JARS EDUCATION
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Practice Paper

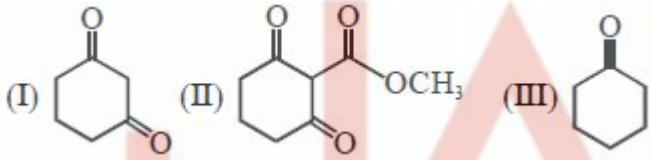
Time : 2 Hour | 11th standard (JEE BASED) | Total Marks : 200

GOC - REACTION MECHANISM

Chemistry

*** SECTION - A** [160]

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



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

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

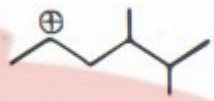
2. Which of the following alcohols is expected to have a lowest pK_a value ?

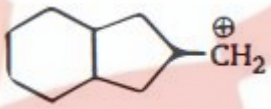
(A) Ethanol (B) 1 -propanol

(C) $2,2,2$ -trifluorethanol (D) 2 -chloroethanol

3. Most stable carbocation among the following is

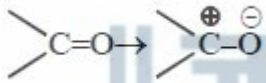
(A) 

(B) 

(C) 

(D) $\overset{\oplus}{C}H_3$

4. Which is wrong electromeric effect ?

(A) 

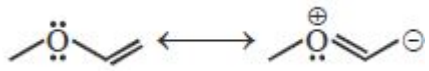
(B) $CH_3 - CH = CH_2 \rightarrow CH_3 - \overset{\oplus}{C}H - \overset{\ominus}{C}H_2$

(C) $CH_3 - C \equiv N \rightarrow CH_3 - \overset{\ominus}{C} = \overset{\oplus}{N}$

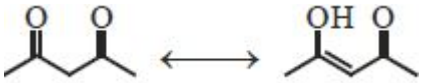
(D) $CH \equiv CH \rightarrow \overset{\oplus}{C}H = \overset{\ominus}{C}H$

5. Which are not the pair of resonating structure

(A)



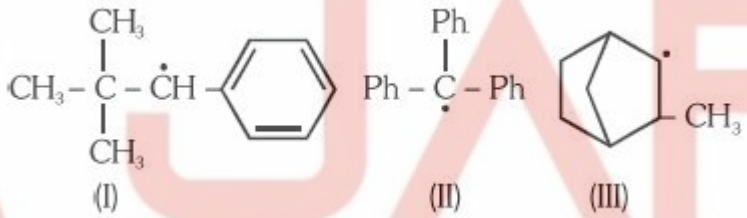
(B)



(C) $N \equiv C - O^{\Theta} \longleftrightarrow \overset{\Theta}{N} = C = O$

(D) $CH_2 = \underset{|}{\overset{O^{\Theta}}{C}} - CH_3 \longleftrightarrow \overset{\Theta}{C}H_2 - \underset{||}{\overset{O}{C}} - CH_3$

6. Consider the following compounds Hyperconjugation occurs In



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

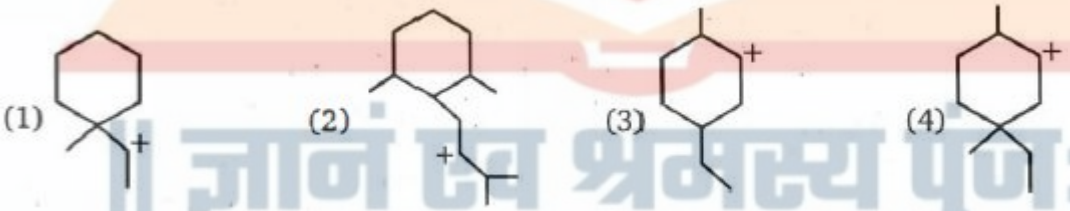
7. Which of the following will show aromatic behaviour

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

8. How many propenyl radical is possible from propene

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

9. Which of the following will rearrange ?



(A) 1 (B) 1 and 3 (C) All (D) $1,2,4$

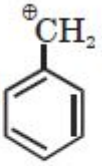
10. The correct stability order for the following carbocation is

