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Daily Practice Problems

JEE CHEMISTRY

Topic: GOC

Q.1 Which of the following belongs to + I group

(A) —OH (B) —OCH_3

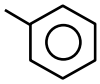
(C) —COOH (D) —CH_3

Q.2 Which of them is false for order of –I effect

(A) – F > – Cl > – Br > – I

(B) $-\overset{\oplus}{N}R_3 > -\overset{\oplus}{N}H_3 > -NO_2$

(C) $-OCH_3$ > – OH > – NH_2

(D)  > – C ≡ CH > H

Q.3 Which of the statement is not correct?

(A) – NH_2 is ortho-para directing group

(B) – CHO is meta directing group

(C) $:CCl_2$ is an electrophile

(D) – $\ddot{O}H$ is (– M) group

Q.4 Among the following compounds, the strongest acid is -

(A) HC ≡ CH (B) C_6H_6

(C) C_2H_6 (D) CH_3OH

Q.5 Heterolysis of propane will yield -

(A) $\dot{C}H_3$ **and** $\dot{C}_2H_5$ **radicals**

(B) CH_3^- **and** $CH_3CH_2^+$ **ions**

(C) CH_3^+ **and** $CH_3CH_2^-$ **ions**

(D) CH_3^+ **and** $CH_3CH_2^+$ **ions**

Q.6 Carbocations may be stabilised by -

(A) π**-bonds only at allylic position**

(B) π**–bonds only at vinylic position**

(C) π**–bonds at allylic and nonallylic position also**

(D) – I effect

Q.7 In the anion HCOO⁻, the two carbon-oxygen bonds are found to be equal length. What is the reason for it -

(A) the C=O bond is weaker than the C—O bond

(B) the anion HCOO⁻ has two resonating structures

(C) the electronic orbitals of carbon atom are hybridized

(D) the anion of obtained by removal of proton from the acid molecule

Q.8 Which of the following resonance structures is the major contributor to the resonance hybrid ?

CH₃ – CH₂ – $C\overset{\oplus}{H}$ **–** $\ddot{C}CH_3$

(I)

$\Leftrightarrow$ **CH₃ – CH₂ – CH =** $\overset{\oplus}{C}CH_3$

(II)

(A) I

(B) II

(C) Both have equal contribution

(D) They are not resonance structures

Q.9 **Consider the following three halides -**

(a) $CH_3–CH_2–Cl$

(b) $CH_2=CH–Cl$

(c) $C_6H_5–Cl$

Arrange C–Cl bond length of these compounds in decreasing order -

(A) a > b > c (B) a > c > b

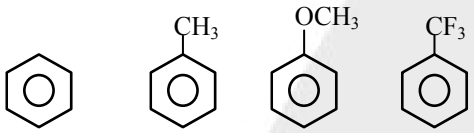
(C) c > b > a **(D) b > c > a**

Q.10 **The species $CH_3\overset{+}{C}HCH_3$ is less stable than -**

(A) $(CH_3)_3 C^+$ **(B)** $CH_3CH_2\overset{+}{C}H_2$

(C) $CH_3\overset{+}{C}H_2$ **(D)** CH_3^+

Q.11 **Increasing order of electrophilic substitution for following compounds -**



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

(A) IV < I < II < III **(B) III < I < II < IV**

(C) I < IV < III < II **(D) II < III < I < IV**

Q.12 **Arrange in decreasing pK_b -**

(a) $F–CH_2CH_2COOH$

(b) $Cl–\underset{\underset{Cl}{|}}{CH}–CH_2–COOH$

(c) $F–CH_2–COOH$

(d) $Br–CH_2–CH_2–COOH$

Correct answer is -

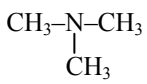
(A) (b) > (d) > (a) > (c)

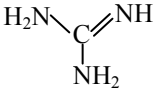
(B) (a) > (c) > (d) > (b)

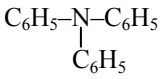
(C) (c) > (b) > (a) > (d)

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

Q.13 The strongest base is -

(A) 

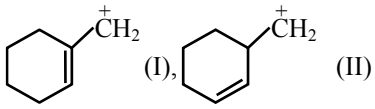
(B) 

(C) 

(D) CH_3—NH—CH_3

Q.14 In which of the following cases, the carbocation (I) is less stable than the carbocation (II) ?

