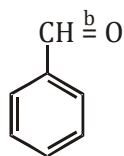
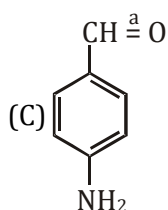
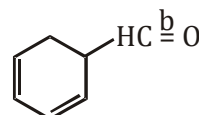
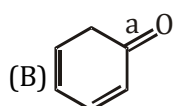
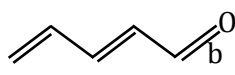
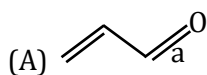
CED182

54. Among the following molecules, the correct order of C - C bond length is (C₆H₆ is benzene)

- (A) C₂H₆ > C₂H₄ > C₆H₆ > C₂H₂
(B) C₂H₆ > C₆H₆ > C₂H₄ > C₂H₂
(C) C₂H₄ > C₂H₆ > C₂H₂ > C₆H₆
(D) C₂H₆ > C₂H₄ > C₂H₂ > C₆H₆

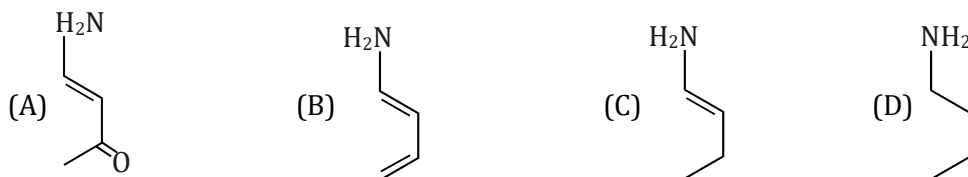
CED184

55. In which case, C-O bond length is shorter for Ist compound:



CED186

56. C-N bond length is maximum in:



CED187

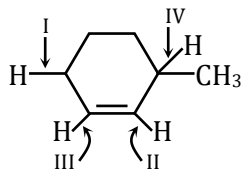
Hyperconjugation

57. Which one of the following molecules has all the effect, namely inductive, mesomeric and hyperconjugative?



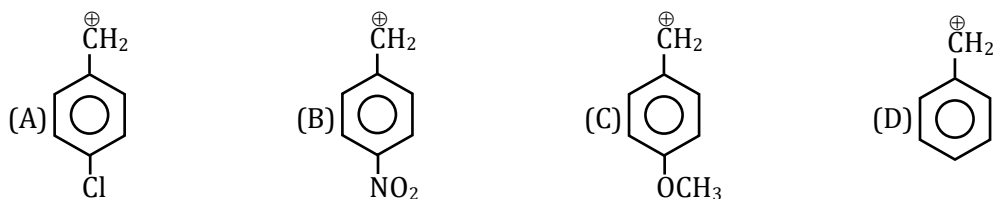
CED189

58. Which of the following C-H bonds participate in hyperconjugation ?



CED190

59. Most stable carbocation is :-



CED191

60. Consider the following carbocations

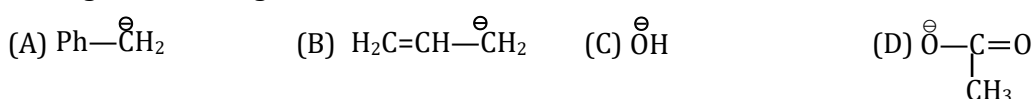


The relative stabilities of these carbocations are such that :-



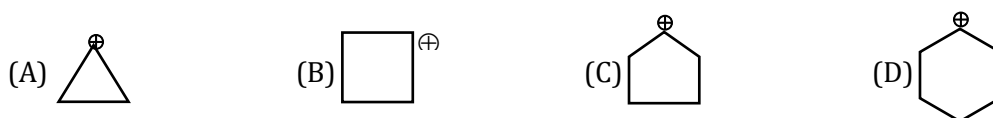
CED192

61. Among the following ions, which is most stable.



CED195

62. Among given carbocations, which is most stable



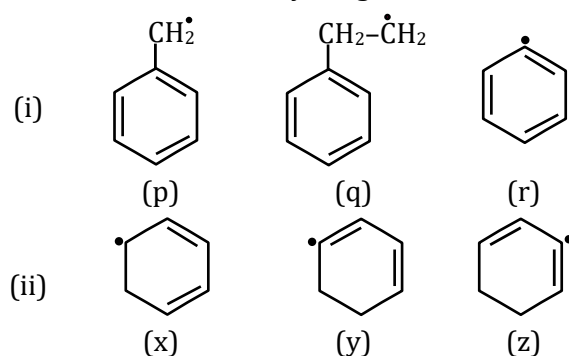
CED196

63. Among the following most stable carbanion is



CED199

64. Correct order of stability for given intermediates is :



(A) $p > r > q$; $x > y > z$

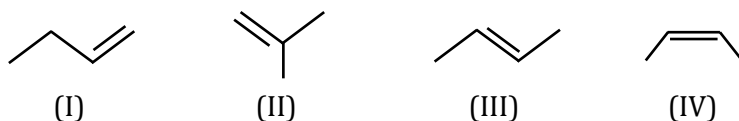
(B) $p > q > r$; $z > y > x$

(C) $p > q > r$; $x > y > z$

(D) $r > p > q$; $y > x > z$

CED201

65. Rank the following alkenes in decreasing order of heat of combustion values :



(A) $\text{II} > \text{III} > \text{IV} > \text{I}$

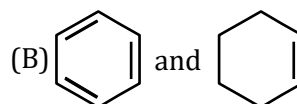
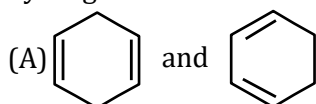
(B) $\text{II} > \text{IV} > \text{III} > \text{I}$

(C) $\text{I} > \text{III} > \text{IV} > \text{II}$

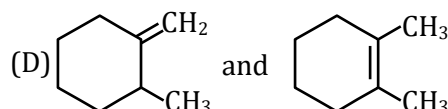
(D) $\text{I} > \text{IV} > \text{III} > \text{II}$

CED202

66. Among the following pairs, identify the one in which second compound gives higher heat of hydrogenation:

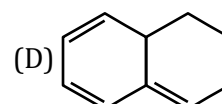
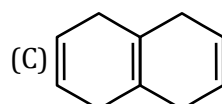
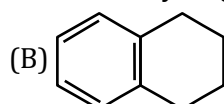
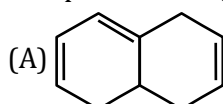


(C) $\text{CH}_3\text{-CH=CH-CH}_3$ and $\text{CH}_3\text{-CH}_2\text{-CH=CH}_2$



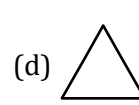
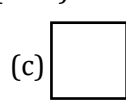
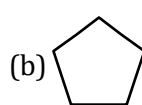
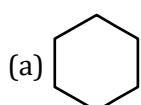
CED203

67. Compound having highest heat of hydrogenation is:



CED204

68. Give decreasing order of heat of combustion (HOC):



(A) $a > b > c > d$

(B) $a > b > d > c$

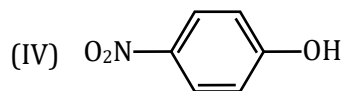
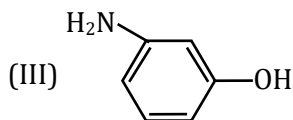
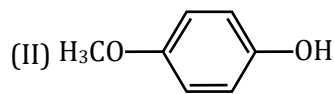
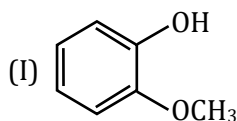
(C) $c > b > d > a$

(D) $d > b > a > c$

CED206

Acidic Strength

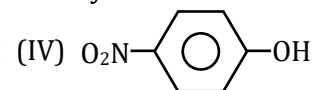
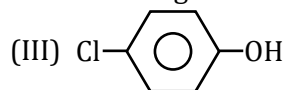
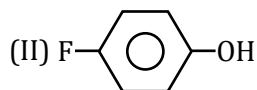
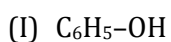
69. In the following compounds, the order of acidic strength is



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

CED209

70. Arrange the given phenol & its derivative in their decreasing order of acidity :

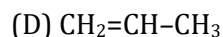
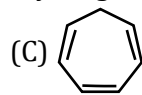
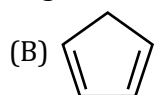
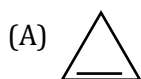


Select the correct answer from the given code:

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

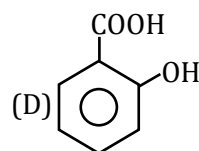
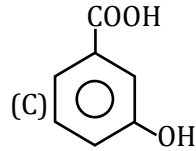
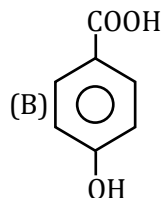
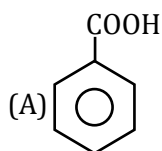
CED210

71. Which one of the following has the most acidic hydrogen ?



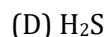
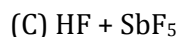
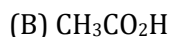
CED211

72. Which of the following is weakest acid?



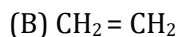
CED212

73. The strongest acid is :



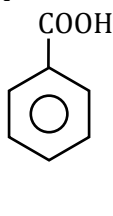
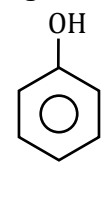
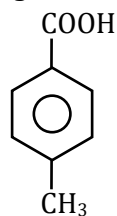
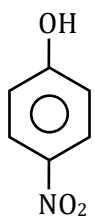
CED214

74. The weakest acid (does not show acidic character) is :



CED215

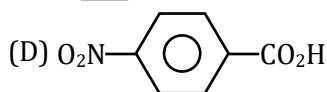
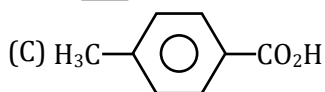
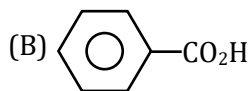
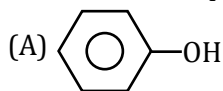
75. Acidic strength order of given compound



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

CED217

76. Most acidic compound is :-



CED218

77. The correct order of acidic strength of the following compounds is :-

A. Phenol

B. p-Cresol

C. m-Nitrophenol

D. p-Nitrophenol

(A) $C > B > A > D$

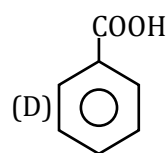
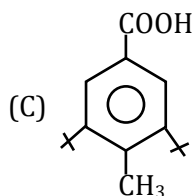
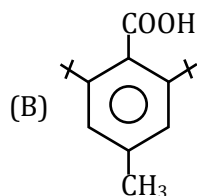
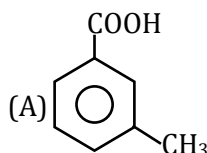
(B) $D > C > A > B$

(C) $B > D > A > C$

(D) $A > B > D > C$

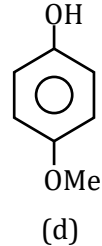
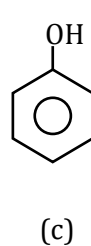
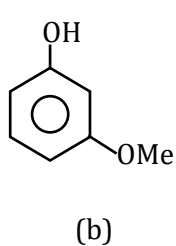
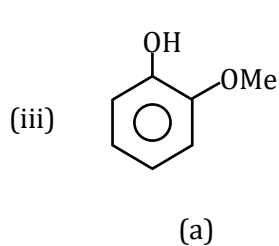
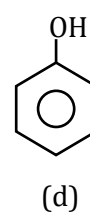
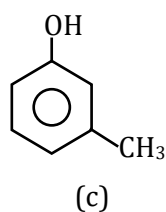
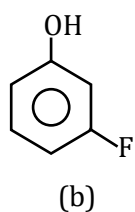
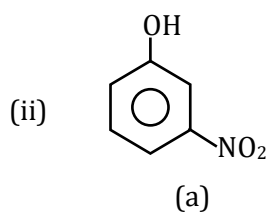
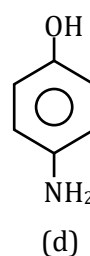
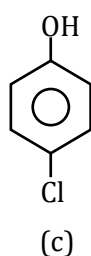
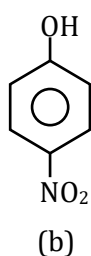
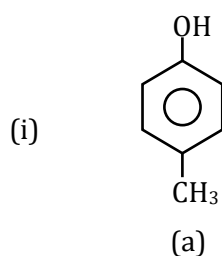
CED219