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

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

11. Correct order of stability of carbocation given below is :-

(i) 

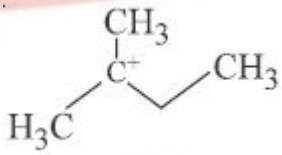
(ii) 

(iii) $CH_2 = CH-\overset{\oplus}{C}H_2$ (iv) $CH_2 = \overset{\oplus}{C}H$

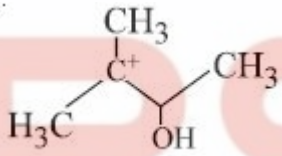
(A) $i > ii > iii > iv$ (B) $ii > iii > i > iv$ (C) $ii > i > iii > iv$ (D) $i > iii > ii > iv$

12. Which of the following carbocation is most stable?

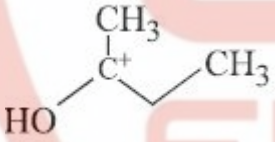
(A)



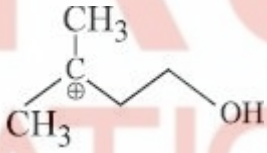
(B)



(C)

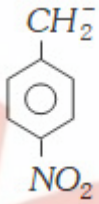


(D)

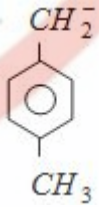


13. Most stable carbanion is

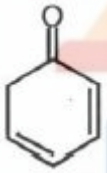
(A) CH_3^- (B) $CH_3CH_2^-$ (C)



(D)



14. In the above compound, how many sites are available for the attack of CH_3O^- ?



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

15. The order of decreasing reactivity towards an electrophilic reagent, for the following Would be

(a) Benzene

(b) Toluene

(c) Chlorobenzene and

(d) Phenol

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

16. Which amongst the following is the strongest acid?

(A) $CHBr_3$ (B) CHI_3 (C) $CH(CN)_3$ (D) $CHCl_3$

17. Which one of the following species is most stable

(A) $p - O_2N - C_6H_4 - \overset{+}{C}H_2$

(B) $p - CH_3O - C_6H_4 - \overset{+}{C}H_2$

(C) $p - Cl - C_6H_4 - \overset{+}{C}H_2$

(D) $C_6H_5 - \overset{+}{C}H_2$

18. What is the decreasing order of reactivity amongst the following compounds towards aromatic electrophilic substitution

I. Chlorobenzene

II. Benzene

III. Anilinium chloride

IV. Toluene

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

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

19. The $C - C$ bond length of the following molecules is in the order

(A) $C_2H_6 > C_2H_4 > C_6H_6 > C_2H_2$

(B) $C_2H_2 < C_2H_4 < C_6H_6 < C_2H_6$

(C) $C_2H_6 > C_2H_2 > C_6H_6 > C_2H_4$

(D) $C_2H_4 > C_2H_6 > C_2H_2 > C_6H_6$

20. Strongest acid is

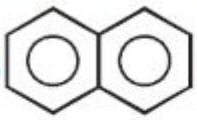
(A) $HC \equiv CH$ (B) C_2H_6 (C) C_6H_6 (D) CH_3OH

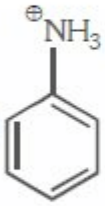
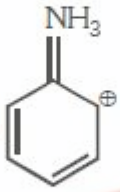
21. Which is an electrophile

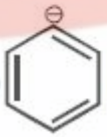
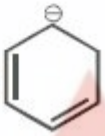
(A) $AlCl_3$ (B) CN^- (C) NH_3 (D) CH_3OH

22. Consider following statements Correct statement(s) are

(a) $CH_2 = CH - \overset{\oplus}{C}H_2$ is more stable than $CH_3 - \overset{\oplus}{C}H - CH_3$

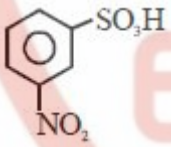
(b)  has two type of C–C bonds.

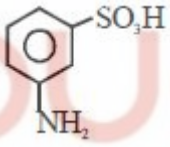
(c)  and  both are permissible resonating structure.

