

ORGANIC CHEMISTRY

ENTHUSIAST | LEADER | ACHIEVER



EXERCISE


Reaction Mechanism-I

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions)
Build Up Your Understanding
ATTACKING REAGENT

1. Which of the following species is an electrophile
 (1) RNH_2 (2) SO_3
 (3) NO_3^\ominus (4) ROH
2. Which of the following acts as a nucleophile?
 (1) NO_2^\oplus (2) $:\text{CCl}_2$
 (3) NH_2^\ominus (4) $\cdot\text{CH}_3$

GC0001
GC0002
REACTION INTERMEDIATES

3. Which of the following contains only three pair of electrons :
 (1) Carbanion (2) Carbocation
 (3) Carbon free radical (4) None
4. Carbanion is a :-
 (1) Base
 (2) Nucleophile
 (3) Both the above
 (4) None
5. In which structure carbon does not act as a electrophile.
 (1) $\text{CH}_3\text{—CH}_2\text{—Cl}$
 (2) $\text{CH}_3\text{—CO—CH}_3$
 (3) 
 (4) $\text{CH}_3\text{—CN}$

GC0003
GC0004
GC0160

6. Wrong statement regarding methyl carbonium ion (CH_3^\oplus).
 (1) It is sp^2 hybridised
 (2) Vacant orbital is sp^2 hybridised
 (3) Vacant orbital is perpendicular to molecular planar and in pure p-orbital
 (4) It is electrophile with sextet of electron

GC0161
I-EFFECT

7. CH_3^\ominus is less stable than :-
 (1) $\text{CH}_3\text{—CH}_2^\ominus$
 (2) $\text{CH}_3\text{—}\overset{\ominus}{\text{C}}\text{H—CH}_3$
 (3) $\overset{\ominus}{\text{C}}\text{H}_2\text{—NO}_2$
 (4) $\text{CH}_3\text{—}\overset{\ominus}{\text{C}}\text{H—C}_2\text{H}_5$
8. Decreasing order of -I effect of the triad $[\text{—NO}_2, \text{—}\overset{\oplus}{\text{N}}\text{H}_3, \text{—CN}]$ is :-
 (1) $\text{—}\overset{\oplus}{\text{N}}\text{H}_3 > \text{—NO}_2 > \text{—CN}$
 (2) $\text{—}\overset{\oplus}{\text{N}}\text{H}_3 > \text{—CN} > \text{NO}_2$
 (3) $\text{—CN} > \text{—NO}_2 > \text{—}\overset{\oplus}{\text{N}}\text{H}_3$
 (4) $\text{—NO}_2 > \text{—CN} > \text{—}\overset{\oplus}{\text{N}}\text{H}_3$
9. Most stable carbanion is :-
 (1) $\text{HC}\equiv\overset{\ominus}{\text{C}}$ (2) $\text{H}_2\text{C}=\overset{\ominus}{\text{C}}\text{H}$
 (3) $\text{CH}_3\text{—}\overset{\ominus}{\text{C}}(\text{CH}_3)_2$ (4) $\text{CH}_3\text{—}\overset{\ominus}{\text{C}}(\text{CH}_3)=\text{CH}$
10. The correct order of stability of given carbanions will be :-
 $\text{CH}_3\text{—}\overset{\ominus}{\text{C}}\text{H}_2$ (I) $\text{CH}_2=\overset{\ominus}{\text{C}}\text{H}$ (II) $\text{HC}\equiv\overset{\ominus}{\text{C}}$ (III)
 (1) $\text{I} > \text{II} > \text{III}$ (2) $\text{III} > \text{II} > \text{I}$
 (3) $\text{I} > \text{III} > \text{II}$ (4) $\text{II} > \text{I} > \text{III}$
11. Which is most basic among the following :-
 (1) CH_3NH_2 (2) $\text{CH}_3\text{CH}_2\text{NH}_2$
 (3) NH_3 (4) $(\text{CH}_3)_2\text{CHNH}_2$

GC0005
GC0006
GC0007
GC0008
GC0009

12. Which of the following has maximum pK_a :-

- (1) CH_2FCOOH (2) CH_2ClCOOH
(3) CH_3COOH (4) HCOOH

GC0010

13. Which of the following is most acidic ?

- (1) Methoxy acetic acid (2) Acetic acid
(3) Chloro acetic acid (4) Trifluoroacetic acid

GC0011

14. Which of the following show + I-effect :-

- (1) $-\text{OH}$ (2) $-\text{OCH}_3$ (3) $-\text{CH}_3$ (4) $-\text{Cl}$

GC0012

15. Among the following the most easily ionised in water is:

- (1) $\text{CH}_3\text{CH}_2\text{CHClCOOH}$
(2) $\text{CH}_3\text{CH}_2\text{CCl}_2\text{COOH}$
(3) $\text{CH}_3\text{CHClCH}_2\text{COOH}$
(4) $\text{CH}_2\text{ClCH}_2\text{CH}_2\text{COOH}$

GC0013

16. The strongest acid amongst the following compounds is ?

- (1) $\text{CH}_3\text{CH}_2\text{CH}(\text{Cl})\text{CO}_2\text{H}$
(2) $\text{ClCH}_2\text{CH}_2\text{CH}_2\text{COOH}$
(3) CH_3COOH
(4) HCOOH

