NEET REVISION SERIES

GENERAL ORGANIC CHEMISTRY

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Q-1 - 12775281



In the following compounds The order of basicity is



(A) IV > I > III > II

(B) III > I > IV > II

(C) II > I > III > IV

(D) I > III > II > IV

CORRECT ANSWER: D

SOLUTION:



Thus, protonation is most difficult in IV followed by II,III

and I. The overall order of basicity is

I > III > II > IV.



Q-2 - 12775293

The correct order of basicity of amines in water is:

(A) $(CH_3)_2 NH$ $> (CH_3)_3 N$ $> CH_2NH_2$ **(B)** $CH + 3NH_2$ $> (CH_3)_3 NH$ $> (CH_3)_3 N$ (C) $(CH_3)_3N$ $> (CH_3)_2 NH$ $> (CH_3NH_2)$ (D) $(CH_3)_3N > CH_3NH_2$ $> (CH_3)_2 NH$

CORRECT ANSWER: A

SOLUTION:

Basicity of amines increase with increase in number of

 $-CH_3$ groups (or any group which cause +I effect), due to increase in electron density on N atom. As a rule, th basicity of t-amine should be more than that of samine, but actually it is found to be lesser than s-amines, this is due to stearic hindrance of bulkier alkyl groups, which decreases the availability of line pair of electron on the N atom of the amino group. Hence the correct order of basicity is $(CH_3)_2 NH$

- $> (CH_3)_3 N$
- $> CH_3NH_2$

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

CORRECT ANSWER: B

SOLUTION:

R
$-CH_3$
$-C_2H_5$
-CHMe ₂
$-CMe_3$

Relative basic strength $R_2NH > R - NH_2 > R_3N > NH_3$ $R_2NH > R - NH_2 > NH_3 > R_3N_3$ $R - NH_2 > NH_3 > R_2NH > R_3N$ $NH_{3} > \bar{R} - NH_{2} > \bar{R_{2}}NH > R_{3}N$

Itbr. The

relative basic character of 1 , 2 and 3 amines also

depends upon the nature of the alkyl group.



Q-4 - 12775309

The order of basic strength among the following amines in benzene

solution is

(A) $CH_3CH_2 > (CH_3)_3N$ $> (CH_3)_2 NH$ **(B)** $(CH_3)_2 NH$ $> (CH_3NH_2)$ $> (CH_3)_3 N$ (C) NH_3NH_2 $> (CH_3)_2 NH$ $> (CH_3)_3 N$

 $(CH_3)_3N > CH_3NH_2$ $> (CH_3)_2 NH$

CORRECT ANSWER: B

SOLUTION:

 $egin{array}{c} CH_3 & NH \ 5.4 imes 10^{-4} _2 \ > CH_3 NH_2 \ 4.5 imes 10^{-4} \ > (CH_3)_3 N \ 0.6 imes 10^{-4} \end{array}$

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Q-5 - 12775312

 RNH_2 reacts with $C_6H_5SO_2Cl$ in aqueous KOH to give a clear solution. On acidification a precepitate is obtained which is due to the formation of

(a) R
$$-$$
 N⁺ $-$ SO₂C₆H₅OH



(B)R-N $-SO_2C_6K_5K^+$

(C) $R - NHSO_2C_6H_5$

(D) $C_6H_5SO_2NH_2$

CORRECT ANSWER: C

SOLUTION:

87. (c) $C_6H_5SO_2Cl + RNH_2 \rightarrow RNHSO_2C_6H_5$ <u>KOH</u>

RNKSO₂C₆H₅ soluble in KOH

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Q-6 - 12775330



Select the basic strenght order of following molecules.

(A)
$$p > o >$$
 aniline $> m$

(B) aniline
$$>m>p>o$$

(C) aniline > p > m > o

(D) p > o > m > aniline

CORRECT ANSWER: C

SOLUTION:

 $-CCl_3$ has electron withdrawing effect, so decreases

the electron density on N. The effect is more at p-

position so the order of basic strength is

Aniline > p > m > o



Q-7 - 12774930

Consider the acidity of the carboxylic acids:

(1) PhCOOH (2) $o - NO_2C_6H_4COOH$

(3) $p - NO_2C_6H_4COOH$ (4) $m - NO_2C_6H_4COOH$

Which of the following order is correct?