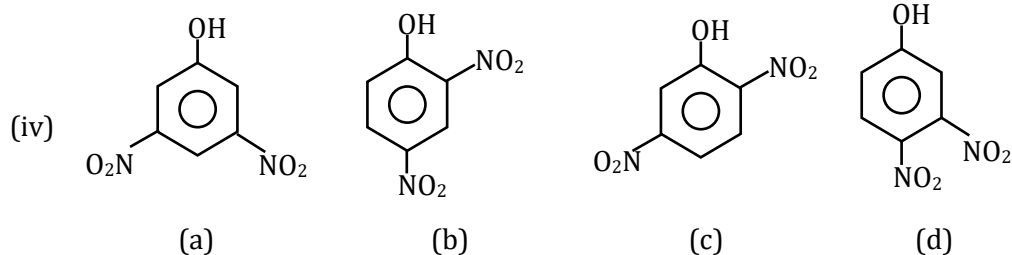
78. Which of the following is most acidic:



CED223

79. Select the strongest acid in each of the following sets:





(A) (i) → b ; (ii) → a ; (iii) → b ; (iv) → b

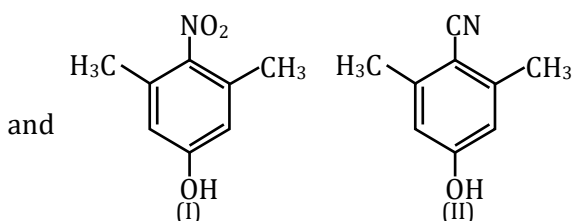
(B) (i) → a ; (ii) → b ; (iii) → c ; (iv) → b

(C) (i) → c ; (ii) → c ; (iii) → a ; (iv) → a

(D) (i) → d ; (ii) → d ; (iii) → c ; (iv) → d

CED224

80. Statement-1 : For the given two compounds-I is more acidic than compounds-II.



Statement-2 : Due to presence of $-\text{CH}_3$ group at ortho positions to $-\text{NO}_2$; the plane of $-\text{NO}_2$ deviates, w.r.t plane of ring.

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1.

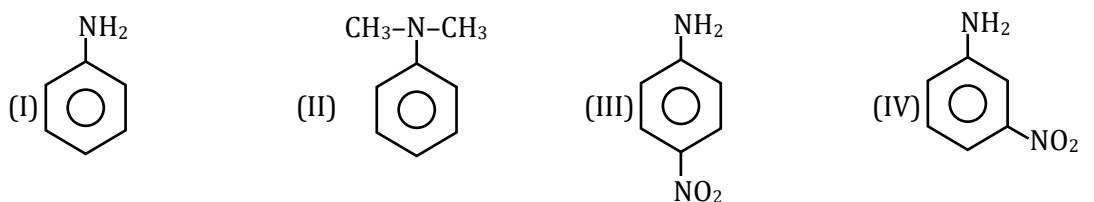
(C) Statement-1 is True, Statement-2 is False.

(D) Statement-1 is False, Statement-2 is True.

CED227

Basic Strength

81. Arrange the following in the decreasing order of basicity :



(A) I > II > III > IV

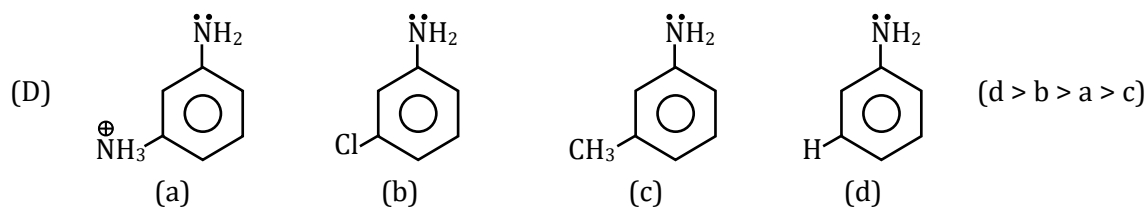
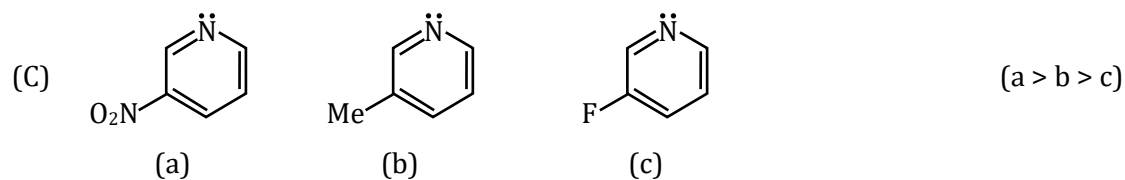
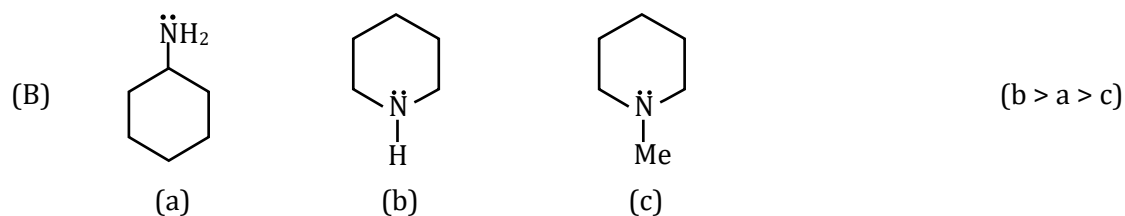
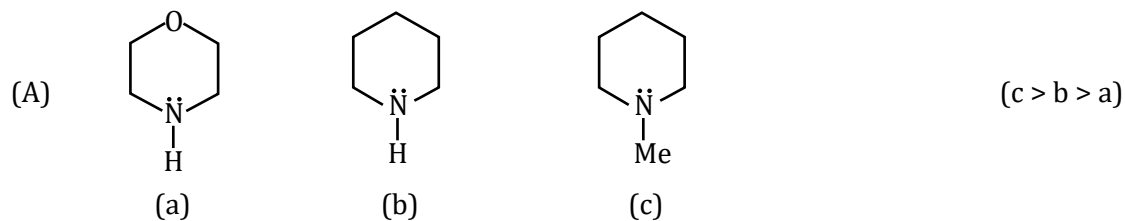
(B) IV > III > II > I

(C) II > I > IV > III

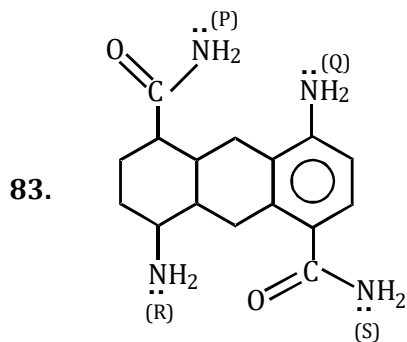
(D) I > IV > III > II

CED229

82. Correct set of basic strength order in given options is:



CED230

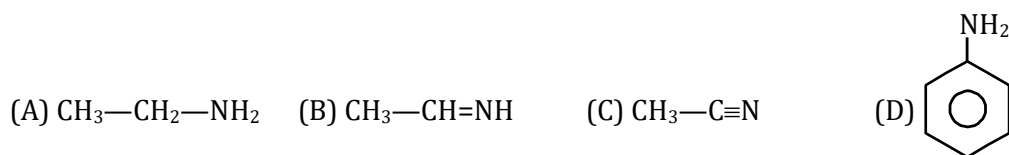


The most basic N-atom is :

- (A) P (B) Q (C) R (D) S

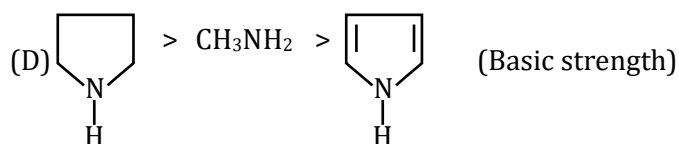
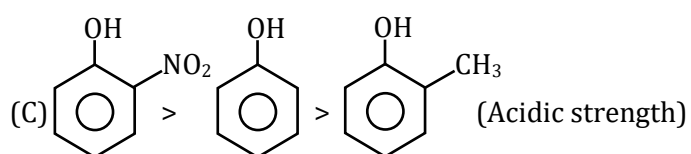
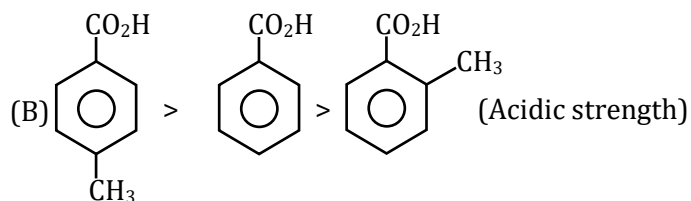
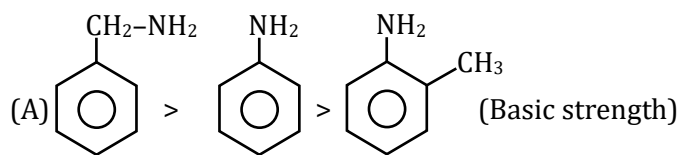
CED231

84. Which compound is most basic -



CED232

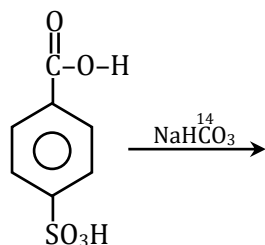
85. What is the incorrect order.



CED233

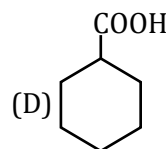
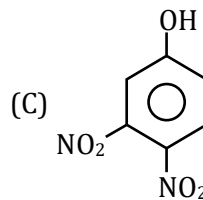
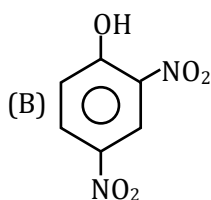
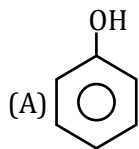
Acid Base Equilibrium

86. In given reaction Gas liberated is/are

(A) CO_2 & SO_2 (B) SO_2 & $^{14}\text{CO}_2$ (C) $^{14}\text{CO}_2$ only(D) SO_2 only

CED236

87. Which of the following compound does not react with NaHCO_3

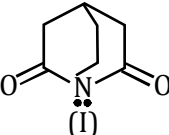
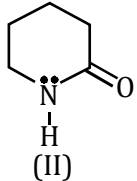


CED237

88. Choose the strongest base among the following

(A) $\text{C}_6\text{H}_5\text{CONHCH}_3$ (B) $\text{C}_6\text{H}_5\text{NH}_2$ (C) $\text{C}_6\text{H}_5\text{-CO-NH}_2$ (D) $\text{C}_6\text{H}_5\text{-NH-CH}_3$

CED238

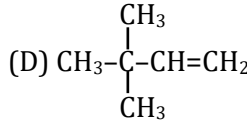
89. Statement 1 :  is more basic than  and

Statement 2 : Lone pair electrons on nitrogen in compound (I) does not participate in resonance.

- (A) Statement-1 is True, Statement-2 is True ; Statement-2 is a correct explanation for Statement-1.
 (B) Statement-1 is True, Statement-2 is True ; Statement-2 is NOT a correct explanation for Statement-1.
 (C) Statement-1 is True, Statement-2 is False.
 (D) Statement-1 is False, Statement-2 is True.