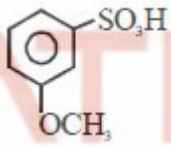
(d)  is less stable than 

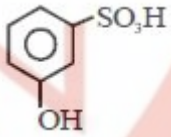
(A) a and b (B) a,b and c (C) a,b and d (D) a,b,c and d

23. Which of the following is strongest acid ?

(A) 

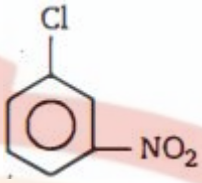
(B) 

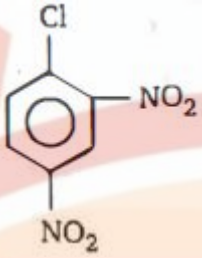
(C) 

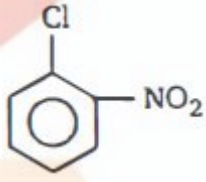
(D) 

24. Which one of the following compounds is most reactive for ArS_{N^2} reaction ?

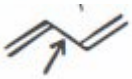
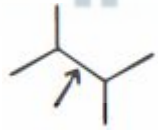
(A) 

(B) 

(C) 

(D) 

25. Which of the following has the lowest barrier to rotation about the indicated bond ?

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

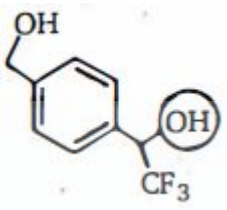
26. Rank the following in decreasing order of basic strength is

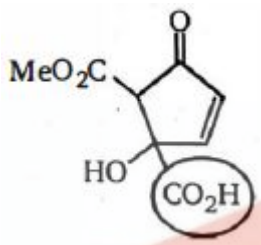
$(A)\, CH_3 - CH_2 - C \equiv C^-$ $(B)\, CH_3 - CH_2 - S^-$

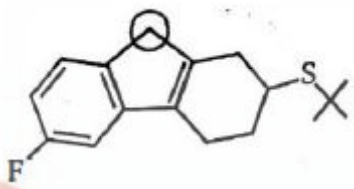
$(C)\, CH_3 - CH_2 - CO_2^-$ $(D)\, CH_3 - CH_2 - O^-$

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

27. Circle represent most acidic hydrogens in these molecules. Which of the following is correct representation ?

(A) 

(B) 

(C) 

(D) All of these

28. Which of the following has maximum heat of hydrogennation

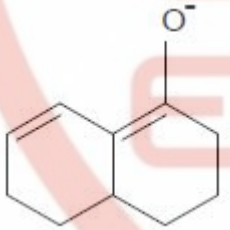
(A) $CH_3 - CH = CH - CH_3$

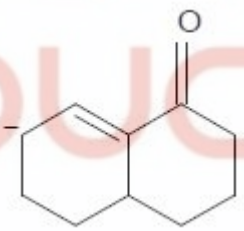
(B) $CH_3 - CH = CH - C_2H_5$

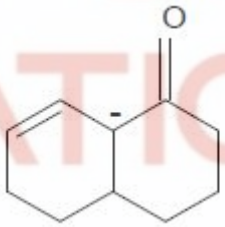
(C) $C_2H_5 - CH = CH_2$

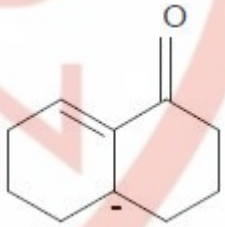
(D) $C_2H_5 - CH = CH - C_2H_5$

29. Which of the following is not a resonating structure of others?

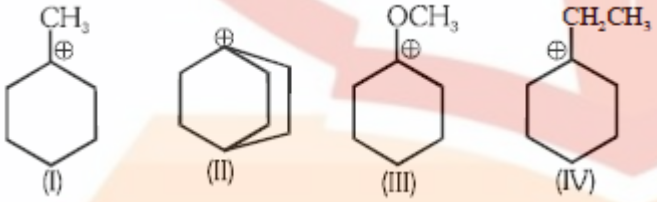
(A) 