(A) 2 > 3 > 4 > 1

(B) 2 > 4 > 3 > 1

(C) 2 > 4 > 1 > 3

(D) 1 > 2 > 3 > 4

SOLUTION:

This is correct order for acidic nature (ortho effect).

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Q-8 - 12774944

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)

CORRECT ANSWER: A

SOLUTION:

Carboxylic acid is stronger acid than phenol.The presence of electron withdrawing group (e.g. CI) increases acidic strength, while present of electron donating (e.g. CH_3) decreases acidic strength.

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Q-9 - 12662446



The major product [P] is

SOLUTION:

CORRECT ANSWER: B



(C)



(B)





Due to lesser steric hindrane of -OH than of $-NO_2$.



Arrange the following compounds in the order of decreasing acidity.







(A) II > IV > I > III

?

(B) I > II > III > IV

(C) III > I > II > IV

(D) IV > III > I > II

CORRECT ANSWER: C

SOLUTION:



Electron releasing group decreases while electorn withdrawing group increases acidic strength by destabilizing and stabilizing the phenoxide ion formed respectively.

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Q-11 - 20595977

Which of the following belongs to +I group ?

 $(\mathsf{A}) - OH$

- $(\mathsf{B}) OCH_3$
- (C) COOH
- $(\mathsf{D})-CH_3$

CORRECT ANSWER: D

SOLUTION:

 $-CH_3$ is electron donating group.

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Q-12 - 20595978

Which of following is the strongest -I group ?

(A) $-N^+(CH_3)_3$

(B) $-^+ NH_3$

(C)
$$-^+ S(CH_3)_2$$

 $(\mathsf{D})-F$

CORRECT ANSWER: A

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Q-13 - 20595980

Carbocations may be stabilised by :

(A) π -bonds only at phenylic position

(B) π -bonds only at phenylic position

(C) π -bonds at allylic and benzylic position also

(D) -I effect

CORRECT ANSWER: C

SOLUTION:

Allylic and benzylic are stabuilised by resonance.



Q-14 - 20595984

The species $CH_3 \overset{+}{C}HCH_3$ is less stable than :

(A)
$$(CH_3)_3 C^+$$

(B) $CH_3 CH_2 CH_2^+$
(C) $CH_3 CH_2$

(D) CH_3^+

CORRECT ANSWER: A

SOLUTION:

group.

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Q-15 - 20595986

Arrange in the order of decreasing K_a .

 $F-CH_2CH_2COOH$ $Cl-CH-CH_2-COOH$

 $F - CH_2 - COOH$

 $Br - CH_2 - CH_2 - COOH$

Correct answer is :

(A)
$$Q>S>P>R$$

(B) P > R > S > Q

(C) R > Q > P > S

(D) S > Q > P > R

CORRECT ANSWER: C

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Q-16 - 20595988

Consider the following species :

(A) $\stackrel{?}{OH}$ (B) $\stackrel{CH_{3}}{CH_{3}} - \stackrel{?}{O}$ (C) $\stackrel{?}{CH_{3}}$ (D) $\stackrel{?}{NH_{2}}$

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

(C) A > B > C > D

(D) C > A > B > D

CORRECT ANSWER: A

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Q-17 - 20595991



Arrange the above phenols in increasing order of K_a value.

(A) I < II < III

(B) III < I < II

(C) III < II < I

(D) I < III < II

CORRECT ANSWER: A

SOLUTION:



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Q-18 - 20595993

Arrange the following in decreasing order of the basicity.

 $egin{aligned} CH_2 &= CHCH_2NH_2,\ CH_3CH_2CH_2NH_2, CH\ &\equiv CCH_2NH_2 \end{aligned}$

(A) I > II > III

(B) II > I > III

(C) III > II > I

(D) II > III > I

SOLUTION:

-I power of triple bonded carbon is greater than double

bonded and single bonded carbon.

