



**TOPIC : Hydrocarbon**

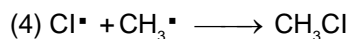
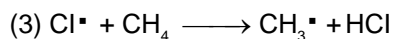
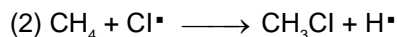
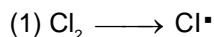
**CLASS : 11<sup>th</sup> JEE/NEET (DPP)**

**Subject : CHEMISTRY**

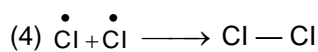
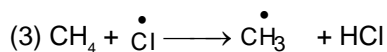
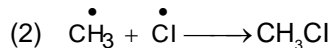
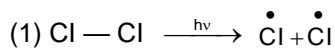
**DPP – 01 Alkane**

- Which of the following alkanes has the lowest boiling point?  
(1) n-Pentane                      (2) Isopentane                      (3) Neopentane                      (4) n-Hexane.
- Which of the following alkanes has the lowest melting point ?  
(1) n-Butane                      (2) n-Pentane                      (3) Propane                      (4) n-Hexane.
- The maximum C—C bond length is in:  
(1) C<sub>2</sub>H<sub>6</sub>                      (2) C<sub>2</sub>H<sub>4</sub>                      (3) C<sub>2</sub>H<sub>2</sub>                      (4) C<sub>6</sub>H<sub>6</sub>
- When cyclohexane is poured on water, it floats because :  
(1) cyclohexane is in boat form                      (2) cyclohexane is in chair form  
(3) cyclohexane is in crown form                      (4) cyclohexane is less denser than water
- Marsh gas mainly contains:  
(1) C<sub>2</sub>H<sub>2</sub>                      (2) CH<sub>4</sub>                      (3) H<sub>2</sub>S                      (4) CO
- When water vapours are passed over aluminium carbide, we get:  
(1) acetaldehyde                      (2) ethylene                      (3) methane                      (4) methyl alcohol
- The complete combustion of CH<sub>4</sub> gives :  
(1) CO + H<sub>2</sub>                      (2) CO + N<sub>2</sub>                      (3) CO + N<sub>2</sub>O                      (4) CO<sub>2</sub> + H<sub>2</sub>O
- Action of heat on a mixture of sodium propionate and sodalime produces:  
(1) methane                      (2) ethane                      (3) propane                      (4) ethylene
- The number of possible monochloro derivatives of 2, 2, 3, 3-Tetramethylbutane is -  
(1) 2                      (2) 3                      (3) 4                      (4) 1
- 20 ml of methane are burnt with 50 ml of oxygen, the volume of the gas left after cooling to room temperature will be  
(1) 80 ml                      (2) 60 ml                      (3) 30 ml                      (4) 20 ml
- What is the volume of oxygen required for the the complete combustion of 4 litre of ethane?  
(1) 4 litre                      (2) 8 litre                      (3) 12 litre                      (4) 14 litre
- The reactivity of hydrogen atoms attached to carbon atom in the halogenation of an alkane has the order :  
(1) tertiary > primary > secondary                      (2) secondary > primary > tertiary  
(3) tertiary > secondary > primary                      (4) primary > secondary > tertiary
- Halogenation of alkanes is an example of  
(1) Free radical addition reaction                      (2) Free radical substitution reaction  
(3) Nucleophilic substitution reaction                      (4) Nucleophilic addition reaction.

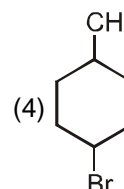
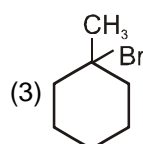
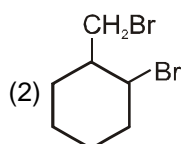
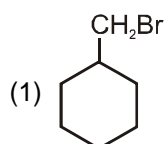
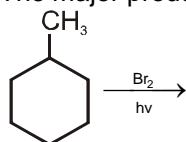
14. Which of the following cannot be considered as a step of mechanism in chain reaction of methane with  $\text{Cl}_2$ ?



15. During chlorination of methane to methyl chloride, the propagation step is represented by



16. The major product obtained in the reaction, :



17. Iodination of an alkane is carried out in presence of

(1) Alcohol

(2)  $\text{P} + \text{I}_2$

(3)  $\text{HNO}_3$  or  $\text{HIO}_3$

(4) A reducing agent

18. Only two isomeric monochloro derivatives are possible for :-

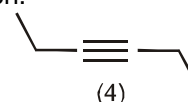
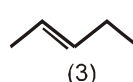
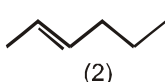
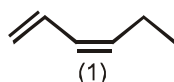
(1) n-Pentane

(2) 2,4-Dimethyl pentane

(3) Toluene

(4) 2,3-Dimethyl butane

19. Which of the followings will give same product on complete hydrogenation.



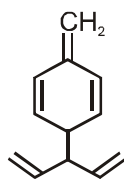
(1) 1, 2, 3, 4

(2) 1, 3, 4

(3) 1, 2, 4

(4) 1, 2, 3

20. Number of moles of hydrogen required for complete hydrogenation of one mole of the following compound :



(1) 6

(2) 7

(3) 5

(4) 3

### DPP – 02 Alkene

1. Ethylene readily undergoes:

(1) addition reaction (2) substitution reaction (3) elimination reaction (4) rearrangement reaction

2. Reaction of ethene with  $\text{Br}_2$  in  $\text{CCl}_4$  gives:

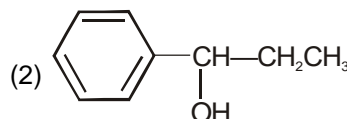
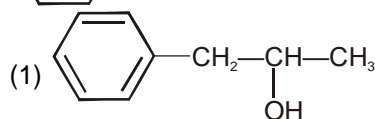
(1) Bromoethane

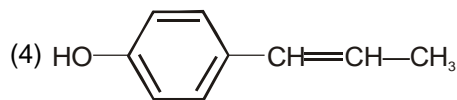
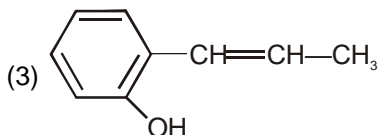
(2) 1, 2-Dibromoethane

(3) 1, 1-Dibromoethane

(4) 1, 1, 2, 2-Tetrabromoethane.