GC0014

17. Which of the following acids is stronger than acetic acid :-

- (1) Propanoic acid (2) Formic acid
(3) Butyric acid (4) Iso butyric acid

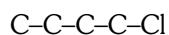
GC0015

18. Which of the following acids have the lowest pK_a value :-

- (1) $\text{CH}_3-\overset{\text{Cl}}{\underset{|}{\text{CH}}}-\text{COOH}$
(2) $\text{Cl}-\text{CH}_2-\text{CH}_2-\text{COOH}$
(3) CCl_3COOH
(4) CHCl_2COOH

GC0016

19. In which σ bond, the inductive effect is minimum?



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

- (1) a (2) b (3) c (4) d

GC0162

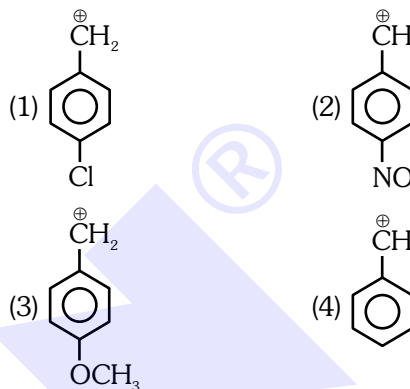
20. Arrange the following in the acidic strength order :

- (a) $\text{NO}_2\text{CH}_2\text{COOH}$ (b) $\text{NC}-\text{CH}_2\text{COOH}$
(c) CCl_3COOH (d) CHCl_2COOH
(1) $a > b > c > d$ (2) $c > d > a > b$
(3) $b > a > d > c$ (4) $c > a > b > d$

GC0163

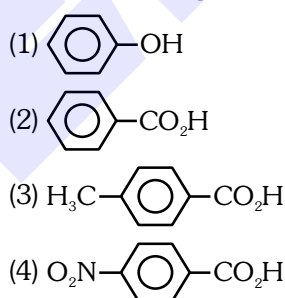
R- OR M-EFFECT

21. Most stable carbocation is :-



GC0017

22. Most acidic compound is :-



GC0018

23. Which resonating structure of vinyl chloride is least stable :-

- (1) $\text{CH}_2=\text{CH}-\ddot{\text{Cl}}:$
(2) $\overset{\ominus}{\text{C}}\text{H}_2-\text{CH}=\overset{\oplus}{\text{Cl}}$
(3) $\overset{\ominus}{\text{C}}\text{H}_2-\overset{\oplus}{\text{C}}\text{H}-\text{Cl}$
(4) All have equal stability

GC0019

24. The stabilization due to resonance is maximum in



GC0020

25. In which of the following compounds carbon-chlorine bond distance is minimum :-

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

GC0021

26. Consider the following carbocations

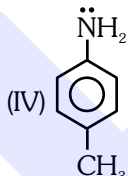
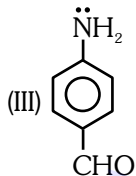
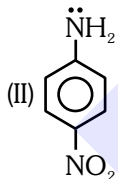
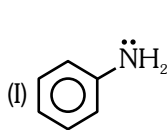
- (a) $\text{CH}_3\text{O-C}_6\text{H}_4\text{-CH}_2^+$ (b) $\text{C}_6\text{H}_5\text{-CH}_2^+$
 (c) $\text{CH}_3\text{-C}_6\text{H}_4\text{-CH}_2^+$ (d) $\text{CH}_3\text{-CH}_2^+$

The relative stabilities of these carbocations are such that :-

- (1) $d < b < c < a$
- (2) $b < d < c < a$
- (3) $d < b < a < c$
- (4) $b < d < a < c$

GC0022

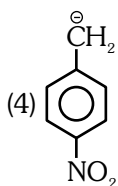
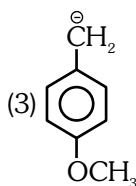
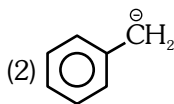
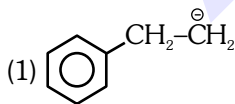
27. Arrange in decreasing order of basic strength :



- (1) $\text{I} > \text{II} > \text{III} > \text{IV}$
- (2) $\text{II} > \text{III} > \text{I} > \text{IV}$
- (3) $\text{IV} > \text{I} > \text{III} > \text{II}$
- (4) $\text{IV} > \text{I} > \text{II} > \text{III}$

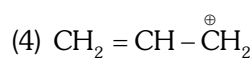
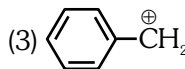
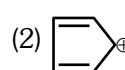
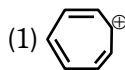
GC0024

28. The most stable carbanion among the following is



GC0025

29. Which of the following is most stable carbocation:-



GC0026

30. The oxygen atom in phenol -

- (1) exhibits only inductive effect
- (2) exhibits only resonance effect
- (3) has more dominating resonance effect than inductive effect
- (4) has more dominating inductive effect than resonance effect

GC0027

31. Which is incorrect stability order :-

- (1) $\text{CH}_2=\text{CH-CH}_2^+ > \text{CH}_3\text{-CH}^+-\text{CH}_3$
- (2) $\text{CH}_2=\text{CH}^+ < \text{CH}_3\text{-CH}_2^+$
- (3) $\text{CH}_3\text{-CH}_2\text{-CH}_2^+ > \text{CH}_3\text{-CH}^+-\text{CH}_3$
- (4) $\text{CH}_3\text{-CH}_2^+ > \text{CH}_3\text{O-CH}_2^+$

GC0028

32. Mesomeric effect is due to :-

- (1) Delocalization of σ e^-
- (2) Delocalization of π e^-
- (3) Migration of H - atom
- (4) Migration of proton