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Q-19 - 20595994

Arrange the following in increasing order of basicity.



(A) I < II < III

(B) III < I < II

(C) III < II < I

(D) II < III < I

CORRECT ANSWER: C

SOLUTION:

As delocalisation of lpe^- increases basicity decreases and pK_a value increases.

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Q-20 - 20595997

Arrange the following in increasing order of stability.



(A) I < II < III

(B) II < I < III

(C) I < III < II

(D) II < III < I

CORRECT ANSWER: C

SOLUTION:

As number of $\alpha - H$ increases stability increases.



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Q-21 - 20596003

Which of the following molecules has the shortest carbon-carbon

single bond length ?

(A) $CH_2 = CH - C$ - CH(B) $CH_2 = CH - C \equiv N$ (C) $CH_2 = CH - CH$ - O(D) $CH_2 = CH - CH$ $= CH_2$

CORRECT ANSWER: B

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Q-22 - 20596006

The correct order of stability of the following carbocations is :



 $CH_3CH_2\overset{+}{C}H_2 > CH_2$ $= CH - \overset{+}{C}H_2 > CH_2$ $= CHCH_3$ $> CH_2$ $= CHC^+(CH_3)_2$ **(B)** $CH_2 = CHC\overset{+}{H}_2$ $= CH_3CH_2 \overset{+}{C}H_2$ $> CH_2$ $= CH \overset{+}{C} H CH_3$ (C) $CH_2 = CH\overset{+}{C}(CH_3)_2$ $> CH_2$

 $= CHCH_3$

 $> CH_2 = CH\dot{C}H_2$ $> CH_3CH_2 \overset{+}{C}H_2$

(D)

$$egin{aligned} CH_2 &= CH \ &+ \ - \overset{+}{C}HCH_3 > CH_2 \ &= CH\overset{+}{C}(CH_3)_2 \ &> CH_3CH_2 - \overset{+}{C}H_2 \ &> CH_2 = CH^+_CH_2 \end{aligned}$$

CORRECT ANSWER: C

SOLUTION:

As resonance and hyper conjugation increases stability

increases.

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Q-23 - 20596009

What is the decrasing order of strength of the bases ? (I) OH^{-}

 $(II)NH_2^-$

 $(\mathrm{III})H - C \equiv C^{-}$

$(IV)CH_3HC_2^{-}$

(A) IV > II > III > I

(B) III > IV > II > I

(C) I > II > III > IV

(D) II > III > I > IV

CORRECT ANSWER: A

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Q-24 - 20596012

Consider the following :

$CH_{3} \mathop{C}_{(I)} H_{2}NH_{2}, CH_{3} \mathop{C}_{(II)} NH_{2},$



Correct order of their basic strenght is :

(A) I > II > III

(B) II > I > III

(C) III > II > I

(D) II > III > I

CORRECT ANSWER: C

SOLUTION:

Ist is highly basic as its lpe^- is localised while in (II) and

(II) lpe^- is delocalised.





Correct order of the heats of combustion of above compounds is :

(A) (i) > (ii) > (iii)(B) (i) > (iii) > (iii)(C) (ii) > (i) > (i) > (i) > (iii)(D) (ii) > (iii) > (i)

CORRECT ANSWER: A



More the numer of carbons more will be the heat of

combustion.



Q-26 - 20594242

Which of the following is not a resonance structure of the others ?





CORRECT ANSWER: D

SOLUTION:



is not

resonating structure of others.

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$CH_3- \overset{O}{\overset{||}{C}}_a - \overset{O}{\overset{}_a O}_b - \overset{O}{\overset{}_b CH_3},$

The correct relation between the bond lengths a and b is :
(A)
$$a = b$$

(B) b > a

(C) b < a

(D) Impossible to predict

CORRECT ANSWER: B

SOLUTION:

$$O^{\delta-} \ |\,| & \delta+ \ CH_3 - C &= O \ - CH_3$$

due to resonace this bond has double bond characters





Which of the following rings is highly strained?