(B) 

(C) 

(D) 

30. Arrange the following in correct order of stability



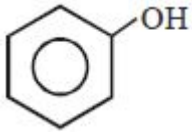
(A) $(III) > (I) > (IV) > (II)$

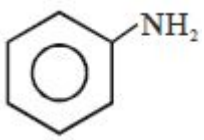
(B) $(I) > (IV) > (III) > (II)$

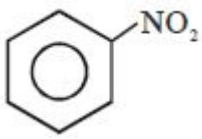
(C) $(II) > (I) > (IV) > (III)$

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

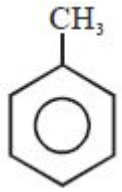
31. Which of the following is most reactive towards electrophile.

(A) 

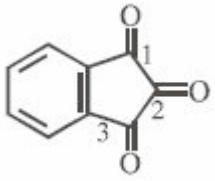
(B) 

(C) 

(D)



32. Which carbonyl group is most reactive for NAR ?



(A) 1

(B) 2

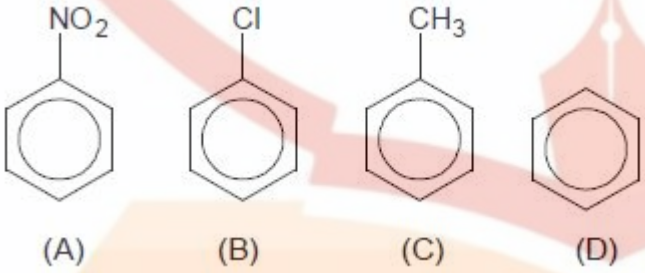
(C) 3

(D) All have same reactivity

33. Which one of the following is most reactive towards electrophilic attack ?

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

34. Correct order of rate of EAS (electrophilic aromatic substitution) is



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

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

35. Which one of the following is most reactive towards electrophilic reagent ?

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

36. Base strength of

$H_3C\underset{(i)}{\overset{\ominus}{C}}H_2$, $H_2C=\underset{(ii)}{\overset{\ominus}{C}}H$ and $H-C\equiv\underset{(iii)}{\overset{\ominus}{C}}$

is in the order of

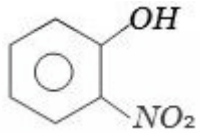
(A) $(i) > (iii) > (ii)$ (B) $(i) > (ii) > (iii)$

(C) $(ii) > (i) > (iii)$ (D) $(iii) > (ii) > (i)$

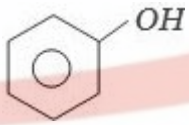
37. Which one of the following compounds is most acidic

(A) $Cl - CH_2 - CH_2 - OH$

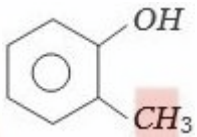
(B)



(C)



(D)



38. Which amongst the following is the most stable carbocation

(A) $CH_3 - \overset{+}{C}(CH_3)$ (B) $CH_3 - \overset{+}{C}(CH_3)_2$ (C) $\overset{+}{C}H_3$ (D) $CH_3\overset{+}{C}H_3$

39. Arrange the carbanions,

$(CH_3)_3\overline{C}, \overline{C}Cl_3, (CH_3)_2\overline{C}H, C_6H_5\overline{C}H_2$ in order of the irdecreasing stability :

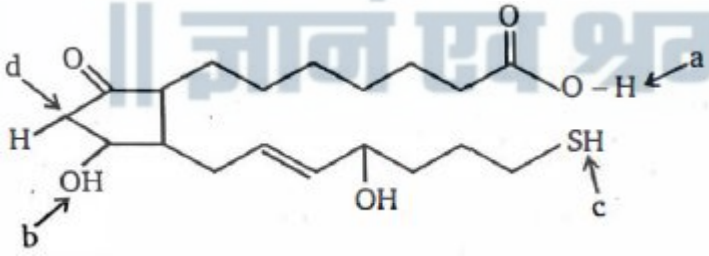
(A) $(CH_3)_2\overline{C}H > \overline{C}Cl_3 > C_6H_5\overline{C}H_2 > (CH_3)_3\overline{C}$

