Ashoka Scientific Forum

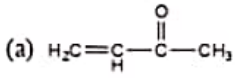
Developing Scientific Temper Among Students

IIT-JAM | TIFR | DU BHU | JNU | ISM | PU & All Other University M.Sc. Entrance Exam
CSIR-NET | GATE | TIFR

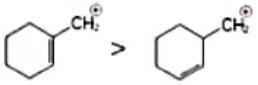
ORGANIC ASSIGNMENT – I

GOC

1. Which of the following compound does not have delocalized electron?

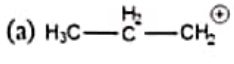
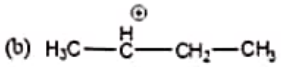
   (a)  (b)  (c)  (d) $CH_3CH_2NHCH{=}CHCH_3$

2. For each pair of ions, determine which ion is in correct order of stability?

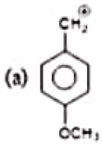
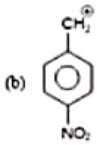
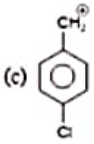
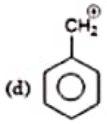
   (a)  (i) > (ii)

   (b) $\overset{\ominus}{H_2}C-CH_3$ (i) > $\overset{\ominus}{H_2}C-C\equiv N$ (ii)

3. Arrange the following carbocations in decreasing order of their stability:

   (a)  (b)  (c) $(CH_3)_3C^{\oplus}$ (d) $CH_3^{\oplus}$

4. Arrange the following carbocation in decreasing order of their stability:

   (a)  (b)  (c)  (d) 

5. Inductive effect involves:

   (a) Delocalisation of σ -electron (b) Partial displacement of σ -electron
   (c) Delocalisation of π -electron (d) Displacement of lone pair of electron

6. In which of the following species, delocalisation of π -electron is possible?

   (a) $CH_2{=}CH\text{-}CH_2\text{-}CHO$ (b) $CH_2{=}CH\text{-}CH{=}O$ (c) $CH_3\text{-}CH(OH)\text{-}CH_3$ (d) $CH_2{=}CH\text{-}CH_2\text{-}CH{=}CH_2$

7. HNCO (isocyanic acid) has the following resonating structures:

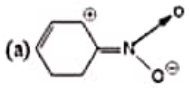
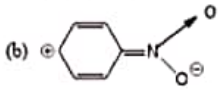
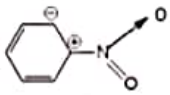
   $$H-\overset{\cdot\cdot}{N}=C=O \leftrightarrow H-\overset{\cdot\cdot}{N}^{-}-C\equiv O^{\oplus} \leftrightarrow H-\overset{\cdot\cdot}{N}^{\oplus}\equiv C-O^{-}$$

   (I) (II) (III)

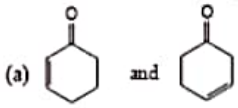
   The order of stability is:

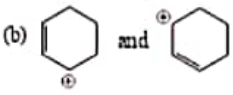
   (a) I > III > II (b) I > II > III (c) II > III > I (d) II > I > II

8. Which will be the least stable resonating structure of nitrobenzene?

   (a)  (b)  (c) 

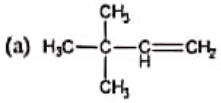
9. Which of the following pairs represent resonating structure?

   (a)  and

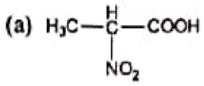
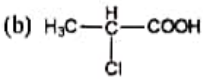
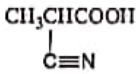
   (b)  and

2637, Hudson Lane, Behind Khalsa College, Near G.T.B. Nagar Metro Station Gate No. 3 & 4, New Delhi – 110009
Mob.011-47455430, 08860929430, e-mail: info@asfinstitute.com, www.asfinstitute.com

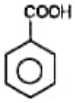
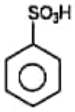
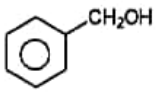
10. Hyperconjugation involves:
    (a) Delocalisation of σ-electron with an adjacent π–bond
    (b) Delocalisation of π-electron with an adjacent triple bond
    (c) Delocalisation of π-electron with an adjacent double bond
    (d) All are true

11. Hyperconjugation phenomenon is possible in:
    (a) 
    (b) $H_2C{=}CH_2$ (c) $C_6H_5{-}\underset{H}{C}{=}CH_2$ (d) $CH_3\text{-}CH_2\text{-}CH{=}CH_2$