Q-29 - 20594251

Most stable carbocation among the following is :



(D) . \oplus CH_3

CORRECT ANSWER: A

SOLUTION:

$C^{\,\oplus}$ stability $\,\propto\, + H$ on carbocation

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Q-30 - 20594258

Circle represents most basic atoms in these moelcule. Which of the

following is correct representation?







(D) All of these

CORRECT ANSWER: D

SOLUTION:

All 'N' atoms of circle have localised I,p which do not part

in resonance

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Q-31 - 20594262

Arrange the following in decreasing order of their acidic strengths .



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

$(\mathsf{A}) A > C > B > D$

(B) A > D > B > C

(C) A > D > C > B

(D) D > A > C > B

CORRECT ANSWER: C

SOLUTION:

Due to electronegativity order.

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O^{\,\oplus}\,>\,N^{\,+}\,>\,O>\,N
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Q-32 - 20594263



The correct of heats of combustion of above compounds is :

(A) I > II > III

(B) II > I > III

(C) III > II > I

(D) III > I > II

CORRECT ANSWER: C

SOLUTION:

More the no. of corbons more will be the heat of

combustion.

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Q-33 - 20594266

Which of the following acids would have a STRONGER

CONJUGATE BASE?



(A) 2,4,6

(B) 1,3,5

(C) 2,3,5

(D) 1,3,6

CORRECT ANSWER: A

SOLUTION:

Weaker acid has stronger conjugate base.

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Q-34 - 20594273

Which one of the following compounds has non zero dipole

moment?





CORRECT ANSWER: A

SOLUTION:

Cis molecule has non-zero dipole moment



Which one of the following has the smallest heat of combustion?





CORRECT ANSWER: C

SOLUTION:



is most sable and so its heat of combustion will be least.

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Q-36 - 20594277

Arrang the following (w,x,y,z) in decreasing order of their boiling

points :



(A) w > x > z > y(B) w > x > y > z(C) w > z > y > x

(D) w > z > x > y

CORRECT ANSWER: D

SOLUTION:

 ${\rm B.P} \propto \,$ extent of H bonding $\,\propto\,$ surface area of

molecule.



Arrange the following in increasing order of their strenght.



(A) III < I < IV < II

(B) II < I < IV < III

(C) I < III < IV < II

(D) II < III < I < IV

CORRECT ANSWER: D

SOLUTION:

Acidic stength \propto stability of resulting anion.



Which of the following σ bonds participate in hyperconjugation ?



(A) I and II



(C) II and V

(D) III and IV

SOLUTION:

p or p H atoms w.r.t.C=C bond take in

hyperconjugattion

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Q-39 - 20594285

Among the isomeric amines select the one with the lowest boiling point.





(B)





CORRECT ANSWER: C

SOLUTION:



does not participate in H-bonding so has least B.P





Q-40 - 20594287

Arrang the anions (p)

$$\stackrel{-}{C} H_3, (q) \stackrel{-}{N} H_2, (r) OH^{-}, \ (s) F^{-},$$

in decreasing order of their basic strength .

(A) p > q > r > s

(B) q > p > r > s

(C) r > q > p > s

(D) r > p > q > s

CORRECT ANSWER: A

SOLUTION:

Basic strength

 \propto Acidic strength of conjugated acid

1



Q-41 - 20594295

Which of the following is most polar?





CORRECT ANSWER: B

SOLUTION:



Quasi-aromatic and polar. (Both rings are aromatic)

Quasi -

aromatic and polar . (Both rings are aromatic)



The correct order of decreasing basic strength of x,y, and z is :

(A)
$$x > y > z$$

(B) x > z > y

(C) y > x > z



CORRECT ANSWER: B

SOLUTION:

Increasing order of basic strength





Q-43 - 20594297

Which of the following is the strongest Bronsted base ?



SOLUTION:

CORRECT ANSWER: D



Alcohols are more acidic than amines .

(2) Phenols are more acidic than alcohols because or

resonance.



Q-44 - 20594301

$$egin{array}{ll} H-C\equiv C\stackrel{b}{-}C\equiv C\ \stackrel{b}{-}CH_3, \end{array}$$

Compare the bond lengths a and b :

(A) a=b

(B) a > b

(C) b > a

$$(\mathsf{D}) a > \ > \ > b$$

CORRECT ANSWER: C

SOLUTION:

$$H-C = C - a C = C - b CH_3$$

$$sp sp sp sp sp sp^3 sp - sp^3$$

bond's has more s characters.



