PART III: ORGANIC CHEMISTRY

XI

SECTION I: SINGLE OPTION CORRECT

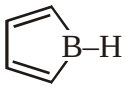
835. During the preparation of ethane by Kolbe's electrolytic method using inert electrodes, the pH of the electrolyte:

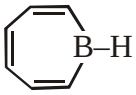
(A) increases progressively as the reaction proceeds
(B) decreases progressively as the reaction proceeds
(C) remains constant throughout the reaction
(D) may decrease , if the concentration of the electrolyte is not very high

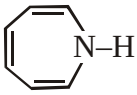
836. Arrange the following compounds in increasing order of their reactivity towards E_2 elimination with $(CH_3)_3COK$ in t-butanol:

(I) $PhCHClCH_3$ (II) $PhCH_2CH_2Cl$
(III) $CH_3COCH_2CH_2Cl$ (IV) $CH_3COCHClCH_3$
(A) I < II < III < IV (B) III < II < IV < I (C) III < IV < II < I (D) I < IV < II < III

837. Which of the following compound would exhibit aromatic properties:

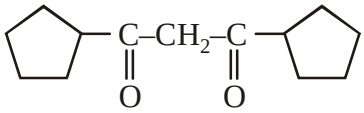
(A) 

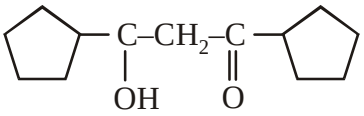
(B) 

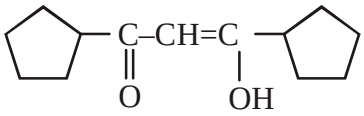
(C) 

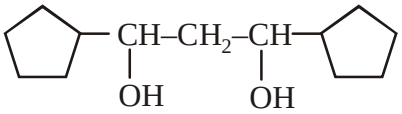
(D) 

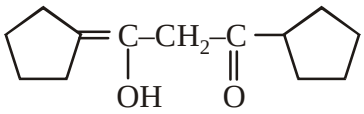
838. Which of the following is the enol tautomer of the compound shown?



(A) 

(B) 

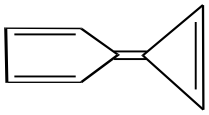
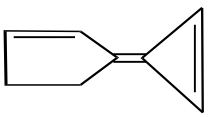
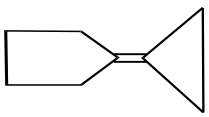
(C) 

(D) 

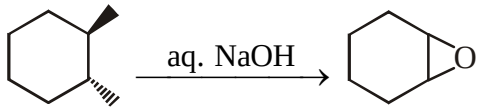
839. Highest heat of combustion is observed in:

(A) n-hexane (B) 2-methylpentane
(C) 3-methylpentane (D) 2,2,3-trimethylbutane

840. Which of the following has highest dipole moment ?

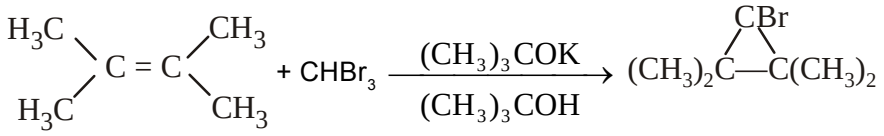
(A) H – F (B) 
(C)  (D) 

841. Which of the following reactions involves a carbene reaction intermediate?

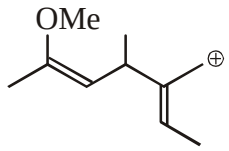
(A) 

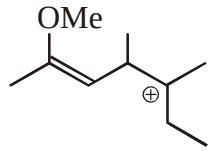
(B) $(CH_3)_3CBr \xrightarrow{EtOH} (CH_3)_3COC_2H_5$

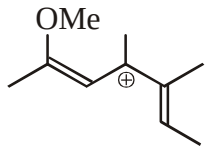
(C) $CH_4 + 4Cl_2 \xrightarrow{h\nu} CCl_4 + 4HCl$

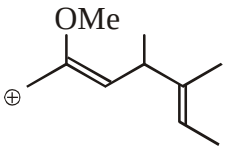
(D) 

842. Which of the following is the most stabilized carbocation?

(A) 

(B) 

(C) 

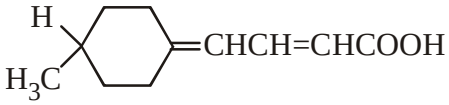
(D) 

843. Sodium formate on Kolbe's electrolysis, the products liberated at anode and cathode respectively are A and B.

(A) A = CO_2 B = H_2 (B) A = H_2 B = CO_2

(C) A = H_2 B = H_2 (D) A = CO_2 B = CO_2

844. How many stereoisomers are possible for the following molecule?



(A) 1 (B) 2 (C) 3 (D) 5

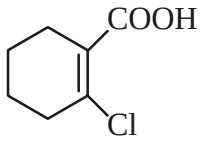
845. Kolbe's synthesis of 2, 2-dimethyl propanoic acid gives the following major product(s) at anode.