CED241

90. Hyperconjugation is possible in which of the following species ?

- (A) $\text{CH}_3 - \overset{\ominus}{\text{C}}\text{H} - \text{CH}_3$ (B) $\text{C}_6\text{H}_5 - \text{CH}_3$ (C) $\text{H}_2\text{C} = \text{CH}_2$ (D) 

CED242

MULTIPLE CORRECT TYPE QUESTIONS

Mesomeric Effect

91. Which of the following group(s) is/are ortho and para directing?

- (A) $-\text{CN}$ (B) $-\text{SO}_3\text{H}$ (C) $-\text{NH}_2$ (D) $-\text{O}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}$

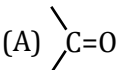
CED140

92. Which of the following have + M effect (e^- -donating mesomeric effect)?

- (A) $-\text{NO}_2$ (B) $-\text{COOH}$ (C) $-\text{NH}_2$ (D) $-\text{SR}$

CED141

93. Which of the following have -M effect ?

- (A)  (B) $-\text{SO}_3\text{H}$ (C) $-\text{OR}$ (D) $-\text{Br}$

CED142

94. Which of the following groups show both +M and -M effect depending upon situation.

- (A) $-\text{NO}_2$ (B) $-\text{NO}$ (C) $-\text{CH}=\text{CH}_2$ (D) $-\text{CHO}$

CED143

95. Which of the following group can neither show +M or -M effect ?

- (A) $-\overset{\oplus}{\text{P}}\text{H}_3$ (B) $-\overset{\oplus}{\text{N}}\text{H}_3$ (C) $-\text{OH}$ (D) $-\text{CH}_3$

CED144

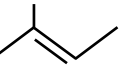
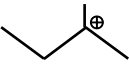
96. Group which can show both -I and +M effects:

- (A) OH (B) $-\text{COCl}$ (C) $-\text{CHO}$ (D) $-\text{Cl}$

CED145

Hyperconjugation

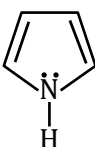
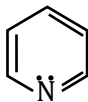
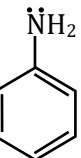
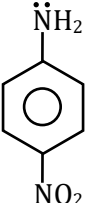
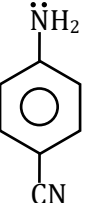
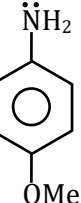
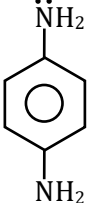
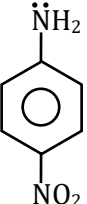
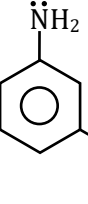
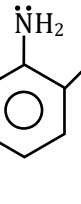
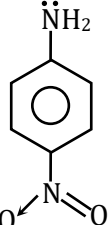
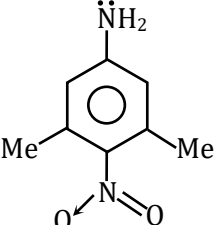
97. Which of the following compound is correctly matched with number of hyperconjugating structures (involving C-H bond) :

- (A)  (3) (B)  (9) (C)  (8) (D) $\text{CH}_3\text{-C}\equiv\text{C-CH}_3$ (5)

CED207

Basic Strength

98. Correct set of basic strength order in given option is/are :

- (A) (a)  (b)  (c)  (b > c > a)
- (B) (a)  (b)  (c)  (d)  (d > c > b > a)
- (C) (a)  (b)  (c)  (b > a > c)
- (D) (a)  (b)  (a > b)

CED244

Acid Base Equilibrium

99. Identify the non-feasible reaction

- (A) $\text{CH}_3\text{-C}\equiv\text{CH} + \text{NH}_2^\ominus \rightleftharpoons \text{CH}_3\text{-C}\equiv\text{C}^\ominus + \text{NH}_3$
- (B) $\text{CH}_3\text{CH}_2\text{-OH} + \text{NaOH} \rightleftharpoons \text{CH}_3\text{CH}_2\text{ONa} + \text{H}_2\text{O}$
- (C) $\text{CH}_3\text{-OH} + \text{NaOH} \rightleftharpoons \text{CH}_3\text{ONa} + \text{H}_2\text{O}$
- (D) $\text{HC}\equiv\text{CH} + \text{NaOH} \rightleftharpoons \text{HC}\equiv\text{CNa} + \text{H}_2\text{O}$

CED243

EXERCISE - S

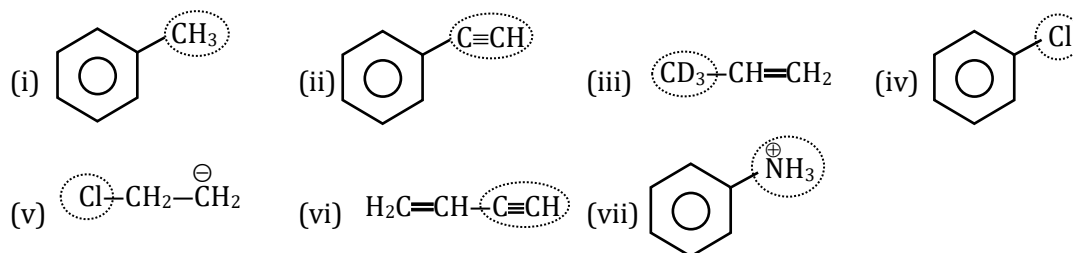
Inductive effect

1. How many of the following groups have + I effect :

- | | | | |
|-----------|----------------------|-------------|----------------------------|
| (a) -OH | (b) $-O^{\ominus}$ | (c) $-NH_2$ | (d) $-\ddot{N}^{\ominus}H$ |
| (e) -COOH | (f) $-COO^{\ominus}$ | (g) -Me | (h) -OMe |
| (i) -F | (j) $-NF_3^{\oplus}$ | | |

CED108

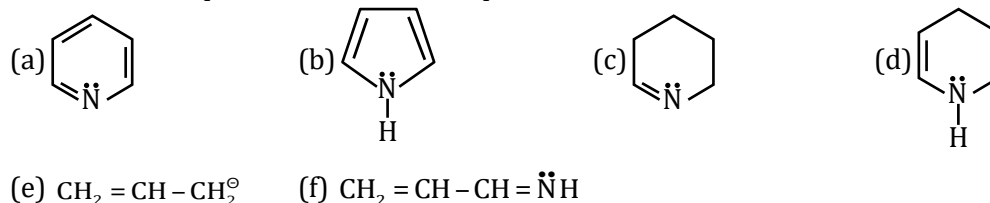
2. Calculate the marked group which shows -I effect.



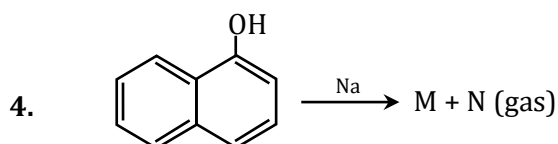
CED269

Resonance

3. Number of compounds in which lone-pair indicated is involved in resonance :



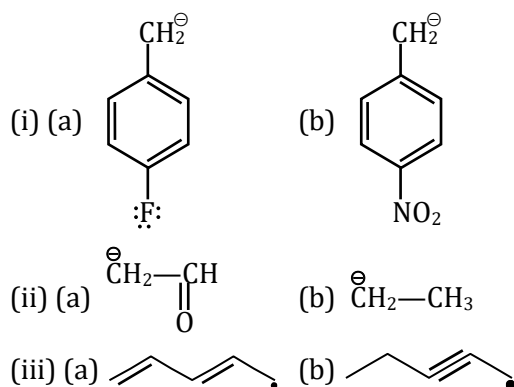
CED128



CED270

Hyperconjugation

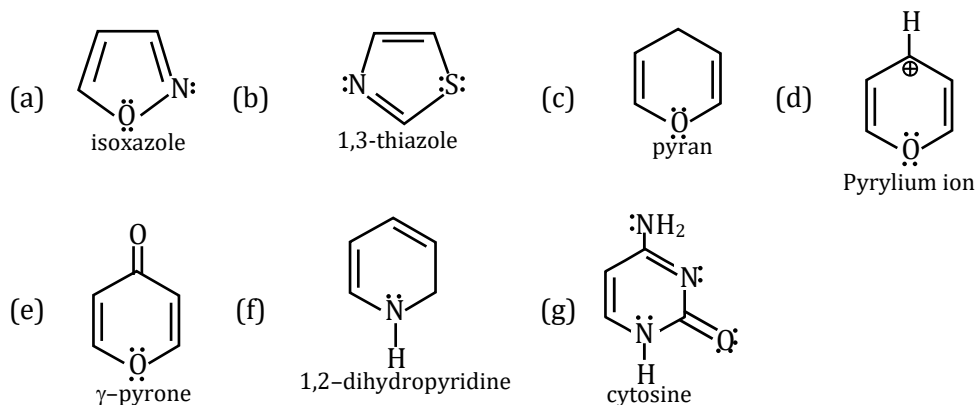
5. Number of pairs having first intermediate more stable is:



CED208

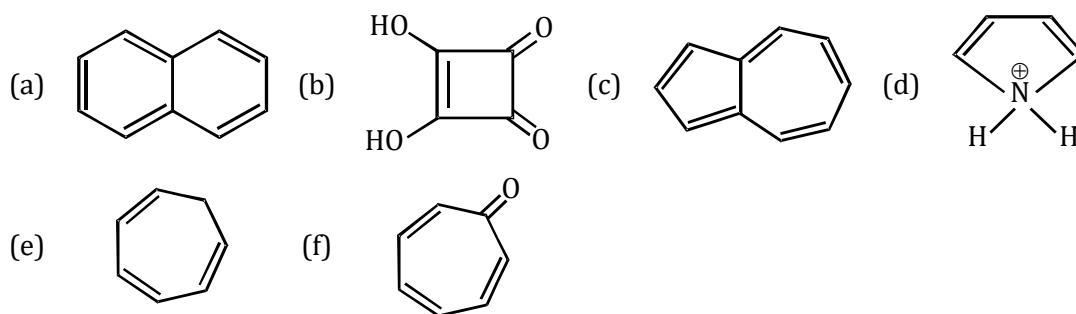
Aromaticity

6. Among the given compounds, total number of non-aromatic species are :



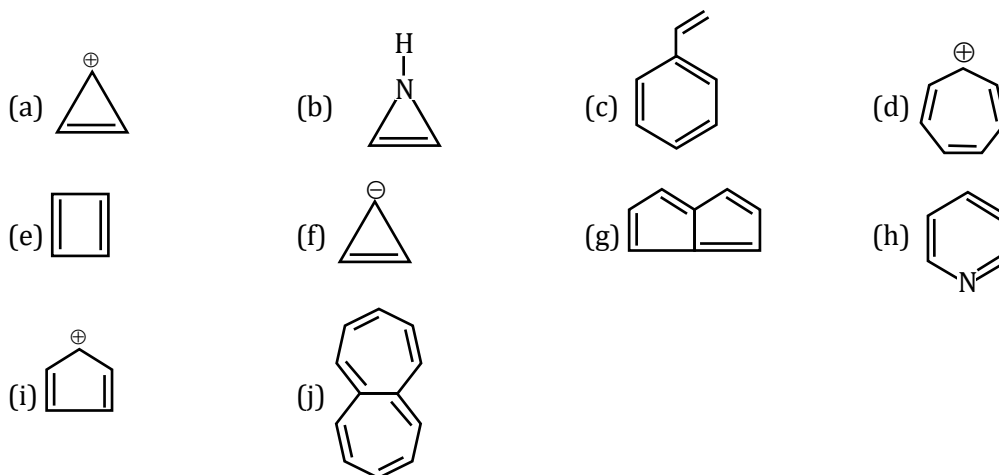
CED167

7. Total number of aromatic compounds



CED168

8. Of the given system how many molecule are anti-aromatic ?



CED280

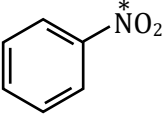
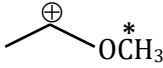
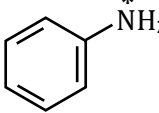
Mesomeric effect

9. How many of these groups shows -R effect when attached to benzene :



CED146

10. How many compounds having * marked group show both -I & + R / + M effects.

- (a) $\text{CH}_3\text{-CH=CH-}\overset{*}{\text{C}}\text{HO}$ (b) 
- (c) $\text{H}_2\text{C=CH-}\overset{*}{\text{F}}$ (d) 
- (e) $\text{H}_3\text{C-CH=CH-}\overset{*}{\text{C}}\text{H}_3$ (f) 

CED147

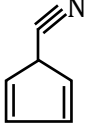
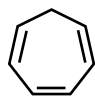
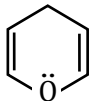
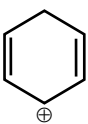
11. How many species is/are -M/-R groups

- (i) -OH (ii) -NO₂ (iii) -CN (iv) -CH₃
 (v) -O[⊖] (vi) - $\overset{+}{\text{N}}\text{H}_3$ (vii) -COOH (viii) -CH=NH

CED148

Acidity

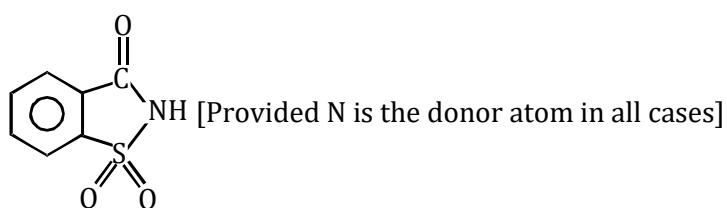
12. How many compound are stable after deprotonation ?