Which of the following alkenes is the most stable ?





CORRECT ANSWER: D

SOLUTION:

Stability of Alkene $\,\propto\,$ No. of ' $\,\propto\,$ ' H-atoms or more

hyper conjugation.

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Q-46 - 20594322

Dereasing order of acidic streighth of following compoundt is :







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

(A) x > y > z

$(\mathsf{B})\, y > x > z$

(C) z > y > x

(D) z > x > y

CORRECT ANSWER: D





Q-47 - 20594328

Which of the following has the most negative heat of hydrogenation



CORRECT ANSWER: A

SOLUTION:

Heat of hydrogenation $\,\propto\,$ Unsatability of Alkene

& It is represented by $\Delta H ightarrow$ which has negative value

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Q-48 - 20594331

What is the decreasing order of stability (most stable \rightarrow stable) of the following carbocations ?



(D) 3>1pprox4>2pprox5

CORRECT ANSWER: B

SOLUTION:



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Q-49 - 20594342

Intermolecular hydrogen bonding strongest in :

(A) methylamine

(B) phenol

(C) formaldehyde



CORRECT ANSWER: B

SOLUTION:

Extent of H-bonding $\propto \oplus \delta$ charge on H.

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Q-50 - 20594349

Which compound posses highest dipole moment?

(A) naphtalene

(B) phenanthrene

(C) anthracene

(D) azulene

CORRECT ANSWER: D

SOLUTION:

Polycycilic systems : Huckel's (4n + 2)n rule applies to

monocyclic system. The rule, however, is not

necessarily succesful for polycyclic conjugated system,



The (4n+2) rule should be applied to the peripheral (conjugated) π electrons. The five-membered ring has five and the seven-membered ring has seven π electrons (two π electrons are common to both rings). If one π electron is transferred from the seven -to the five. ring, each will now have a closed shell of six π electrons (cf. naphtalene). In this condition, the molecule will have a dipolar structure, and this has been shown to be the case from dipole -moment measurements. Azulene also behaves chemically as an aromatic compound.



Q-51 - 20594368

Dipole moment of which ketone is maximum ?





CORRECT ANSWER: C

SOLUTION:



so molecule has high dipole.



Q-52 - 20594372

Which has maximum dipol moment?







CORRECT ANSWER: C

SOLUTION:



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Q-53 - 20594407

Which of the following isomeic hydrocarbnons is most acidic?



SOLUTION:

CORRECT ANSWER: B





(A)

(a)



The most stabel canonicl strucure of given moelcules is :




CORRECT ANSWER: B

SOLUTION:

Both rings are aromatic .



Q-55 - 20594463

Which of the following will from carbocation most readily ?









CORRECT ANSWER: C



Q-56 - 20594468



Which of the phenol derivatives above is the strongest acid?

square Compound A square Compound B Square Compound C

Square Compound D square Compound E Square Compound F



acidic due to -M of 3 NO_2 groups.



Q-57 - 35609298

The aromatic compound would be :



CORRECT ANSWER: C

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Among the following, the aromatic compound is



CORRECT ANSWER: A

SOLUTION:

Species (1) is called cyclopropenyl cation. It is planar

and has $(4n+2)\pi e^{-1}$ s. thus it is aromatic.

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Q-59 - 18683886

Which of the following is non aromatic compound

(A) Phenol

(B) Naphthalene

(C) pyridine

(D) Cyclo octatetraene

CORRECT ANSWER: D





Q-60 - 12676058

Which of the following will have zero dipole moment?

(A) 1, 1 - Dichlorethene

(B) cis - 1, 2Dichloroethene

(C) trans - 1, 2 - Dichloroethene

(D) All have equal dipole moment

CORRECT ANSWER: C

SOLUTION:

Dipole moment is a vector quantity. In trans1, 2 - 1

dichloroethene, all the vectors cancel each other.

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