12. Among the following compound, the strongest acid is:
    (a) $CH{\equiv}CH$ (b) C_6H_6 (c) C_2H_6 (d) CH_3OH

13. Find the strongest acid among the following compounds:
    (a)  (b)  (c) CH_3CH_2COOH (d) 

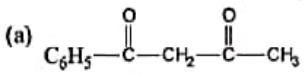
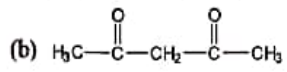
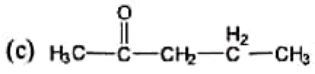
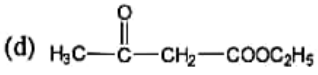
14. The strongest acid among the following compounds is?
    (a) $HOOC-(CH_2)_2-COOH$ (b) $H_3N^{\oplus}-(CH_2)_2-COOH$
    (c) $F-(CH_2)_2-COOH$ (d) $CH_3-(CH_2)_2-COOH$

15. Amongst the following compounds, the strongest acid is:
    (a)  (b)  (c)  (d) 

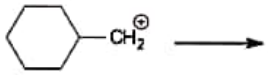
16. Which of the following is CORRECT order of basic strength?
    (A) (I) $(CH_3)_3C^-$ (II) $(CH_3)_2N^-$ (III) $(CH_3)_3CO^-$ (IV) CH_3O^-
    (a) I > II > III > IV (b) III > II > IV > I (c) II > III > I > IV (d) IV > III > II > I

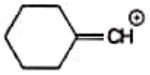
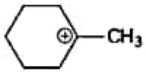
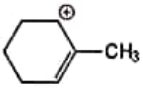
17. The correct basic strength order of the following anion is:
    (a) $CH_3\text{-}CH_2^- > NH_2^- > CH_2{=}CH^- > CH{\equiv}C^- > OH^- > F^-$
    (b) $NH_2^- > CH_3\text{-}CH_2^- > CH_2{=}CH^- > CH{\equiv}C^- > F^- > OH^-$
    (c) $CH_3\text{-}CH_2^- > CH_2{=}CH^- > NH_2^- > CH{\equiv}C^- > OH^- > F^-$
    (d) $F^- > OH^- > CH{\equiv}C^- > CH_2{=}CH^- > NH_2^- > CH_3\text{-}CH_2^-$

18. In which of the following pairs of carbocation, the first one is more stable than second:
    (a) $\overset{\ominus}{C}F_3$ $\overset{\ominus}{C}Cl_3$ (b) $HC{\equiv}C^{\ominus}$ $H_2C{=}CH^{\ominus}$ (c) $(CH_3)_3\overset{\ominus}{C}$ CH

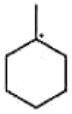
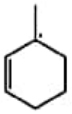
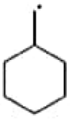
19. Which among the following compound will give maximum enol content in the solution?
    (a) 
    (b) 
    (c) 
    (d) 

20. Which of the following is the rearranged more stable carbocation of the given species:



(a)  (b)  (c)  (d)

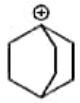
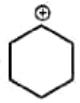
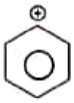
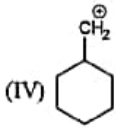
21. The most stable radical among the following is:

(a)  (b)  (c)  (d) 

22. The most unstable carbocation is:

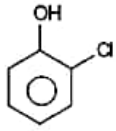
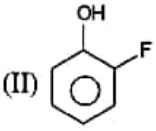
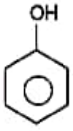
(a) $CH_3CH_2^{\oplus}$ (b) $Cl-CH_2-CH_2^{\oplus}$ (c) $CH_2^{\oplus}-CHO$ (d) $CH_2^{\oplus}-O-CH_3$

23. The stability order of the following carbocation is:

(I)  (II)  (III)  (IV) 

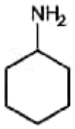
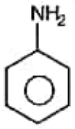
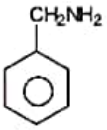
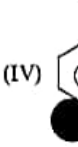
(a) I > II > IV > III (b) IV > III > II > I (c) IV > II > III > I (d) II > IV > III > I

24. Write the order of acidic strength of the following compounds:

(I)  (II)  (III) 

(a) I > II > III (b) II > III > I (c) III > II > I (d) I > III > II

25. Arrange the decreasing order of basicity:

(I)  (II)  (III)  (IV) 

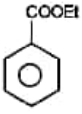
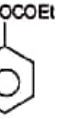
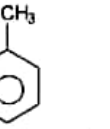
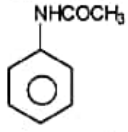
(a) I > III > IV > II (b) II > III > I > IV (c) II > III > IV > I (d) I > IV > III > II