- (a)  (b)  (c)  (d) 
- (e)  (f) 

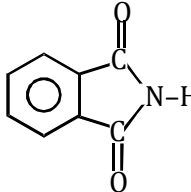
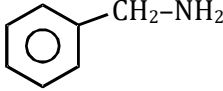
CED271

Basicity

13. The structure of saccharin is given as follows :

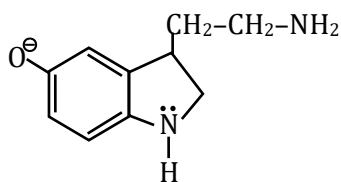


How many following compounds are more basic than saccharin?

- (i) $\text{CH}_3\text{-}\overset{\text{O}}{\underset{\text{NH}}{\text{C}}}\text{-NH}_2$ (ii) $\text{H}_2\text{N-}\overset{\text{O}}{\underset{\text{NH}}{\text{C}}}\text{-NH}_2$ (iii) $\text{CH}_3\text{-}\overset{\text{O}}{\underset{\text{O}}{\text{C}}}\text{-NH}_2$ (iv) 
- (v)  (vi) 

CED246

14. The conjugate base of serotonin (used as tranquilisers) is given as follows:

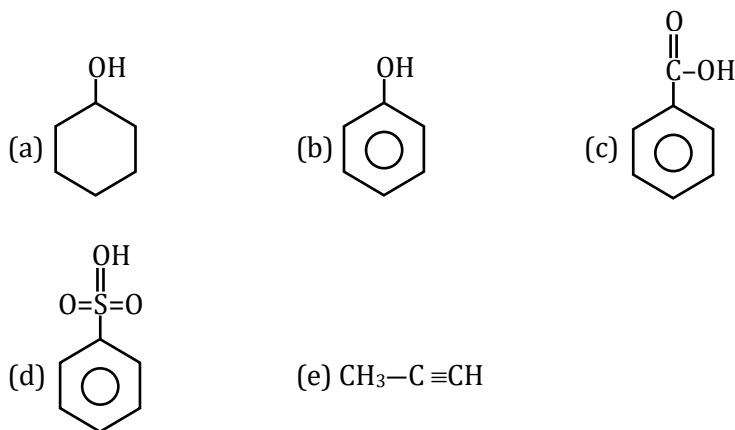


How many basic groups present in following compound ?

CED248

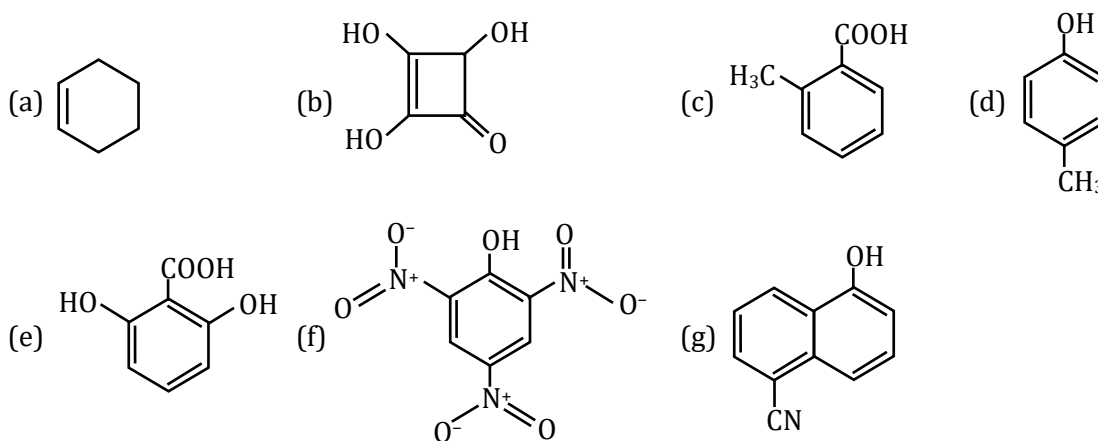
Acid-Base equilibrium

15. Which of the following compound will react with NaHCO_3 or soluble in NaHCO_3 ?



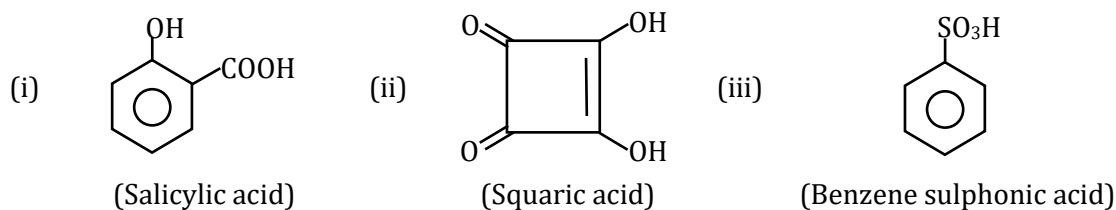
CED272

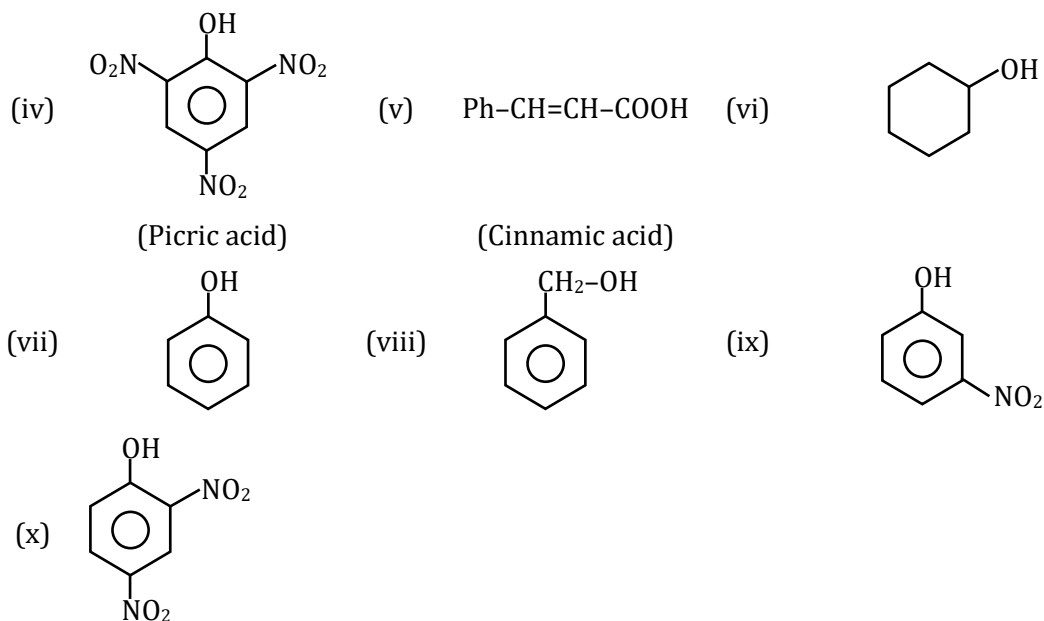
16. How many compounds are soluble aqueous NaOH ?



CED273

17. Number of compounds which can give effervescences with NaHCO_3





CED247

18. Total number of compounds soluble in aqueous HCl :

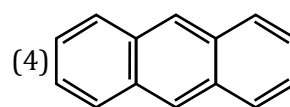
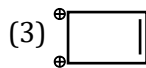
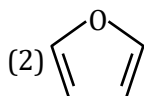
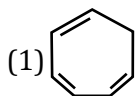
- | | | | |
|---|---------------------------|-----------------------------|--|
| (a) $\text{R}-\text{NH}_2$ | (b) R_2NH | (c) R_3N | (d) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}_2$ |
| (e) PhOH | (f) PhNH_2 | (g) $\text{Ph}-\text{COOH}$ | (h) PhCH_3 |
| (i) $\text{Ph}-\text{CH}_2-\text{NH}_2$ | | | |

CED274

EXERCISE - JEE (Main) PYQ

1. Which one of the following compounds is non-aromatic ?

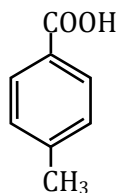
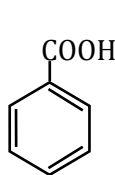
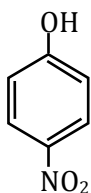
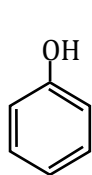
[JEE (Main) 2021]



CED031

2. The correct order of acid character of the following compounds is :

[JEE (Main) 2021]



(I)

(II)

(III)

(IV)

(1) III > II > I > IV

(2) IV > III > II > I

(3) I > II > III > IV

(4) II > III > IV > I

CED032

3. A. Phenyl methanamine
B. N,N-Dimethylaniline
C. N-Methyl aniline
D. Benzenamine

[JEE (Main) 2021]

Choose the correct order of basic nature of the above amines.

(1) A > C > B > D

(2) D > C > B > A

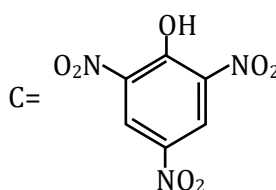
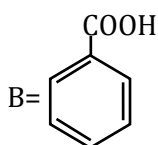
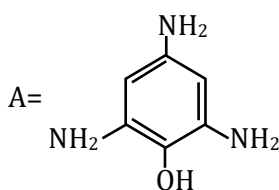
(3) D > B > C > A

(4) A > B > C > D

CED033

4. Compound(s) which will liberate carbon dioxide with sodium bicarbonate solution is/are:

[JEE (Main) 2021]



(1) B only

(2) C only

(3) B and C only

(4) A and B only

CED034

5. **Statement I** : Sodium hydride can be used as an oxidising agent.

[JEE (Main) 2021]

Statement II : The lone pair of electrons on nitrogen in pyridine makes it basic.

Choose the CORRECT answer from the options given below :

(1) Both statement I and statement II are false

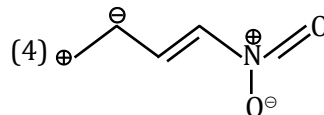
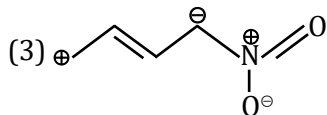
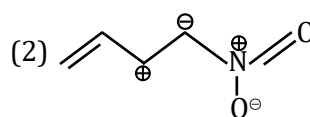
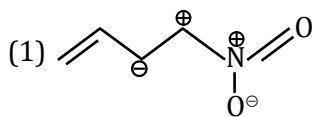
(2) Statement I is true but statement II is false

(3) Statement I is false but statement II is true

(4) Both statement I and statement II are true

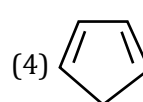
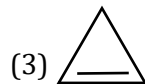
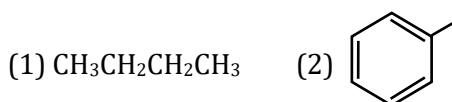
CED036

6. Which one among the following resonating structures is **not** correct ? [JEE (Main) 2021]



CED042

7. Which among the following is the strongest acid ? [JEE (Main) 2021]



CED043

8. Given below are two statements : [JEE (Main) 2021]

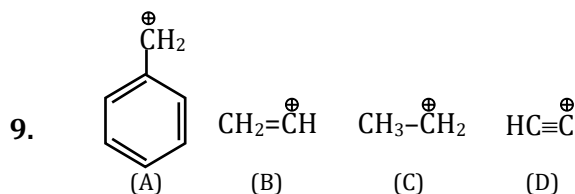
Statement I : Aniline is less basic than acetamide.

Statement II : In aniline, the lone pair of electrons on nitrogen atom is delocalised over benzene ring due to resonance and hence less available to a proton.

Choose the **most appropriate** option ;

- (1) Statement I is true but statement II is false.
 (2) Statement I is false but statement II is true.
 (3) Both statement I and statement II are true.
 (4) Both statement I and statement II are false.