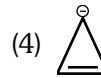
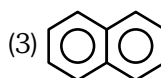
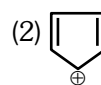
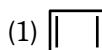
GC0029

33. Among the following the pK_a is minimum for :-

- (1) $\text{C}_6\text{H}_5\text{OH}$
- (2) HCOOH
- (3) $\text{C}_2\text{H}_5\text{OH}$
- (4) $\text{CH}_3\text{C}\equiv\text{CH}$

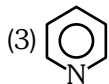
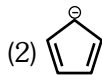
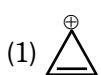
GC0031

34. Among the following the aromatic compound is-



GC0032

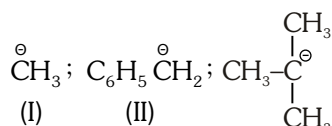
35. Which is aromatic compound among the following



(4) All the above

GC0033

36. Select the correct option for stability of following carbanions :



(I)

(II)

(III)

(1) I > II > III

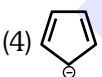
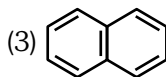
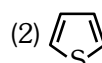
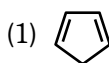
(2) II > I > III

(3) III > II > I

(4) II > III > I

GC0034

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



GC0036

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

A. Acetylene

B. Ammonia

C. Phenol

D. Carbonic acid

(1) C > B > A > D

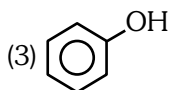
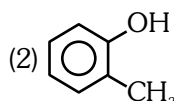
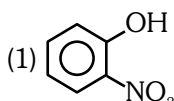
(2) D > C > A > B

(3) B > D > A > C

(4) A > B > D > C

GC0409

39. Which one of the following compounds is most acidic:-



(4) $\text{ClCH}_2\text{CH}_2\text{OH}$

GC0038

40. Which of the following is most acidic :-

(1) phenol

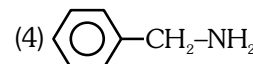
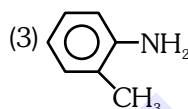
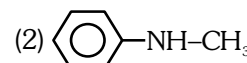
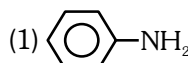
(2) benzyl alcohol

(3) m-chloro phenol

(4) cyclohexanol

GC0039

41. Which of the following is the strongest base :-



GC0040

42. The least carbon-chlorine bond length present in-

(1) Methyl chloride

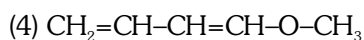
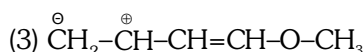
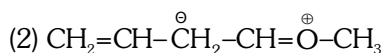
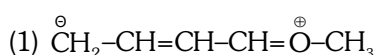
(2) Allyl chloride

(3) Ethyl chloride

(4) Vinyl chloride

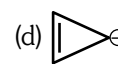
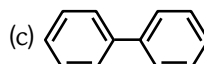
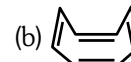
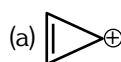
GC0410

43. Which one of the following resonating structures of 1-methoxy-1,3-butadiene is least stable :-



GC0046

44. Four structures are given in options (a) to (d). Examine them and select the aromatic structures.



(1) a and d

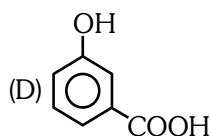
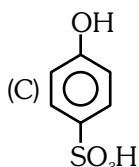
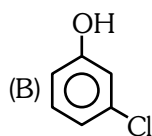
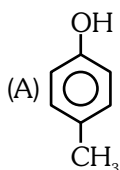
(2) b and c

(3) a and b

(4) a and c

GC0047

45. Order of acidic strength of the following compound will be :



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

GC0411

46. Phenol is less acidic than

- (1) Ethanol
- (2) o-Nitrophenol
- (3) o-Methylphenol
- (4) o-Methoxyphenol

GC0049

47. Temporary electron displacement effect in a molecule that occurs when a reagent approaches to attack if, is called as -

- (1) Inductive effect
- (2) Resonance effect
- (3) Mesomeric effect
- (4) Polarisability effect

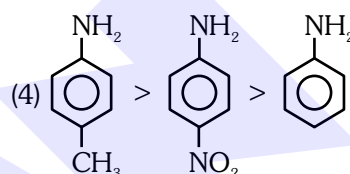
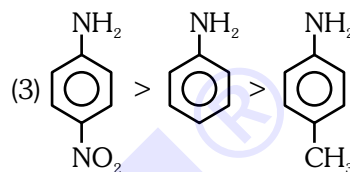
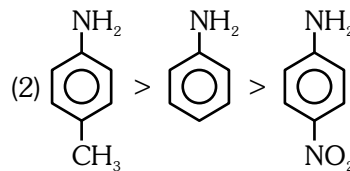
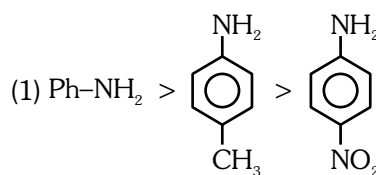
GC0164

48. Which statement is incorrect.

- (1) The energy of actual structure of the molecule is lower than that of any canonical structure
- (2) The energy difference between actual structure and least energy resonance structure is called as resonance energy
- (3) More number of resonating structure, more resonance
- (4) In equivalent resonance structure of acetate ion of C=O bond length are unequal