(B) $\overline{C}Cl_3 > C_6H_5\overline{C}H_2 > (CH_3)_2\overline{C}H > (CH_3)_3\overline{C}$

(C) $(CH_3)_3\overline{C} > (CH_3)_2\overline{C}H > C_6H_5\overline{C}H_2 > \overline{C}Cl_3$

(D) $C_6H_5\overline{C}H_2 > \overline{C}Cl_3 > (CH_3)_3\overline{C} > (CH_3)_2\overline{C}H$

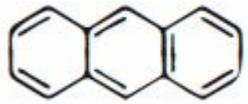
40. Identify most acidic hydrogen in given compound.



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

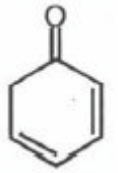
*** SECTION - B** **[40]**

41. How many resonance structures are there for anthracene ?

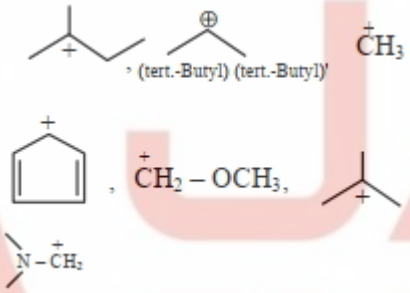


42. How many carbon-hydrogen bond orbitals are available for overlap with the vacant p -orbital in ethyl carbocation ?

43. In the above compound, how many sites are available for the attack of CH_3O^- ?



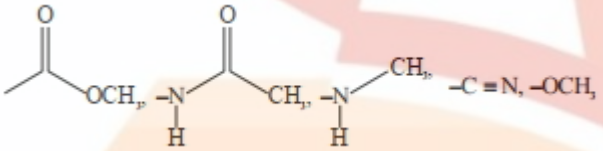
44. Number of carbocation from the following that are not stabilized by hyperconjugation is..... .



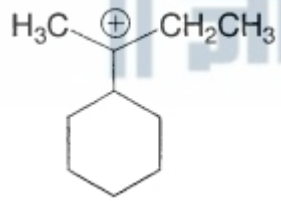
45. Among the following, total number of meta directing functional groups is_____ (Integer based)

$-\mathrm{OCH_3}, -\mathrm{NO_2}, -\mathrm{CN}, -\mathrm{CH_3} - \mathrm{NHCOCH_3},$
$-\mathrm{COR}, -\mathrm{OH}, -\mathrm{COOH}, -\mathrm{Cl}$

46. Total number of deactivating groups in aromatic electrophilic substitution reaction among the following is

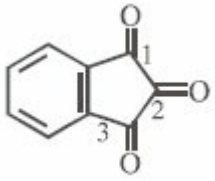


47. The total number of contributing structures showing hyperconjugation (involving $C-H$ bonds) for the following carbocation is

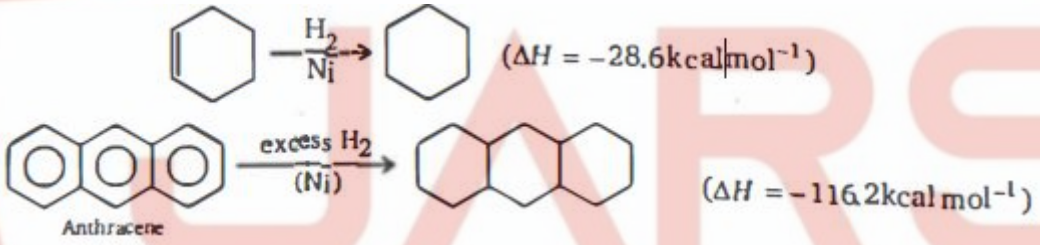


48. Total number of α -hydrogen in given compound is

49. Which carbonyl group is most reactive for NAR ?



50. Use the following data to answer the question below.
Calculate the resonance energy of anthracene.....$kcal/mol$



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