CED044



[JEE (Main) 2021]

The correct order of stability of given carbocation is :

- (1) $\text{A} > \text{C} > \text{B} > \text{D}$ (2) $\text{D} > \text{B} > \text{C} > \text{A}$ (3) $\text{D} > \text{B} > \text{A} > \text{C}$ (4) $\text{C} > \text{A} > \text{D} > \text{B}$

CED045

10. Given below are two statements : [JEE (Main) 2021]

Statement I : Hyperconjugation is a permanent effect.

Statement II : Hyperconjugation in ethyl cation $(\text{CH}_3-\text{CH}_2^+)$ involves the overlapping of $\text{C}_{\text{sp}^2}-\text{H}_{1\text{s}}$ bond with empty 2p orbital of other carbon.

Choose the **correct** option :

- (1) Both **statement I** and **statement II** are false
 (2) **Statement I** is incorrect but **statement II** is true
 (3) **Statement I** is correct but **statement II** is false
 (4) Both **Statement I** and **statement II** are true.

CED046

11. Which of the following has the shortest C-Cl bond ? [JEE (Main) 2021]



CED047

17. The descending order of acidity for the following carboxylic acid is :

- A. CH_3COOH B. $\text{F}_3\text{C}-\text{COOH}$ C. $\text{ClCH}_2-\text{COOH}$ D. FCH_2-COOH
 E. $\text{BrCH}_2-\text{COOH}$

Choose the correct answer from the options given below :

[JEE (Main) 2023]

- (1) $\text{D} > \text{B} > \text{A} > \text{E} > \text{C}$ (2) $\text{E} > \text{D} > \text{B} > \text{A} > \text{C}$ (3) $\text{B} > \text{C} > \text{D} > \text{E} > \text{A}$ (4) $\text{B} > \text{D} > \text{C} > \text{E} > \text{A}$

CED277

18. The decreasing order of hydride affinity for following carbocations is:

A.	$\text{CH}_2 = \text{CH}-\overset{+}{\text{C}}(\text{CH}_3)-\text{CH}_3$
B.	$\text{C}_6\text{H}_5-\overset{+}{\text{C}}(\text{C}_6\text{H}_5)-\text{C}_6\text{H}_5$
C.	$\text{H}_3\text{C}-\overset{+}{\text{C}}(\text{CH}_3)-\text{CH}_3$
D.	

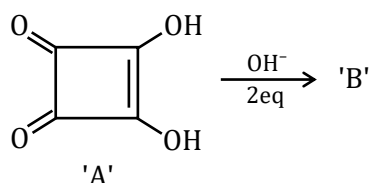
Choose the correct answer from the options given below:

[JEE (Main) 2023]

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

CED278

19. Correct statements for the given reaction are :



- A. Compound 'B' is aromatic
 B. The completion of above reaction is very slow
 C. 'A' shows tautomerism
 D. The bond lengths C-C in compound B are found to be same

Choose the correct answer from the options given below :

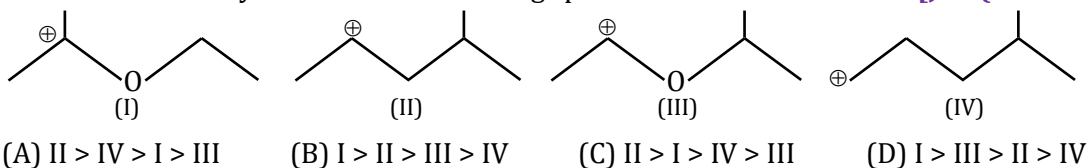
[JEE (Main) 2023]

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

CED279

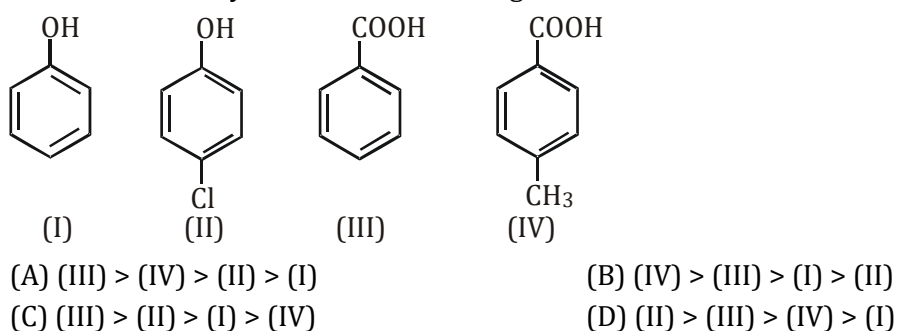
EXERCISE - JEE (Advanced) PYQ

1. The correct stability order for the following species is : [JEE (Advanced) 2008]



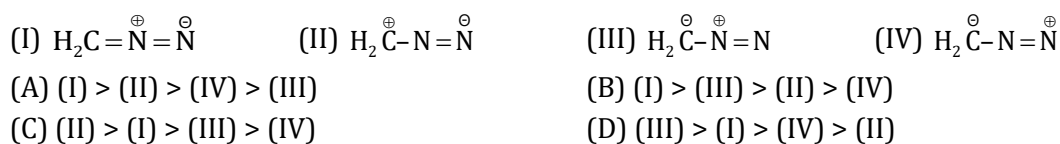
CED069

2. The correct acidity order of the following is: [JEE (Advanced) 2009]



CED070

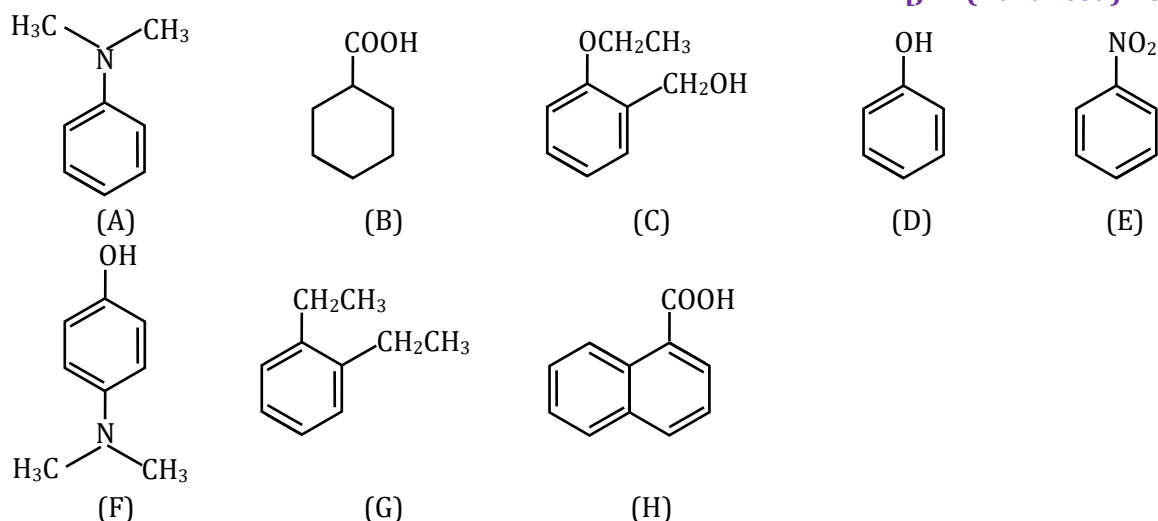
3. The correct stability order of the following resonance structures is [JEE (Advanced) 2009]



CED071

4. Amongst the following, the total number of compounds soluble in aqueous NaOH is:

[JEE (Advanced) 2010]



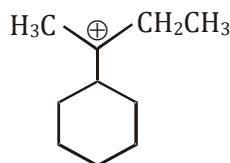
CED072

5. Among the following compounds, the most acidic is [JEE (Advanced) 2011]



CED073

6. The total number of contributing structures showing hyperconjugation (involving C–H bonds) for the following carbocation is. [JEE (Advanced) 2011]

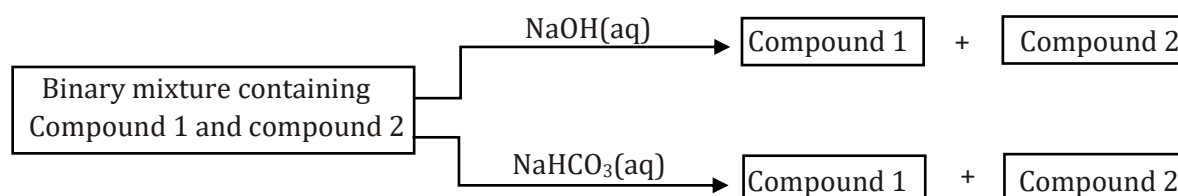


CED074

7. The carboxyl functional group ($-\text{COOH}$) is present in – [JEE (Advanced) 2012]
 (A) picric acid (B) barbituric acid
 (C) ascorbic acid (D) aspirin

CED075

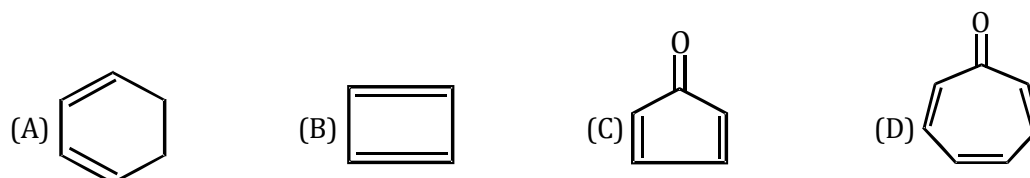
8. Identify the binary mixtures (s) that can be separated into the individual compounds, by differential extraction, as shown in the given scheme – [JEE (Advanced) 2012]



- (A) $\text{C}_6\text{H}_5\text{OH}$ and $\text{C}_6\text{H}_5\text{COOH}$ (B) $\text{C}_6\text{H}_5\text{COOH}$ and $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$
 (C) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ and $\text{C}_6\text{H}_5\text{OH}$ (D) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ and $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$

CED076

9. Which of the following molecules, in pure form, is (are) unstable at room temperature? [JEE (Advanced) 2012]



CED077

10. The compound that does NOT liberate CO_2 , on treatment with aqueous sodium bicarbonate solution, is – [JEE (Advanced) 2013]
 (A) Benzoic acid (B) Benzenesulphonic acid
 (C) Salicylic acid (D) Carboic acid (phenol)

CED078

11. The hyperconjugative stabilities of tert-butyl cation and 2-butene, respectively, are due to [JEE (Advanced) 2013]

- (A) $\sigma \rightarrow p$ (empty) and $\sigma \rightarrow \pi$ electron delocalisations
 (B) $\sigma \rightarrow \sigma$ and $\sigma \rightarrow \pi$ electron delocalisations
 (C) $\sigma \rightarrow p$ (filled) and $\sigma \rightarrow \pi$ electron delocalisations
 (D) p (filled) $\rightarrow \sigma$ and $\sigma \rightarrow \pi$ electron delocalisations

CED079

12. The total number of lone-pairs of electrons in melamine is [JEE (Advanced) 2013]

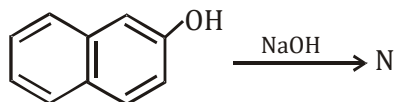
CED080

13. Hydrogen bonding plays a central role in the following phenomena [JEE (Advanced) 2014]

(A) Ice floats in water
 (B) Higher Lewis basicity of primary amines than tertiary amines in aqueous solutions
 (C) Formic acid is more acidic than acetic acid
 (D) Dimerisation of acetic acid in benzene

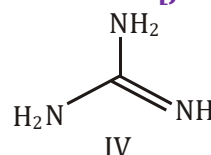
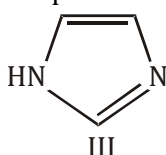
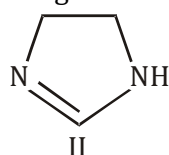
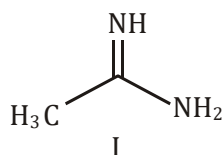
CED081