GC0165

49. Decreasing order of basic strength is :-



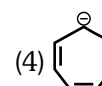
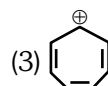
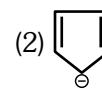
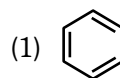
GC0166

50. Phenol are ortho para directing due to :

- (1) —OH groups shows +M & -I
- (2) —OH does not show hinderance
- (3) The resonance effect increases the e^- density at o & p position
- (4) The I-effect decreases the e^- density at meta position

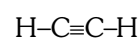
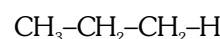
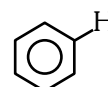
GC0167

51. Which of the following is not aromatic ?



GC0168

52. Arrange the following in their acidic strength order



(a)

(b)

(c)

- (1) $a > b > c$
- (3) $b > a > c$

- (2) $c > a > b$
- (4) $a > c > b$

GC0169

HYPERCONJUGATION

53. Which of the following compounds exhibits hyperconjugation :

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

GC0051

54. Which of the following is least stable :-

- (1) $\text{CH}_3 - \overset{\oplus}{\text{CH}} - \text{CH}_3$ (2) $\text{CH}_3 - \text{CH}_2 - \overset{\oplus}{\text{CH}_2}$
(3) $\text{CH}_3 - \overset{\oplus}{\text{C}}(\text{CH}_3)_2$ (4) $\text{CH}_3 - \overset{\oplus}{\text{C}}(\text{CH}_3) - \text{CH}(\text{C}_6\text{H}_5)$

GC0052

55. Which of the following is most stable alkene :-

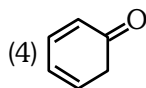
- (1) $\text{H}_2\text{C}=\text{CH}_2$
(2) $\text{CH}_3\text{CH}=\text{CH}_2$
(3) $\text{H}_5\text{C}_2\text{CH}=\text{CH}_2$
(4) $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}=\text{CH}_2$

GC0053

TAUTOMERISM

56. Which of the following will lead to maximum enolisation :-

- (1) $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$
(2) $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_2 - \overset{\text{O}}{\parallel} \text{C} - \text{H}$
(3) $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{CH}(\text{Br}) - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$



GC0056

57. Urea $\left[\text{H}_2\text{N} - \overset{\text{O}}{\parallel} \text{C} - \text{NH}_2 \right]$ molecule exhibits

(isomerism):-

- (1) Chain (2) Position
(3) Geometrical (4) Tautomerism

GC0057

58. Tautomerism is not observed in :-

- (1) $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$ (2) $\text{Ph} - \text{CH}=\text{CH} - \text{OH}$
(3) $\text{CH}_3 - \text{NO}_2$ (4) $\text{CH}_3 - \overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}} - \text{CHO}$

GC0058

EXERCISE-I (Conceptual Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	2	3	3	2	3	1	1	2	4	3	4	3	2
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	1	2	3	4	2	3	4	3	4	3	1	3	4	1	3
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	4	2	2	3	4	2	1	2	1	3	4	4	3	4	1
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58		
Ans.	2	4	4	2	3	4	2	4	2	2	4	4	4		

EXERCISE-II (Previous Year Questions)
AIPMT/NEET
AIPMT 2006

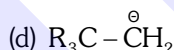
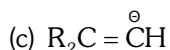
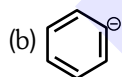
1. Which of the following is more basic than aniline
 (1) Diphenyl amine (2) Triphenyl amine
 (3) p-nitro aniline (4) Benzyl amine

GC0061
AIPMT 2007

2. Which of the following presents the correct order of the acidity in the given compounds :
 (1) $\text{FCH}_2\text{COOH} > \text{CH}_3\text{COOH} > \text{BrCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$
 (2) $\text{BrCH}_2\text{COOH} > \text{ClCH}_2\text{COOH} > \text{FCH}_2\text{COOH} > \text{CH}_3\text{COOH}$
 (3) $\text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH} > \text{BrCH}_2\text{COOH} > \text{CH}_3\text{COOH}$
 (4) $\text{CH}_3\text{COOH} > \text{BrCH}_2\text{COOH} > \text{ClCH}_2\text{COOH} > \text{FCH}_2\text{COOH}$

GC0062
AIPMT 2008

3. The stability of carbanions in the following:-

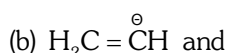
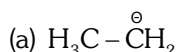


is in the order of:-

- (1) (d) > (b) > (c) > (a)
 (2) (a) > (c) > (b) > (d)
 (3) (a) > (b) > (c) > (d)
 (4) (b) > (c) > (d) > (a)

GC0063

4. Basic strength of:-

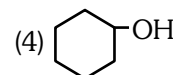
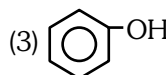
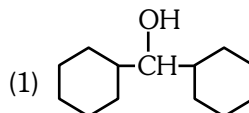


is in the order of:-

- (1) (a) > (c) > (b) (2) (a) > (b) > (c)
 (3) (b) > (a) > (c) (4) (c) > (b) > (a)

GC0064
AIPMT 2010

5. Which one of the following compounds has the most acidic nature ?


GC0065

6. Given are cyclohexanol (I), acetic acid (II), 2, 4, 6-trinitrophenol (III) and phenol (IV). In these the order of decreasing acidic character will be :-

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

GC0066
AIPMT Mains-2010

7. Among the following four compounds :-

- (a) phenol
 (b) methyl phenol
 (c) metanitrophenol
 (d) paranitrophenol,

The acidity order is :