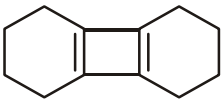
(A) isoctane (B) isobutene & isobutane

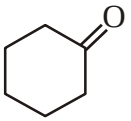
(C) 2, 2, 3, 3-tetramethyl butane (D) hydrogen gas

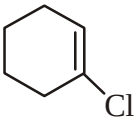
846. The relative reactivity of $1^o : 2^o : 3^o$ hydrogens to chlorination is 1 : 3.8 : 5. The percentage of 2 - chlorobutane, formed during the reaction of chlorine and butane.

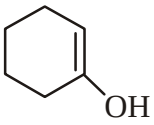
(A) 72 % (B) 28 % (C) 44 % (D) 33. 3 %

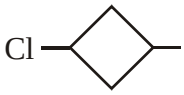
847.  $\xrightarrow[CaO]{NaOH}$ The product is

(A) 

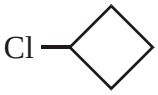
(B) 

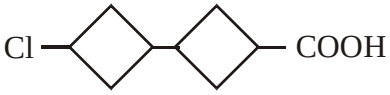
(C) 

(D) 

848.  $\xrightarrow[CaO]{NaOH}$ The major product is

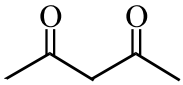
(A) 

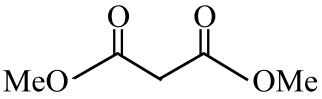
(B) 

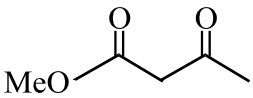
(C) 

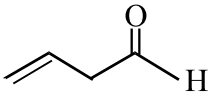
(D) 

849. Among the following compounds, the one that undergo deprotonation most radily in the presence of a base to form a carbanion is :

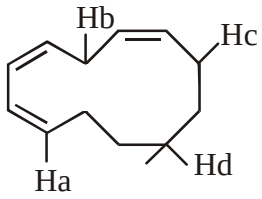
(A) 

(B) 

(C) 

(D) 

850. Increasing bond dissociation energy of the indicated C–H bond:



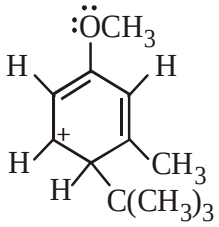
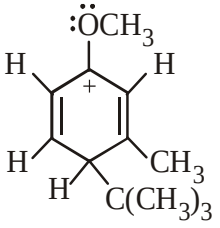
(A) c < b < a < d

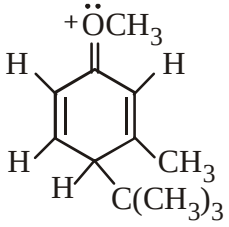
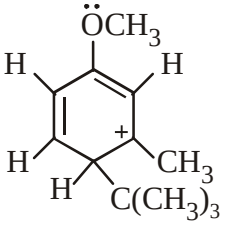
(B) b < a < d < c

(C) b < c < d < a

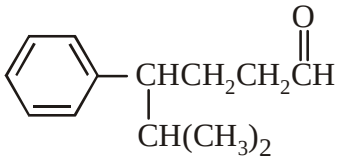
(D) d < c < b < a

581. Which is the most stable resonance form?

(A)  ⟷ (B)  ⟷

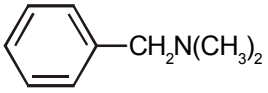
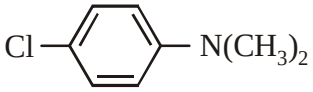
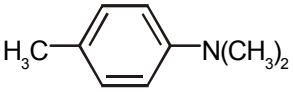
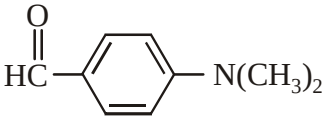
(C)  ⟷ (D) 

852. What is the IUPAC name for the compound shown?

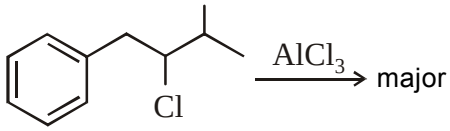


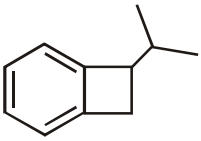
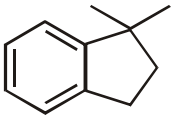
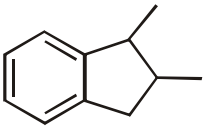
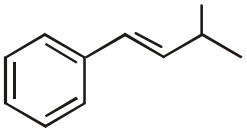
(A) 4-Benzyl-4-isopropylbutanal
(B) 4-Isopropyl-4-phenylbutanal
(C) 2-methyl-3-phenylhexanal
(D) 5-Methyl-4-phenylhexanal

853. Which one of the amines is the least basic?

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

854. Give the major product of the following reaction:



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

855. Which of the following are feasible reactions?

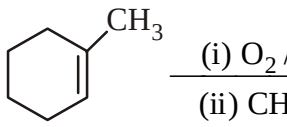
(i) $HC\equiv CH + CH_3Li \rightarrow HC\equiv CLi + CH_4$