26. Which of the following is the least stable resonating structure:

(a) $CH_2=CH-CH^{\ominus}-CH^{-}-NH_2$ (b) $CH_2^{-}-CH^{\oplus}-CH=NH_2$

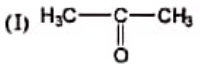
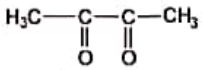
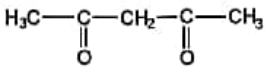
(c) $CH_2^{-}-CH=CH-CH=NH_2^{\oplus}$ (d) $CH_2=CH-CH^{-}-CH=NH_2^{\oplus}$

27. The correct order of electron density in aromatic ring of following compound is:

(I)  (II)  (III)  (IV) 

(a) IV > III > II > I (b) I > II > III > IV (c) IV > II > I > III (d) IV > II > III > I

28. Order of acidity strength will be:

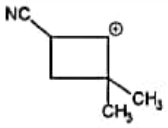
(I)  (II)  (III) 

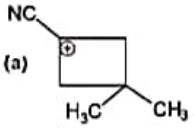
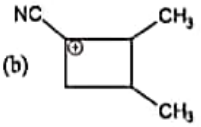
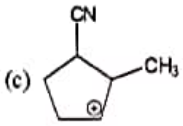
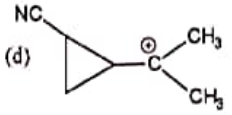
(a) III > II > I (b) III > I > II (c) II > I > III (d) I > II > III

29. Non planar cation is:

(I) $\overset{\oplus}{N}H_4$ (II) $\overset{\oplus}{C}H_3$ (III) $CH_3\overset{\oplus}{C}O$ (IV) $(CH_3)_3\overset{\oplus}{C}SbF_6^{\ominus}$

30. The given carbocation rearranges into:



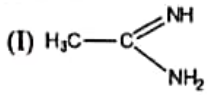
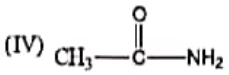
(a)  (b)  (c)  (d) 

31. Which of the following is not arranged in decreasing Ka order?

(a) $CH_4 > NH_3 > H_2O > HF$ (b) $CH_3OH > CH_3NH > CH_3\text{-}F > CH_3\text{-}CH_3$

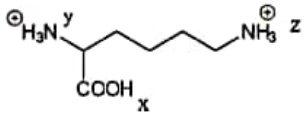
(c) HI > HBr > HCl > HF (d) $PhOH > H_2O > C_2H_5OH > CH_3\text{-}C\equiv CH$

32. Write the basicity order of the following:

(I)  (II) $CH_3\text{—}CH_2\text{—}NH_2$ (III) $(CH_3)NH$ (IV) 

(a) II > I > III > IV (b) I > III > II > IV (c) III > I > II > IV (d) I > II > III > IV

33. What is the acidity order of x, y and z?



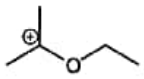
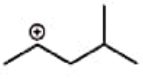
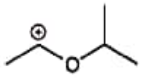
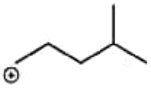
(a) x > y > z (b) x > z > y (c) y > z > x (d) z > y > x

34. Which will be least stable resonating structure:

(a) $CH_2 = CH - CH^{\oplus} - CH^{-} - O - CH_3$ (b) $CH_2^{-} = CH^{\oplus} - CH = CH - OCH_3$

(c) $CH_2^{-} - CH = CH - CH = O^{\oplus} - CH_3$ (d) $CH_2 = CH - CH^{-} - CH = O^{\oplus} - CH_3$

35. The correct stability order for the following species is:

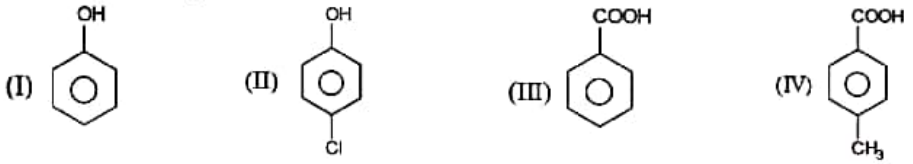
(a)  (b)  (c)  (d)  (a)

II > IV > I > III (b) I > II > III > IV (c) II > I > IV > III (d) I > III > II > IV

36. The correct stability order of the following resonating structure is:

(I) $CH_2 = N^{\oplus} = N^{-}$ (II) $CH_2^{\oplus} - N = N^{-}$ (III) $CH_2^{-} - N^{\oplus} \equiv N$ (IV) $CH_2^{-} - N = N^{\ominus}$