14. The number of resonance structures for N is: [JEE (Advanced) 2015]



CED082

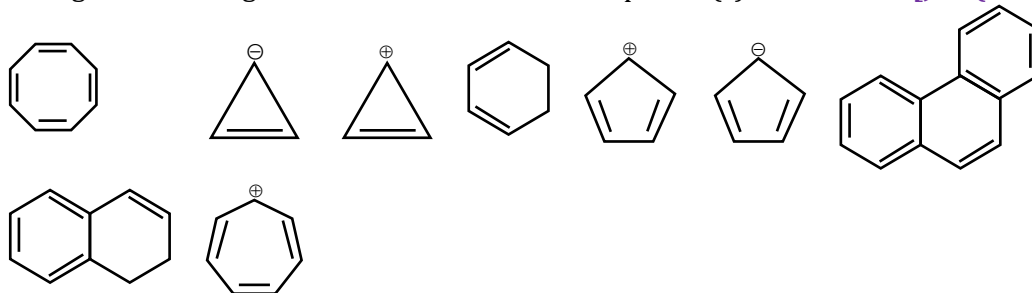
15. The order of basicity among the following compounds is [JEE (Advanced) 2017]



(A) II > I > IV > III (B) IV > II > III > I (C) I > IV > III > II (D) IV > I > II > III

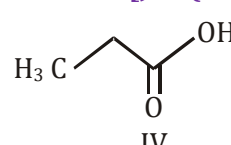
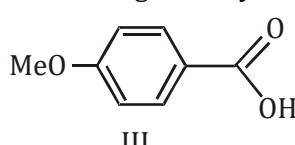
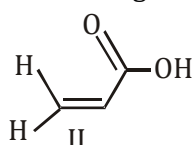
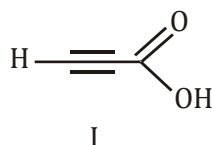
CED083

16. Among the following, the number of aromatic compound (s) is- [JEE (Advanced) 2017]



CED084

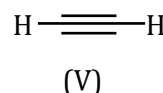
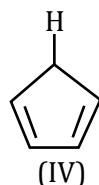
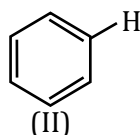
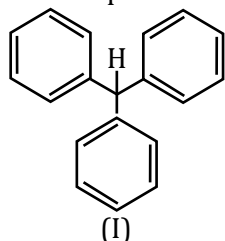
17. The correct order of acid strength of the following carboxylic acids is - [JEE (Advanced) 2019]



(A) I > III > II > IV (B) III > II > I > IV (C) II > I > IV > III (D) I > II > III > IV

CED085

18. With respect to the compounds I-V, choose the correct statement(s). [JEE (Advanced) 2020]



(A) The acidity of compound I is due to delocalization in the conjugate base.
 (B) The conjugate base of compound IV is aromatic.
 (C) Compound II becomes more acidic, when it has a -NO₂ substituent.
 (D) The acidity of compounds follows the order I > IV > V > II > III.

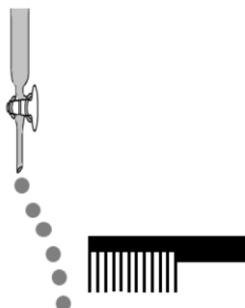
CED086

19. Consider the following compounds in the liquid form :

[JEE (Advanced) 2020]

O_2 , HF, H_2O , NH_3 , H_2O_2 , CCl_4 , $CHCl_3$, C_6H_6 , C_6H_5Cl .

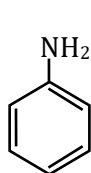
When a charged comb is brought near their flowing stream, how many of them show deflection as per the following figure?



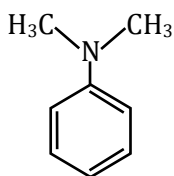
20. Consider the following four compounds **I**, **II**, **III**, and **IV**.

CED087

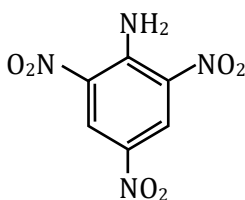
[JEE (Advanced) 2020]



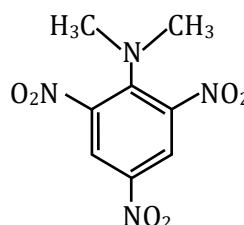
(I)



(II)



(III)



(IV)

Choose the correct statement(s).

- (A) The order of basicity is **II** > **I** > **III** > **IV**.
 (B) The magnitude of pK_b difference between **I** and **II** is more than that between **III** and **IV**.
 (C) Resonance effect is more in **III** than in **IV**.
 (D) Steric effect makes compound **IV** more basic than **III**.

CED088

JEE (Main) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION-A

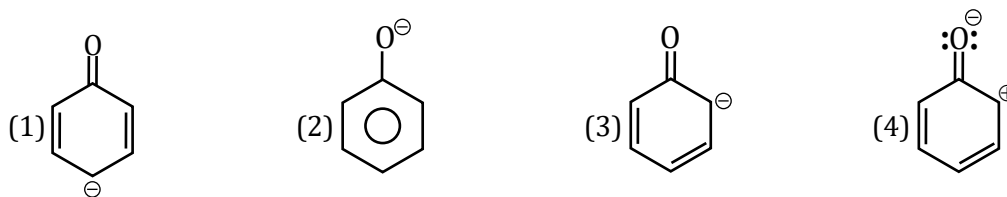
- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +4, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1, in all other cases

1. Arrange pH of the given compounds in decreasing order:

- (i) Phenol (ii) Ethyl alcohol (iii) Formic acid (iv) Benzoic acid
 (1) i > ii > iii > iv (2) ii > i > iv > iii (3) iii > ii > iv > i (4) iv > iii > i > ii

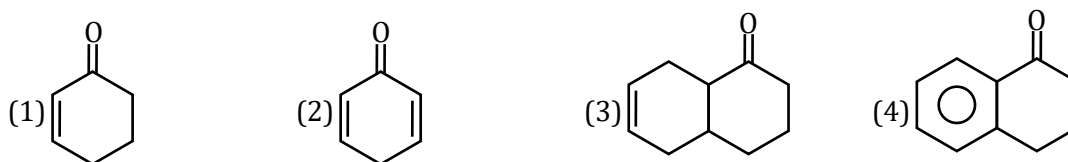
CED001

2. Which of the following is not a valid resonance structures of phenoxide ion ?



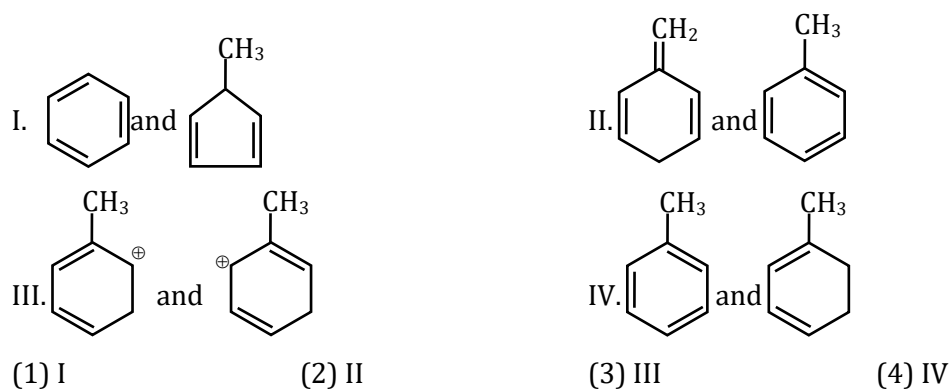
CED002

3. Which of the following is not resonance stabilized ?



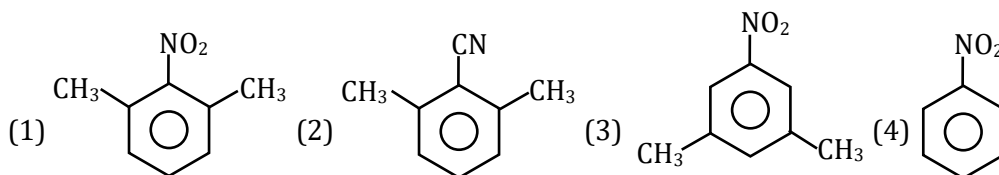
CED003

4. Which of the following pairs are resonating structures?



CED004

5. In which of the following compound steric inhibition of resonance effect will operate ?



CED005

6. Consider the basicity of the following aromatic amines:

(I) aniline

(II) p-nitroaniline

(III) p-methoxyaniline

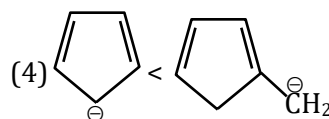
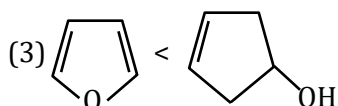
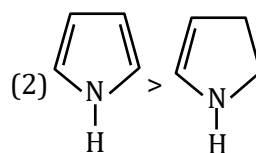
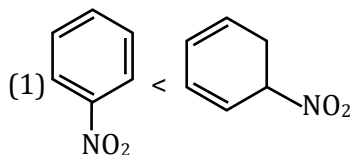
(IV) p-methylaniline

The correct order of decreasing basicity is:

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

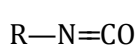
CED006

7. Which order is correct for resonance energy?



CED007

8. Three resonating structures for alkyl cyanate is given



I

II

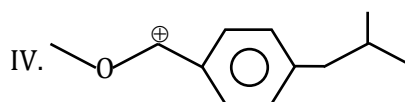
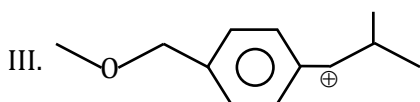
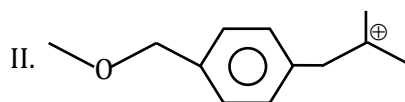
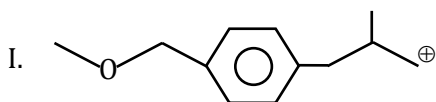
III

The decreasing order of their stability is:

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

CED008

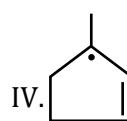
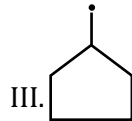
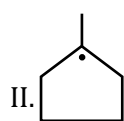
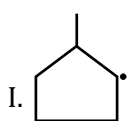
9. Decreasing order of stabilities of following carbocation is:



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

CED009

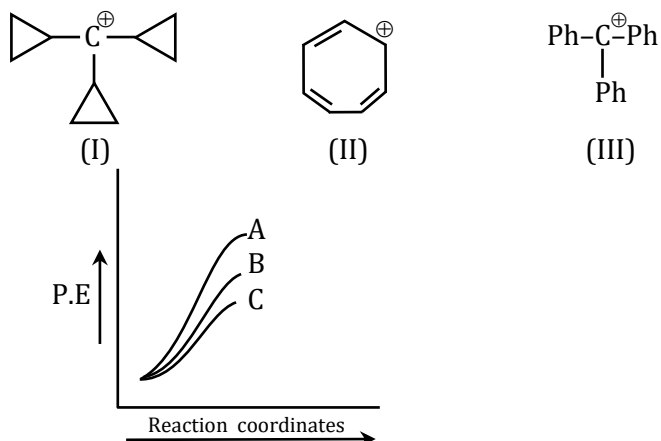
10. Decreasing order of stabilities of the following free radicals is :



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

CED010

11. In the following graph, stability of different carbocations have been shown :



Match the potential energy curve with carbocation.

I	II	III
(1) A	B	C
(2) B	A	C
(3) C	B	A
(4) C	A	B

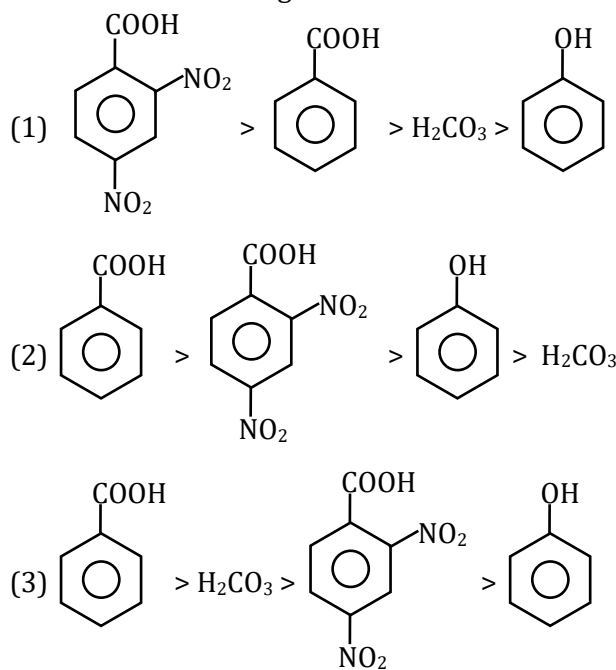
CED011

12. Which of the following compound has highest dipole moment ?



CED012

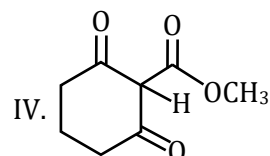
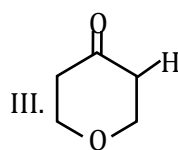
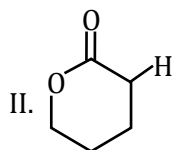
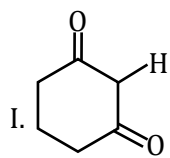
13. Which of the following is the correct order of acidic strength.