(A) $C_6H_5-\overset{+}{C}H_2(I), CH_2=CH-\overset{+}{C}H_2(II)$

(B) 

(C) $CH_2=\overset{+}{C}H(I), CH_3-\overset{+}{C}H_2(II)$

(D) $H_3C-\overset{+}{C}H_2(I), \underset{\underset{F}{|}}{CH_2}-\overset{\oplus}{C}H_2(II)$

Q.15 Which among the following species is an ambident nucleophile -

(A) Acetone **(B) Cyanide ion**

(C) Nitrite ion **(D) Sulphite ion**

Q.16 Which one of the nitrogen containing compounds is an electrophile :

(A) NH_2—NH_2 **(B) NH_2—OH**

(C) NF_3 **(D) NH_3**

Q.17 Consider the following species

(a) $\overset{\Theta}{O}H$ **(b)** $CH_3-\overset{\Theta}{O}$

(c) $\overset{\Theta}{C}H_3$ **(d)** $\overset{\Theta}{N}H_2$

Arrange these nucleophilic species in their decreasing order of nucleophilicity -

(A) c > d > b > a **(B) b > a > c > d**

(C) a > b > c > d **(D) c > a > b > d**

Q.18 Which one of the following statements is not correct for electrophile :

(A) Electron deficient species are electrophile

(B) Electrophiles are Lewis acids

(C) All + ive charged species are electrophile

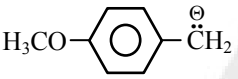
(D) $AlCl_3$, SF_6, IF_7 and SO_3 are electrophiles

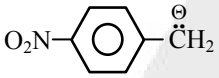
Q.19 Which of the following is an electrophilic reagent ?

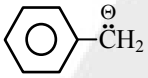
(A) H_2O **(B) OH^-**

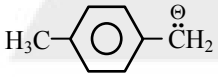
(C) NO_2^+ **(D) none**

Q.20 Consider the following carbanions :

(I) 

(II) 

(III) 

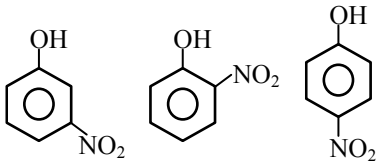
(IV) 

Correct decreasing order of stability is -

(A) II > III > IV > I **(B) III > IV > I > II**

(C) IV > I > II > III **(D) I > II > III > IV**

Q.21



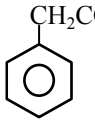
(I) (II) (III)

Arrange following phenol in increasing order of pK_a value

(A) I < II < III **(B) III < I < II**

(C) III < II < I(D) I < III < II

Q.22



(I)

$CH_2=CHCH_2COOH$

(II)

CH_3CH_2COOH

(III)

Arrange following acid in decreasing order of $[H^+]$ conc.

(A) I > II > III **(B) II > III > I**

(C) II > I > III(D) III > II > I

Q.23 **Arrange Increasing order of their K_a value.**

oxalic acid, **succinic acid,**

I **II**

malonic acid, **adipic acid**

III **IV**

(all dibasic)

(A) III < II < I < IV **(B) II < III > I > IV**

(C) I > III > II > IV **(D) II > I > III < IV**

Q.24 Arrange the following in Decreasing order of their pK_a value

CH_2=CHCH_2NH_2, $CH_3CH_2CH_2NH_2$,

I II

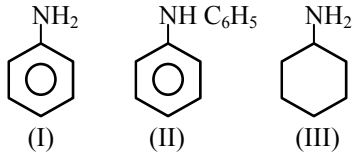
$CH{\equiv}CCH_2NH_2$

III

(A) I > II < III (B) II > I > III

(C) III > II > I(D) II < III < I

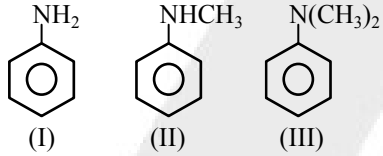
Q.25 Arrange the following in increasing of pH value



(A) III > I > II (B) III < I < II

(C) III < II > I (D) II < III < I

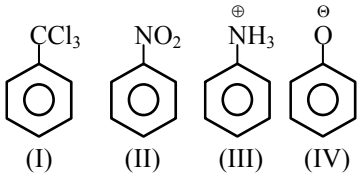
Q.26 Arrange in Increasing of basic strength



(A) II < III < I (B) I > II > III

(C) III > II < I(D) I < II < III

Q.27 Electrophile $\overset{\oplus}{N}O_2$ attacks the following

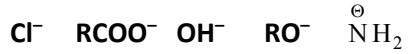


In which cases $\overset{\oplus}{N}O_2$ will be meta-position :

(A) II and IV(B) I, II and III

(C) II and III only (D) I only

Q.28 Arrange Decreasing order of basicity



I II III IV V

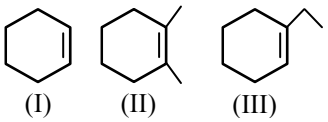
(A) I > II < III > IV < V

(B) V > IV > II > III > I

(C) I > II > III > IV > V

(D) V > IV > III > II > I

Q.29 Arrange the Stability of following

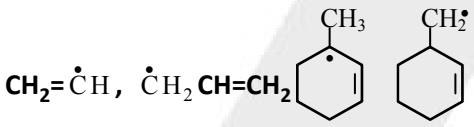


(I) (II) (III)

(A) I < II < III **(B) II < I < III**

(C) I < III < II(D) II < III < I

Q.30 Stability of following radical is



I II III IV

(A) II > III > II > IV **(B) III > II > I > IV**

(C) III < II < I < IV **(D) I < IV < II < III**

ANSWER KEY

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	D	D	D	D	B	A	B	A	A	A
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	A	C	B	C	A	C	A	C	C	A
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	C	A	C	B	A	D	B	D	C	D