- (1) c > d > a > b (2) c > d > c > b
 (3) b > a > c > d (4) d > c > a > b

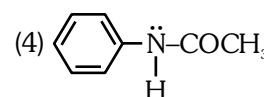
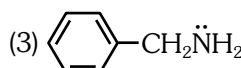
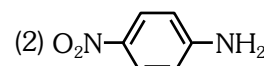
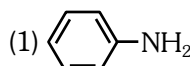
GC0067

8. Which of the following species is not electrophilic in nature :-

- (1) BH_3 (2) H_3O^+ (3) NO_2^+ (4) Cl^+

GC0068
AIPMT Mains-2011

9. Which of the following compounds is most basic ?


GC0070

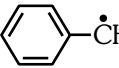
AIPMT Pre.-2012

10. The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid (B), acetic acid (C) and formic acid (D) is:

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

GC0073

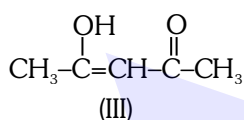
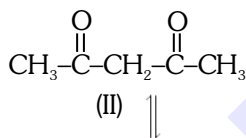
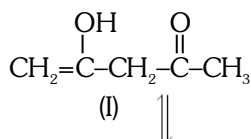
NEET-UG 2013

11. The radical,  is aromatic because it has :-

- (1) 6p-orbitals and 7 unpaired electrons
 (2) 6p-orbitals and 6 unpaired electrons
 (3) 7p-orbitals and 6 unpaired electrons
 (4) 7p-orbitals and 7 unpaired electrons

GC0075

12. The order of stability of the following tautomeric compounds is :-

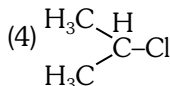
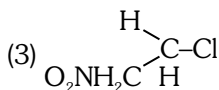
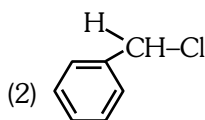
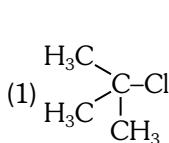


- (1) $II > III > I$ (2) $I > II > III$
 (3) $III > II > I$ (4) $II > I > III$

GC0076

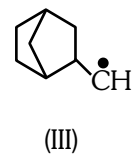
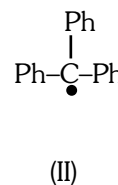
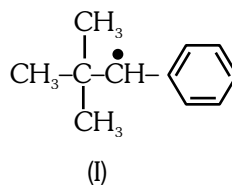
AIPMT 2015

13. In which of the following compounds, C-Cl bond ionisation shall give most stable carbonium ion?



GC0080

14. Consider the following compounds

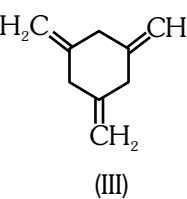
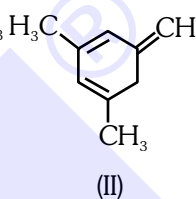
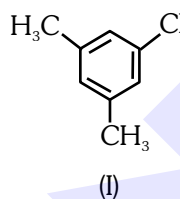


Hyperconjugation occurs in :-

- (1) II only (2) III only (3) I and III (4) I only

GC0081

15. Given :-

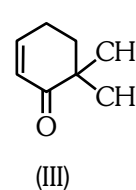
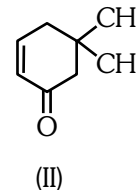
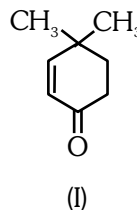


The enthalpy of the hydrogenation of these compounds will be in the order as :-

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

GC0082

16. Which of the given compounds can exhibit tautomerism?



- (1) I and III (2) II and III
 (3) I, II and III (4) I and II

GC0083

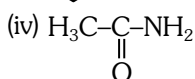
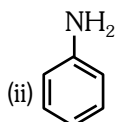
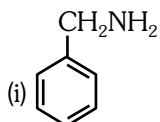
Re-AIPMT 2015

17. Which of the following statements is not correct for a nucleophile ?

- (1) Nucleophiles attack low e^- density sites
 (2) Nucleophiles are not electron seeking
 (3) Nucleophile is a Lewis acid
 (4) Ammonia is a nucleophile

GC0085

18. Correct order of K_b is



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

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

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

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

GC0086

NEET-I 2016

19. The correct statement regarding a carbonyl compound with a hydrogen atom on its alpha carbon, is :-

(1) a carbonyl compound with a hydrogen atom on its alpha-carbon never equilibrates with its corresponding enol.

(2) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as aldehyde-ketone equilibration.

(3) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as carbonylation.

(4) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol tautomerism.

GC0089

20. The **correct** statement regarding the basicity of arylamines is :-

(1) Arylamines are generally less basic than alkylamines because the nitrogen lone-pair electrons are delocalized by interaction with the aromatic ring π electron system.

(2) Arylamines are generally more basic than alkylamines because the nitrogen lone-pair electrons are not delocalized by interaction with the aromatic ring π electron system.

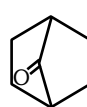
(3) Arylamines are generally more basic than alkylamines because of aryl group.

(4) Arylamines are generally more basic than alkylamines, because the nitrogen atom in arylamines is sp^2 -hybridized.

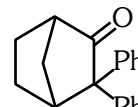
GC0090

NEET-II 2016

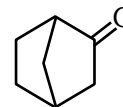
21. Which among the given molecules can exhibit tautomerism ?