(4) None of these

CED013

14. Arrange the following in increasing order of their acidic strength.



(1) I < III < IV < II

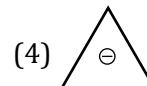
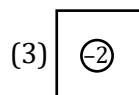
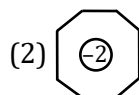
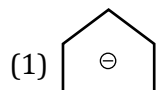
(2) II < I < IV < III

(3) III < I < IV < II

(4) II < III < I < IV

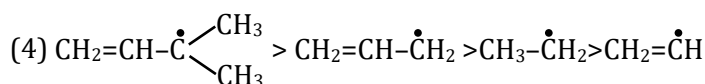
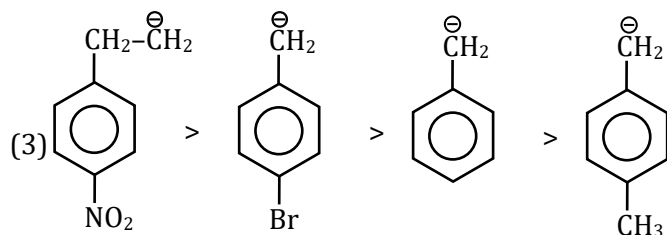
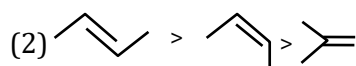
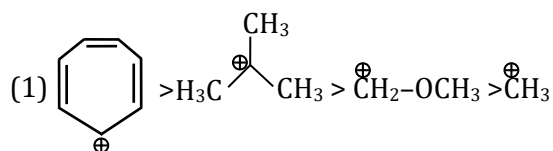
CED014

15. Which of the following species will be least stable?



CED015

16. Correct order of stability:



CED016

17. The decreasing order of acidic character of the following is :

(I) CH₃SH

(II) CH₃OH

(III) H₂O

(IV) EtOH

(1) I > II > III > IV

(2) IV > III > II > I

(3) I > III > II > IV

(4) III > I > II > IV

CED017

18. If Heat of hydrogenation of 1-butene is 30 Kcal/mol then heat of hydrogenation of 1,3-butadiene is ?

(1) 3

(2) 60

(3) 57

(4) 25

CED018

19. Which of the following statements is correct for the given molecule ?



(1) Shape of the given molecule is square

(2) Shape of the given molecule is rectangular

(3) Given molecule is Non-aromatic

(4) Given molecule is more stable than Non-aromatic molecules

CED019

20. The increasing order of pK_b value of the following is:

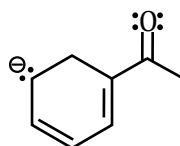
- | | | | |
|---|---|---|---|
| (I) $\text{OH}^\ominus$ | (II) $\text{F}^\ominus$ | (III) $\text{NH}_2^\ominus$ | (IV) $\text{CH}_3^\ominus$ |
| (1) $\text{IV} < \text{III} < \text{I} < \text{II}$ | (2) $\text{I} < \text{II} < \text{III} < \text{IV}$ | (3) $\text{IV} < \text{II} < \text{III} < \text{I}$ | (4) $\text{I} < \text{III} < \text{II} < \text{IV}$ |

CED020

SECTION-B

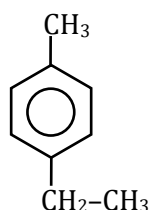
- This section will have **TEN** questions. Candidate can choose to attempt any 5 questions out of these 10 questions. In case if candidate attempts more than 5 questions, first 5 attempted questions will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (Answer should be rounded off to the nearest integer).
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +4, if only correct answer is given.
 Zero Marks : 0, if no answer is given.
 Negative Marks : -1 for incorrect answer

1. How many total resonating structures can be drawn for the following anion (include those without separation of charge) ?

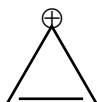


CED021

2. Number of α -hydrogen in given compound is

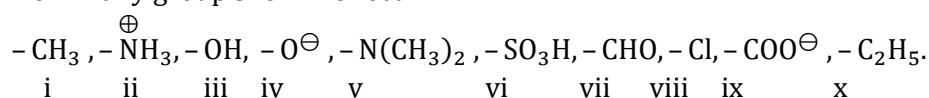


CED022

3.  (A). Number of resonating structure of (A) is

CED023

4. How many group show -I effect ?



CED024

5. How many of the following groups have + I effect:

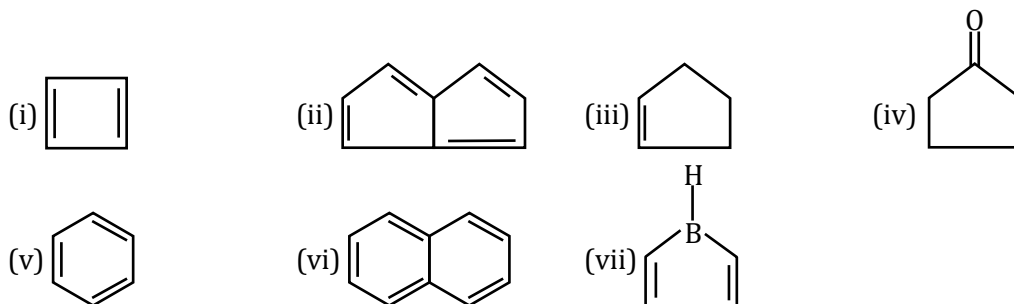
- | | | | |
|-----------|-----------------------------------|----------------------|----------------------|
| (a) —OH | (b) —O ⁺ | (c) —NH ₂ | (d) —NH ⁺ |
| (e) —COOH | (f) —COO ⁺ | (g) —Me | (h) —OMe |
| (i) —F | (j) —NF ₃ ⁺ | | |

CED025

6. Number of statements is (are) true about resonance.
- Resonance is an intramolecular phenomenon.
 - Resonance involves delocalization of both s and p electrons.
 - Resonance involves delocalization of pi electrons only.
 - Resonance decreases potential energy of an acyclic molecule.
 - Resonance has no effect on the potential energy of a molecule.
 - Resonance is the only way to increase molecular stability.
 - Resonance is not the only way to increase molecular stability.
 - Any resonating molecule is always more stable than any non resonating molecule.
 - The canonical structure explains all features of a molecule.
 - The resonance hybrid explains all features of a molecule.
 - Resonating structures are real and resonance hybrid is imaginary.
 - Resonance hybrid is real and resonating structures are imaginary.
 - Resonance hybrid is always more stable than all canonical structures.

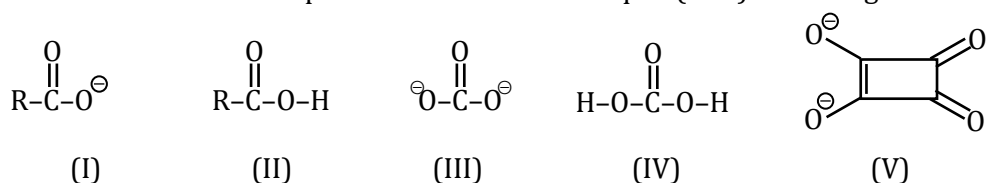
CED026

7. Identify total number of compounds which are unstable at room temperature?



CED027

8. The total number of compounds which contains equal (C-O) bond length are:

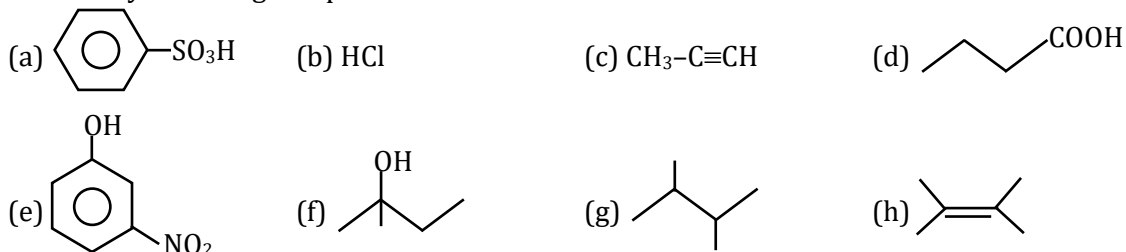


CED028

9. Some of total number of resonating structures in naphthalene and anthracene are :

CED029

10. How many following compounds are more acidic than water?



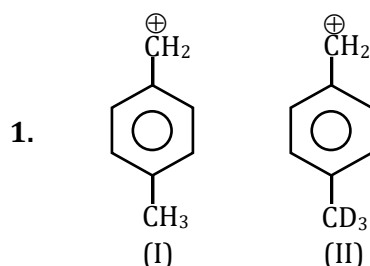
CED030

JEE (Advanced) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION-I

- This section contains **SIX** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1, in all other cases

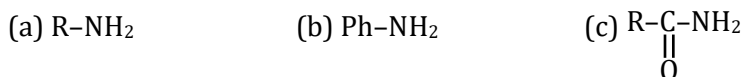


Carbocation (I) is more stable than carbocation (II), because:

- (A) $-\text{CD}_3$ has more + I effect than $-\text{CH}_3$ (B) $-\text{CH}_3$ has more + I effect than $-\text{CD}_3$
 (C) $-\text{CH}_3$ has more + H effect than $-\text{CD}_3$ (D) $-\text{CD}_3$ has more + H effect than $-\text{CH}_3$

CED051

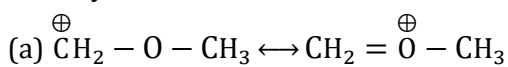
2. Write decreasing order of basic strength of following :



- (A) $a > c > b$ (B) $c > b > a$ (C) $a > b > c$ (D) $b > a > c$

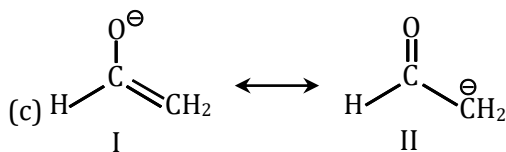
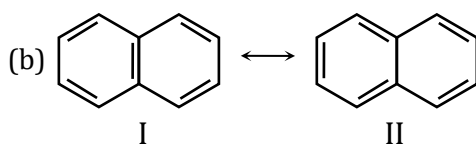
CED052

3. Identify more stable canonical structure in each of the following pairs :



I

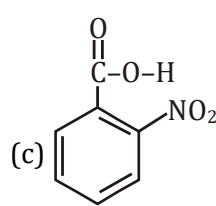
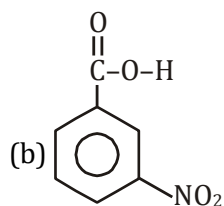
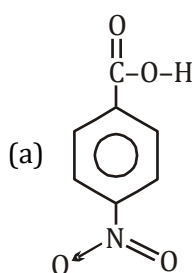
II



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

CED053

4. Write correct order of acidic strength of following compounds:



(A) $c > a > b$

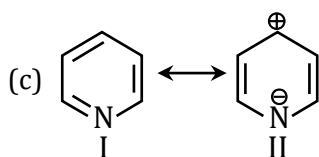
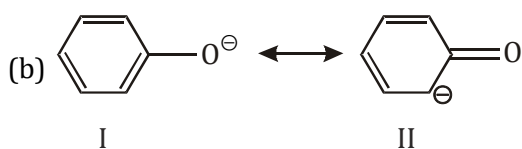
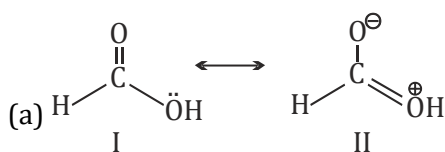
(B) $c > b > a$

(C) $a > c > b$

(D) $b > a > c$

CED054

5. Identify more stable canonical structure in each of the following pairs :



(A) I, II, II

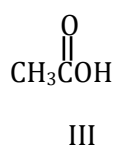
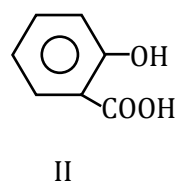
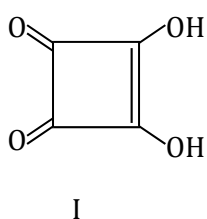
(B) II, II, II

(C) I, I, I

(D) I, II, I

CED055

6. Consider the following compound



Which of the above compounds reacts with NaHCO_3 giving CO_2

(A) I, II and III

(B) I and III

(C) II and III

(D) I and II

CED056

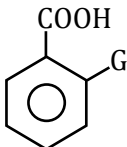
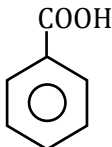
SECTION-II

- This section contains **FOUR** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +4, if only (all) the correct option(s) is (are) chosen.
 Partial Marks : +3, if all the four options are correct but **ONLY** three options are chosen.
 Partial Marks : +2, if three or more options are correct but **ONLY** two options are chosen, both of which are correct options.
 Partial Marks : +1, if two or more options are correct but **ONLY** one option is chosen and it is a correct option.
 Zero Marks : 0, if none of the options is chosen (i.e. the question is unanswered).
 Negative Marks : -2, in all other cases.