37. The correct acidity order of the following is:



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

38. Among the following compounds, the most acidic is:

(a) P-nitrophenol (b) P-hydroxybenzoic acid (c) o-hydroxybenzoic (d) P-toluic acid

39. The correct order of increasing basic nature for the bases NH_3, CH_3NH_2 and $(CH_3)_2NH$ is:

(a) $CH_3NH_2 < NH_3 < (CH_3)_2NH$ (b) $(CH_3)_2NH < NH_3 < CH_3NH_2$

(c) $NH_3 < CH_3NH_2 < (CH_3)_3NH$ (d) $CH_3NH_2 < (CH_3)_2NH < NH_3$

40. Consider the acidity of the carboxylic acids:

(i) PhCOOH (ii) o-$NO_2C_6H_4COOH$ (iii) P-$NO_2C_6H_4COOH$ (iv) m-$NO_2C_6H_4COOH$

(a) I > II > III > IV (b) II > IV > III > I (c) II > IV > I > III (d) II > III > IV > I

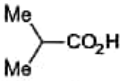
41. Among the following acids, which has the lowest pKa value?

(a) CH_3CH_2COOH (b) $(CH_3)_2CH$-COOH (c) HCOOH (d) CH_3COOH

42. Among the following, which is the most basic compound?

(a) P-nitroaniline (b) Acetanilide (c) Aniline (d) Benzylamine

43. The correct order of increasing acid strength of the following compound is:

(a) CH_3CO_2H (b) $MeOCH_2CO_2H$ (c) CF_3CO_2H (d) 

(A) d < a < c < b (B) d < a < b < c (C) a < d < c < b (D) b < d < a < c

44. Arrange the Carbanions, $(CH_3)_3C^-$, CCl_3^-, $(CH_3)_2CH^-$, $C_6H_5CH_2^-$, in the order of their decreasing stability:

(a) $(CH_3)_2CH^- > CCl_3^- > C_6H_5CH_2^- > (CH_3)_3C^-$ (b) $CCl_3^- > C_6H_5CH_2^- > (CH_3)_2CH^- > (CH_3)_3C^-$

(c) $(CH_3)_3C^- > (CH_3)_2CH^- > C_6H_5CH_2^- > CCl_3^-$ (d) $C_6H_5CH_2^- > CCl_3^- > (CH_3)_3C^- > (CH_3)_2CH^-$

45. The correct order of increasing basicity of the given conjugate bases (R=Carbanion) is:

(a) $RCOO^- < HC\equiv C^- < R^- < NH_2^-$ (b) $R^- < CH\equiv C^- < RCOO^- < NH_2^-$

(c) $RCOO^- < NH_2^- < CH\equiv C^- < R^-$ (d) $RCOO^- < HC\equiv C^- < NH_2^- < R^-$

46. The strongest acid amongst the following compound is:

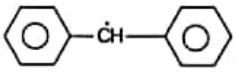
(a) CH_3COOH (b) HCOOH (c) $CH_3CH_2CH(Cl)COOH$ (d) $ClCH_2CH_2CH_2COOH$

47. The correct order of acid strength of the following compound is:

(A) Phenol (B) P-Cresol (C) m-nitrophenol (D) P-nitrophenol

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

48. Arrange the following radicals in decreasing order of their stability:

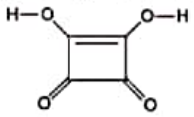
(I) $\dot{C}H_3$ (II) $H_3C-\dot{C}H_2$ (III)  (IV) 

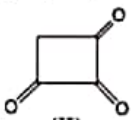
(a) IV > I > III > II (b) IV > III > II > I (c) I > II > III > IV (d) IV > III > I > II

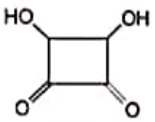
49. Which does not contain conjugate system?

(a) CH_2=CH-Cl (b) CH_2=CHCHO (c) $CH_3CH=CH_2$ (d) 

50. The correct pKa order of the following acid is:


(I)


(II)


(III)

(a) I > II > III (b) I > III > II (c) III > II > I (d) III > I > II

ANSWER KEY

1. b	2. a	3.c>b>a>d	4.a>d>c>b	5. b	6. b	7. a	8. c	9. b	10. a
11. d	12. d	13. a	14. b	15. b	16. a	17. c	18. b	19. a	20. b
21. c	22. c	23. d	24. a	25. a	26. a	27. d	28.	29. a	30. d
31. a	32. b	33. a	34. a	35. d	36. b	37. a	38.	39.	40. d
41. c	42. d	43. b	44. b	45. d	46. c	47. a	48. b	49. c	50. c