I



II



III

(1) Both I and II

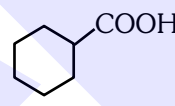
(2) Both II and III

(3) III only

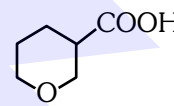
(4) Both I and III

GC0092

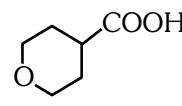
22. The **correct** order of strengths of the carboxylic acids



I



II



III

is

(1) $\text{III} > \text{II} > \text{I}$

(2) $\text{II} > \text{I} > \text{III}$

(3) $\text{I} > \text{II} > \text{III}$

(4) $\text{II} > \text{III} > \text{I}$

GC0093

NEET(UG) 2017

23. Which one is the correct order of acidity ?

(1) $\text{CH}\equiv\text{CH} > \text{CH}_3\text{-C}\equiv\text{CH} > \text{CH}_2=\text{CH}_2 > \text{CH}_3\text{-CH}_3$

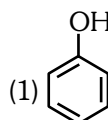
(2) $\text{CH}\equiv\text{CH} > \text{CH}_2=\text{CH}_2 > \text{CH}_3\text{-C}\equiv\text{CH} > \text{CH}_3\text{-CH}_3$

(3) $\text{CH}_3\text{-CH}_3 > \text{CH}_2=\text{CH}_2 > \text{CH}_3\text{-C}\equiv\text{CH} > \text{CH}\equiv\text{CH}$

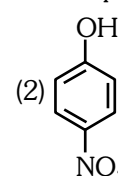
(4) $\text{CH}_2=\text{CH}_2 > \text{CH}_3\text{-CH}=\text{CH}_2 > \text{CH}_3\text{-C}\equiv\text{CH} > \text{CH}\equiv\text{CH}$

GC0094

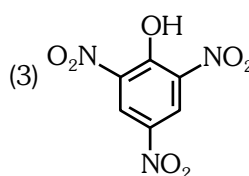
24. Which one is the most acidic compound ?



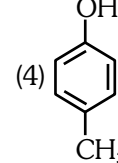
(1)



(2)



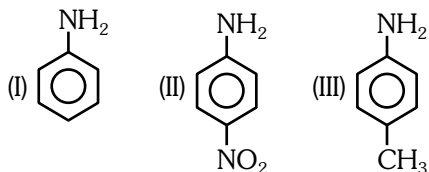
(3)



(4)

GC0095

25. The **correct** increasing order of basic strength for the following compounds is :



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

GC0096

26. The **correct** statement regarding electrophile is:-

- (1) Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from another electrophile
- (2) Electrophiles are generally neutral species and can form a bond by accepting a pair of electrons from a nucleophile
- (3) Electrophile can be either neutral or positively charged species and can form a bond by accepting a pair of electrons from a nucleophile
- (4) Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from a nucleophile

GC0097

NEET(UG) 2018

27. Which of the following is correct with respect to -I effect of the substituents ? (R = alkyl)

- (1) $-NH_2 < -OR < -F$
- (2) $-NR_2 < -OR < -F$
- (3) $-NH_2 > -OR > -F$
- (4) $-NR_2 > -OR > -F$

GC0101

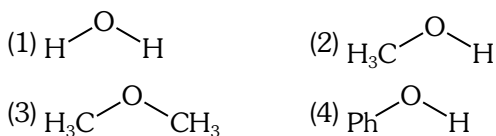
NEET(UG) 2019

28. The **correct** order of the basic strength of methyl substituted amines in aqueous solution is:-

- (1) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$
- (2) $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$
- (3) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2$
- (4) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N$

GC0170

29. The compound that is most difficult to protonate is:-



GC0171

NEET(UG) 2019 (ODISHA)

30. The most stable carbocation, among the following is :-

- (1) $(CH_3)_3C - \overset{\oplus}{C}H - CH_3$
- (2) $CH_3 - CH_2 - \overset{\oplus}{C}H - CH_2 - CH_3$
- (3) $CH_3 - \overset{\oplus}{C}H - CH_2 - CH_2 - CH_3$
- (4) $CH_3 - CH_2 - \overset{\oplus}{C}H_2$

GC0172

NEET(UG) 2020

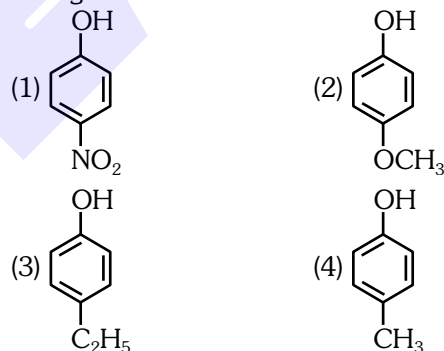
31. A tertiary butyl carbocation is more stable than a secondary butyl carbocation because of which of the following ?