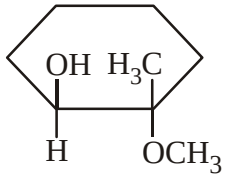
(ii) $HC\equiv CH + NaOH \rightarrow HC\equiv CNa + H_2O$

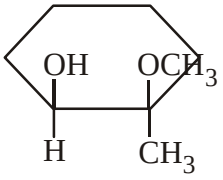
(iii) $HC\equiv CNa + NH_3 \rightarrow HC\equiv CH + NaNH_2$

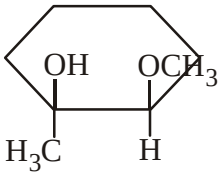
(iv) $H_2C{=}CH_2 + HC\equiv CNa \rightarrow H_2C{=}{=}CHNa + HC\equiv CH$

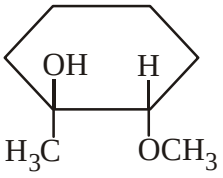
(A) i, ii and iii (B) ii, iii and iv (C) i, iii and iv (D) only i

856.  A. A is

(A) 

(B) 

(C) 

(D) 

857. Which of the following method will obtain major yield of coupling product?

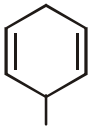
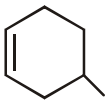
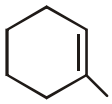
(A) $CH_3 - CH_2Mg\,Cl + CH_3 - \underset{\displaystyle H}{\overset{\displaystyle CH_3}{\underset{|}{\overset{|}{C}}}} - CH_2 - Cl \longrightarrow \overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2 - CH_2 - CH_3$

(B) $\overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2 - MgCl + CH_3 - CH_2 - Cl \longrightarrow \overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2 - CH_2 - CH_3$

(C) $(CH_3 - CH_2)_2\,CuLi + \overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2 - Cl \longrightarrow \overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2 - CH_2 - CH_3$

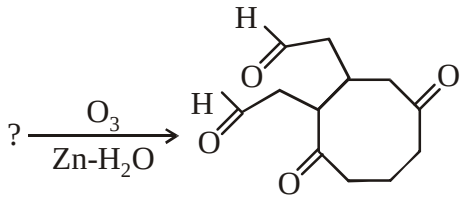
(D) $(\overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2)_2CuLi + CH_3 - CH_2 - Cl \longrightarrow \overset{\displaystyle CH_3}{\overset{|}{CH_3 - CH}} - CH_2 - CH_2 - CH_3$

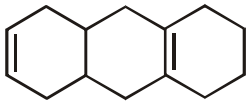
858. Arrange the following reaction in decreasing order of reactivity with NBS/heat:

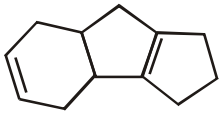
(1)  (2)  (3)  (4) 

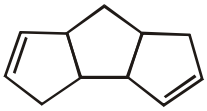
(A) 1 > 2 > 3 > 4 (B) 2 > 1 > 3 > 4 (C) 1 > 2 > 4 > 3 (D) 4 > 3 > 2 > 1

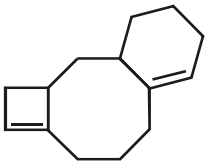
859. Which starting material should be used to produce the compound shown below?



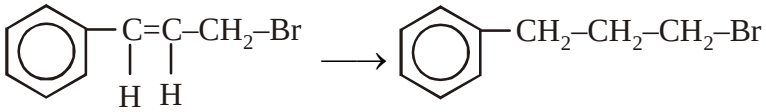
(A) 

(B) 

(C) 

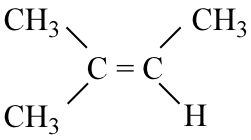
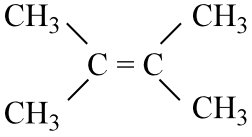
(D) 

860. Which of the following reagents can be used for the following conversions



(A) $NH_2–NH_2/H_2O_2$
(B) H_2/Pd–C
(C) $LiAlH_4$
(D) Zn-Cu/EtOD

861. Reactivity of $F^{\ominus}$ is highest in–
(A) DMF (B) H_2O (C) EtOH (D) benzene

862. Which one of the following alkene will react fastest with H_2 under catalytic hydrogenation?
(A) Trans-cyclohexene
(B) Cis-cyclohexene
(C) 
(D) 

863. $Br–CH_2–C\equiv CH \xrightarrow{Mg / Et_2O}$ The product is
(A) $HC\equiv C–CH_2–Mg^+Br^-$
(B) $CH_3–C\equiv C–Mg^+Br^-$
(C) $HC\equiv C–CH_2–O–Et$
(D) Both (a) and (b)

Answer Key

Qs.	Ans.
835	A
836	D
837	B
838	B
839	D
840	B
841	D
842	C
843	C
844	C
845	B
846	A
847	A
848	A
849	A
850	C

Qs.	Ans.
851	C
852	D
853	D
854	B
855	D
856	A
857	D
858	A
859	B
860	A
861	A
862	A
863	B