7. Correct order of basic strength :

- (A) $\text{CH}_3^- > \text{NH}_2^- > \text{OH}^-$
 (B) $\text{OH}^- > \text{Et-O}^- > \text{Et-NH}^-$
 (C) $\text{CH}_3\text{O}^- > \text{CH}_3\text{NH}^- > \text{CH}_3\text{-CH}_2^-$
 (D) $\text{H}_3\text{C-CH}_2^- > \text{H}_2\text{C=CH}^- > \text{HC}\equiv\text{C}^-$

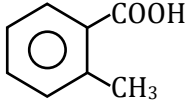
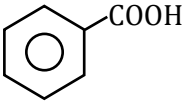
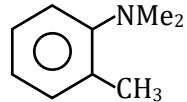
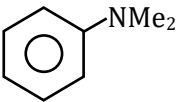
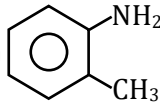
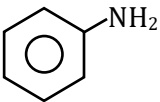
CED057

8.  is more acidic than  , if G is/are -

- (A) -OH (B) -NO₂ (C) -COOH (D) -CH₃

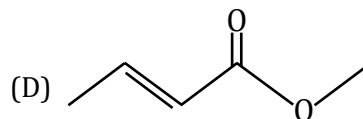
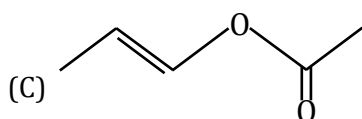
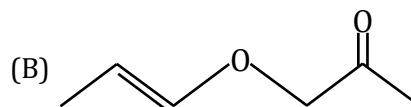
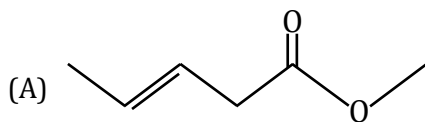
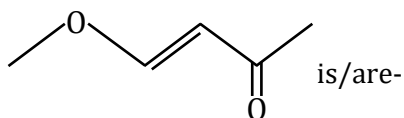
CED058

9. Select correct statement among following -

- (A) $\text{CH}_3\text{-O-CH}_2^+$ is more stable than $\text{CH}_3\text{-CH}_2^+$
 (B)  is more acidic than 
 (C)  is more basic than 
 (D)  is more basic than 

CED059

10. Compound(s) having higher bond rotation energy barrier across C = C than compound.



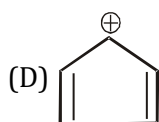
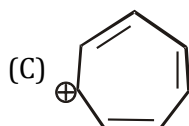
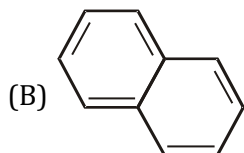
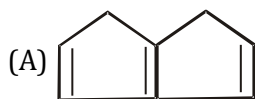
CED060

SECTION-III

- This section contains **ONE** questions.
- Each question has matching lists.** The codes for the lists have choices (A), (B), (C) and (D) out of which **ONLY ONE is correct**
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1, in all other cases..

11. Match the column I with column II.

Column-I



Column-II

(P) Aromatic

(Q) Non-aromatic

(R) Anti-aromatic

(S) Cyclic structure

(A) → Q,S ; (B) → P,S ; (C) → P,S ; (D) → R,S

(B) → P,S ; (B) → P ; (C) → R,S ; (D) → S

(C) → Q,S ; (B) → Q,R ; (C) → P ; (D) → R

(D) → R,S ; (B) → P, ; (C) → P,S ; (D) → Q

CED061

SECTION-IV

- This section contains **ONE** paragraph.
- Based on each paragraph, there are **TWO** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct answer is darkened.
 Zero Marks : 0, in all other cases.

Paragraph for Q. 12 & 13

Analyze the following compounds:



(I)



(II)



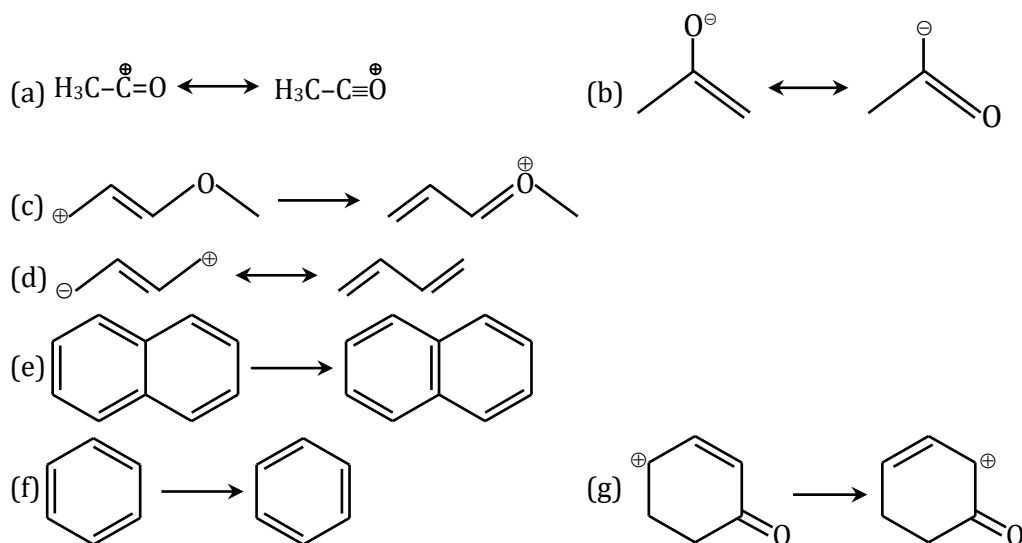
(III)

12. Which of these will have highest resonance energy (R.E.)
 (A) I (B) II (C) III (D) All will have equal R.E.
CED062
13. Which of these will have highest bond length of C = C bond
 (A) I (B) II (C) III (D) All equal
CED063

SECTION-V

- This section contains **FIVE** questions.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (in decimal notation, truncated/rounded-off to the second decimal place; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +3, if **ONLY** the correct numerical value is entered as answer.
 Zero Marks : 0, in all other cases.

14. Total number of pairs of resonating structure in which second is more stable than first.

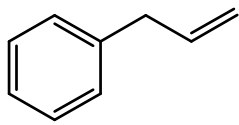
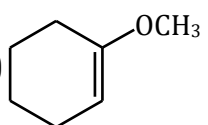
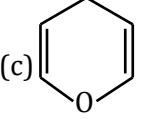
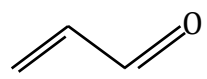
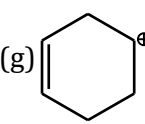
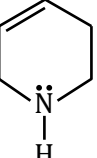
**CED064**

15. How many of the following are more acidic than $\text{CH}_3\text{-CH}_2\text{-OH}$

- (a) $\text{CF}_3\text{-CH}_2\text{-OH}$ (b) $\text{CH}_3\text{-CF}_2\text{-OH}$ (c) $\text{CH}_3\text{-}\overset{\text{O}}{\parallel}\text{C-OH}$ (d) $\text{CH}_3\text{-}\overset{\text{CH}_3}{\underset{|}{\text{CH}}}\text{-OH}$
- (e) $\text{CH}_3\text{-}\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}\text{-OH}$ (f) $\text{O}_2\text{N-CH}_2\text{-OH}$ (g) $\text{CCl}_3\text{-}\overset{\text{O}}{\parallel}\text{C-OH}$ (h) $\text{Et-}\overset{\text{Et}}{\underset{\text{Et}}{\text{C}}}\text{-OH}$

CED065

16. How many of the following will show resonance

- (a)  (b)  (c)  (d) Ph-NH_2
- (e)  (f) $\text{R-}\overset{\text{O}}{\parallel}\text{C-OH}$ (g)  (h) $\text{CH}_2=\text{CH-CH}_2\text{-}\overset{\ominus}{\text{CH}}_2$
- (i) 

CED066

17. Calculate resonance energy of the $\text{CH}_2=\text{CH-CH=CH}_2$ if its heat of hydrogenation is 57 kcal while heat of hydrogenation of $\text{CH}_2=\text{CH-CH}_2\text{-CH}_3$ is 30 kcal.

CED067

18. Number of carbanions which are more stable than $\overset{\ominus}{\text{CH}}_2\text{-CH}_3$

- (i) $\overset{\ominus}{\text{C}}\text{H}_3$ (ii) $\overset{\ominus}{\text{C}}\text{F}_3$ (iii) $\overset{\ominus}{\text{C}}\text{H}(\text{CH}_3)_2$ (iv) $\overset{\ominus}{\text{C}}\text{Cl}_3$
- (v) $\overset{\ominus}{\text{C}}\text{H}_2\text{-CCl}_3$ (vi) $\overset{\ominus}{\text{C}}\text{H}_2\text{-CH}_2\text{-CH}_3$ (vii) $\overset{\ominus}{\text{C}}\text{H}_2\text{-}\overset{\oplus}{\text{N}}(\text{CH}_3)_3$ (viii) $\overset{\ominus}{\text{C}}(\text{CH}_3)_3$

CED068

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	D	A	A	D	A	A	B	A	A	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	A	C	C	A	A	B	D	D	A	D
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	A	B	B	D	B	D	B	C	C	A
Que.	31	32	33	34	35	36	37	38	39	40
Ans.	D	C	B	D	D	B	A	D	D	C
Que.	41	42	43	44	45	46	47	48	49	50
Ans.	C	A	B	B	D	B	D	A	D	B
Que.	51	52	53	54	55	56	57	58	59	60
Ans.	C	D	A	B	A	D	C	B	C	A
Que.	61	62	63	64	65	66	67	68	69	70
Ans.	D	D	B	C	D	C	C	A	D	C
Que.	71	72	73	74	75	76	77	78	79	80
Ans.	B	B	C	C	C	D	B	B	A	D
Que.	81	82	83	84	85	86	87	88	89	90
Ans.	C	A	C	A	B	C	A	D	A	B
Que.	91	92	93	94	95	96	97	98	99	
Ans.	CD	CD	AB	BC	BD	AD	ABC	ABC	BD	

EXERCISE - S

1.	4	2.	5	3.	3	4.	8	5.	2
6.	2	7.	4	8.	7	9.	3	10.	3
11.	4	12.	3	13.	6	14.	3	15.	2
16.	7	17.	6	18.	5				

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	4	4	3	3	1	4	2	1	3
Que.	11	12	13	14	15	16	17	18	19	
Ans.	4	3	3	1	2	3	4	2	4	

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	D	A	B	4	C	6	D	BD	BC	D
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	A	6	ABD	9	D	5	D	ABC	6	CD

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	2	4	3	3	1	1	2	1	1	2
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	3	3	1	4	4	4	1	3	2	1
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	4	5	3	6	4	7	3	3	7	4

JEE (Advanced) Practice Paper

Section-I	Q.	1	2	3	4	5	6
	A.	C	C	B	A	C	A
Section-II	Q.	7	8	9	10		
	A.	AD	ABCD	ABC	ABCD		
Section-III	Q.	11					
	A.	A					
Section-IV	Q.	12	13				
	A.	C	C				
Section-V	Q.	14	15	16	17	18	
	A.	4.00	5.00	6.00	3.00	5.00	