- (1) Hyperconjugation
- (2) -I effect of $-CH_3$ groups
- (3) +R effect of $-CH_3$ groups
- (4) -R effect of $-CH_3$ groups

GC0412

NEET(UG) 2020 (COVID-19)

32. Which of the following substituted phenols is the strongest acid?



GC0413

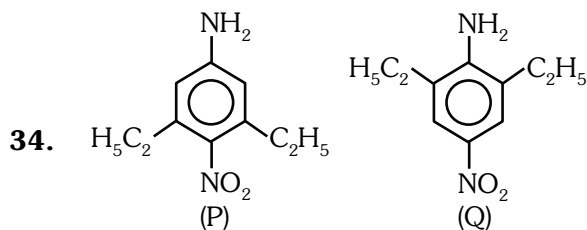
NEET (UG) 2021(Paper-2)

33. Which among the following statements are correct?

- (a) $\ddot{C}F_2$ is more stable than $\ddot{C}Cl_2$
- (b) $\ddot{C}Cl_2$ is more stable than $\ddot{C}Br_2$
- (c) Singlet $\ddot{C}H_2$ is more stable than triplet $\dot{C}H_2$
- (d) Singlet $\ddot{C}H_2$ has planar geometry

- (1) (a), (b), (d) (2) (b), (c), (d)
- (3) (a), (b), (c) (4) only (a)

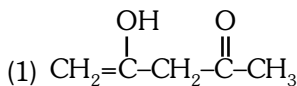
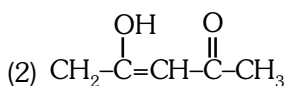
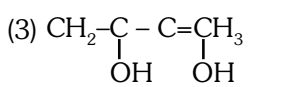
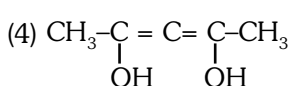
GC0425



- (1) -NO₂ in (P) has weaker inductive effect
- (2) -NO₂ in (P) has stronger -M group
- (3) -NO₂ in (Q) has stronger -M group
- (4) -NO₂ in (Q) has weaker -M group

GC0426

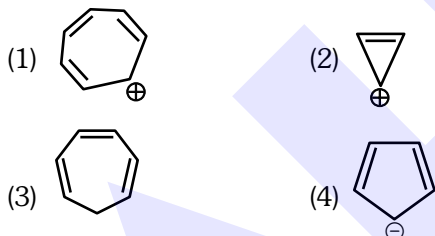
35. The most enolic form of 2,4-pentanedione is

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

GC0427

NEET(UG) 2022

36. Which compound amongst the following is not an aromatic compound ?



GC0428

37. Given below are two statements:

Statement I:

The acidic strength of monosubstituted nitrophenol is higher than phenol because of electron withdrawing nitro group.

Statement II:

o-nitrophenol, m-nitrophenol and p-nitrophenol will have same acidic strength as they have one nitro group attached to the phenolic ring.

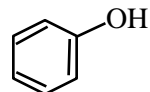
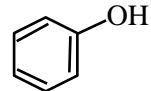
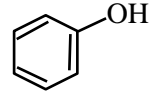
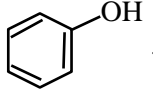
In the light of the above statements, choose the most appropriate answer from the options given below:

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

GC0429

NEET(UG) 2022 (OVERSEAS)

38. The correct order of acid strength of the following molecules is

- (1) $C_2H_5OH < H_2O < CH_3COOH <$ 
- (2) $C_2H_5OH < H_2O <$  $< CH_3COOH$
- (3) $H_2O < C_2H_5OH <$  $< CH_3COOH$
- (4) $H_2O <$  $< C_2H_5OH < CH_3COOH$

GC0430

Re-NEET(UG) 2022

39. Which of the following is the most stable carbocation?



GC0431

EXERCISE-II (Previous Year Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	3	3	2	3	2	4	2	3	3	2	3	2	2	1
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	3	2	4	1	3	4	1	3	3	3	1	1	4	3
Que.	31	32	33	34	35	36	37	38	39						
Ans.	1	1	1	3	2	3	2	2	4						

EXERCISE-III (Analytical Questions)

Master Your Understanding

1. Consider the following statements :-

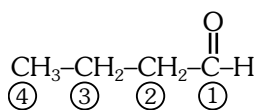
- (a) $\text{CH}_3\text{O}^+\text{CH}_2$ is more stable than $\text{CH}_3\text{C}^+\text{H}_2$
 (b) $\text{Me}_2\text{C}^+\text{H}$ is more stable than $\text{CH}_3\text{CH}_2\text{C}^+\text{H}_2$
 (c) $\text{CH}_2=\text{CH}-\text{C}^+\text{H}_2$ is more stable than $\text{CH}_3\text{CH}_2\text{C}^+\text{H}_2$
 (d) $\text{CH}_2=\text{C}^+\text{H}$ is more stable than $\text{CH}_3\text{C}^+\text{H}_2$

of these statements :-

- (1) a and b are correct
 (2) c and d are correct
 (3) a, b and c are correct
 (4) b, c and d are correct

GC0108

2. Which of the following carbon has most acidic hydrogen.



- (1) C_1-H (2) C_2-H
 (3) C_3-H (4) C_4-H

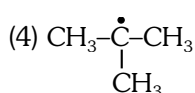
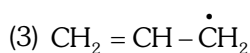
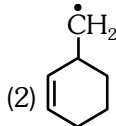
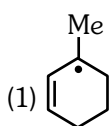
GC0109

3. Hydrogen attached to sp^3 carbon in cyclopentadiene can be easily removed as what :-

- (1) Hydride ion (2) Hydrogen molecule
 (3) Proton (4) Hydrogen atom

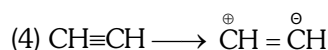
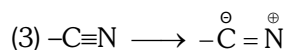
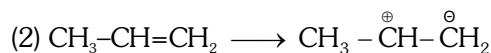
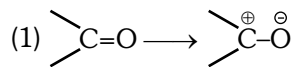
GC0116

4. Which one is most stable free radical :



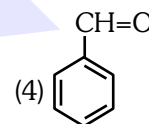
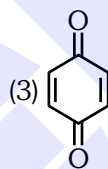
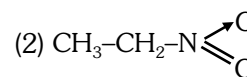
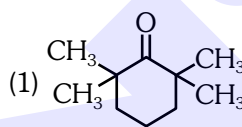
GC0117

5. Which is wrong electromeric effect :



GC0118

6. Tautomerism is exhibited by :-



GC0119

7. Identify the compound that exhibits tautomerism:-

(1) 2-Pentanone

(2) Phenol

(3) 2-Butene

(4) Lactic acid

GC0120

8. Arrange the following in correct order of acidic strength :

(I) CH_3-NO_2

(II) $\text{NO}_2-\text{CH}_2-\text{NO}_2$

(III) $\text{CH}_3-\text{CH}_2-\text{NO}_2$

(IV) $\text{NO}_2-\underset{\text{NO}_2}{\text{CH}}-\text{NO}_2$

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

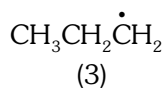
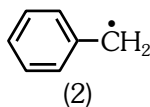
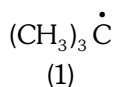
(2) $\text{IV} > \text{II} > \text{III} > \text{I}$

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

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

GC0121

9. The correct order of stability of following carbon free radical is :-



- (1) $1 > 2 > 3 > 4$
 (2) $4 > 3 > 2 > 1$
 (3) $2 > 3 > 1 > 4$
 (4) $2 > 1 > 3 > 4$

GC0122

10. Which of the following is the strongest acid :-

- (1) Carbolic acid
 (2) Carbonic acid
 (3) Picric acid
 (4) Acetic acid

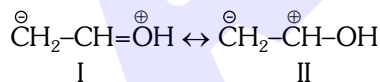
GC0123

11. The correct order of acidic strength is :-

- (1) $\text{CH}_3\text{COOH} < \text{HCN} < \text{H}_2\text{O} < \text{C}_2\text{H}_5\text{OH}$
 (2) $\text{CH}_3\text{COOH} > \text{HCN} > \text{H}_2\text{O} > \text{C}_2\text{H}_5\text{OH}$
 (3) $\text{HCN} > \text{CH}_3\text{COOH} > \text{H}_2\text{O} > \text{C}_2\text{H}_5\text{OH}$
 (4) $\text{CH}_3\text{COOH} > \text{HCN} > \text{C}_2\text{H}_5\text{OH} > \text{H}_2\text{O}$

GC0125

12. The two contributing structure of vinyl alcohol are:

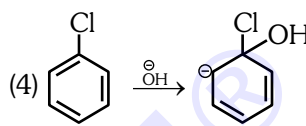
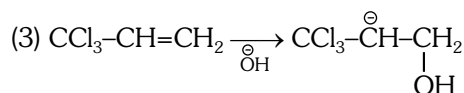
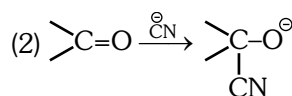
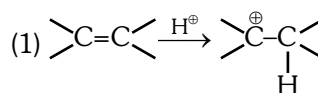


Correct statement is/are :

- (1) I is more stable than II due to complete octet
 (2) II is more stable than I due to less covalent bond
 (3) Both are less stable than $\text{CH}_2=\text{CH}-\text{OH}$ due to polar nature
 (4) 1 and 3 both

GC0173

13. Which is an example of +E effect ?



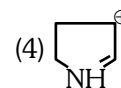
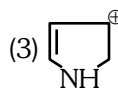
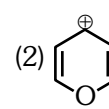
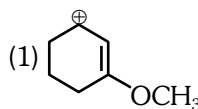
GC0174

14. Hyper conjugation involves delocalisation of except?

- (1) Electrons of C-H bond towards directly attached unsaturated system
 (2) Electrons of C-H bond towards directly attached positively charged carbon
 (3) Electrons of C-H bond towards directly attached having unpaired electron
 (4) Electrons of C-H bond towards directly attached negatively charged carbon

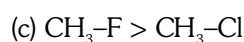
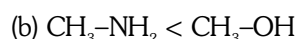
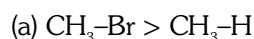
GC0175

15. Which cation have no resonance with lone pair



GC0176

16. Which bond is more polar in following pair



(1) a, c only

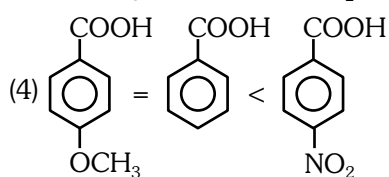
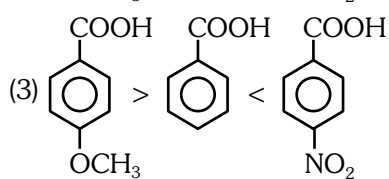
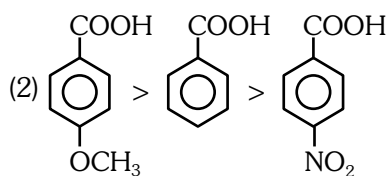
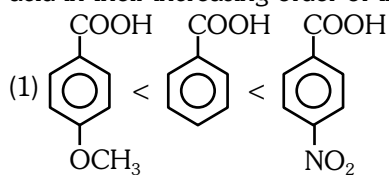
(2) a, b, c

(3) a, b only

(4) b, c only

GC0177

17. Arrange the following derivative of carboxylic acid in their increasing order of their acidity.



GC0178

EXERCISE-III (Analytical Questions)

ANSWER KEY

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