3. P (major), P is :





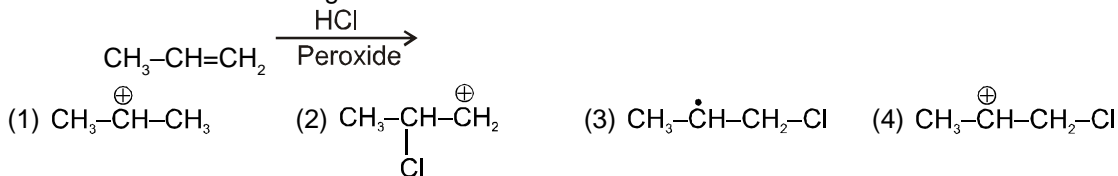
4. Addition of HCl to 2-methyl-2-butene mainly gives

- (1) 1-Chloro-2-methylbutane (2) 2-Chloro-2-methylbutane  
(3) 2-Chlorobutane (4) 1-Chlorobutane.

5. Kharasch effect regarding addition of HBr is not observed in :

- (1) hex-1-ene (2) prop-1-ene (3) hex-3-ene (4) pent-1-ene

6. Intermediate in the following reaction is



7. Peroxide effect is observed

- (1) Only with HBr (2) Only with HI (3) Only with HCl (4) Only with HF

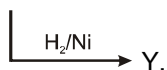
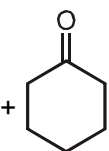
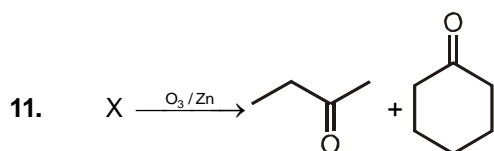
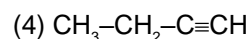
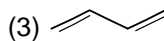
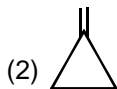
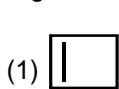
8. Reaction of HBr with propene in the presence of peroxide gives:

- (1) isopropyl bromide (2) allyl bromide (3) n-propyl bromide (4) 3-bromopropane

9. Which of the following alkene gives four monochloro (structural isomer) products after hydrogenation ?

- (1) Pent-2-ene (2) 2-Methylbut-2-ene (3) 3-Methylhex-2-ene (4) 2, 3-Dimethylbut-2-ene

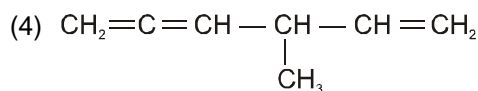
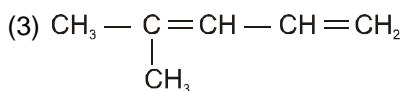
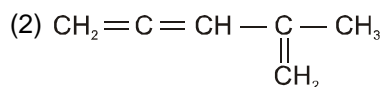
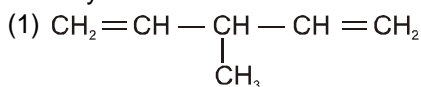
10. An organic compound  $\text{C}_4\text{H}_6$  on ozonolysis gives formaldehyde and glyoxal. What is the structure of organic compound ?



The IUPAC name of compound Y is :

- (1) 2-Cyclohexyl butane (2) 1-(1-Methyl propyl) cyclohexane  
(3) Butyl cyclohexane (4) 1-Cyclohexyl butane


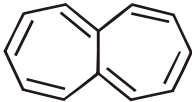
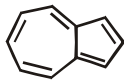
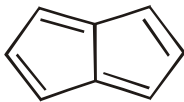

12. An alkene give two moles of HCHO, one mole of  $\text{CO}_2$  and one mole of  $\text{CH}_3\text{-}\overset{\text{O}}{\parallel}{\text{C}}\text{-CHO}$  on ozonolysis. What is its structure?



### DPP – 03 Alkyne

- General formula  $C_nH_{2n-2}$  represents:
  - alkenes
  - alkanes
  - alkynes
  - none
- To prepare But-2-yne from 2, 2, 3, 3-Tetrachlorobutane, reagent used is :
  - Zinc dust /  $\Delta$
  - Sodamide
  - Alc. KOH
  - aq. KOH
- Which of the following compounds on hydrolysis gives propyne ?
  - $CaC_2$
  - $Mg_2C_3$
  - $Al_4C_3$
  - $Cu_2Cl_2$
- Which of the following will react most readily with bromine?
  - $CH \equiv CH$
  - $CH_2 = CH_2$
  - $CH_3CH = CH_2$
  - $CH_3CH_2CH_3$
- Most Acidic hydrogen is present in:
  - ethyne
  - ethene
  - benzene
  - ethane
- When 1-butyne is treated with excess of HBr, the expected product is
  - 1, 2-Dibromobutane
  - 2, 2-Dibromobutane
  - 1, 1-Dibromobutane
  - All the above
- Acetylene on treatment with dil.  $H_2SO_4$  having  $HgSO_4$  gives :
  - acetaldehyde
  - acetic acid
  - ethanol
  - ethylene
- Which of the following reagents will distinguish between 1-butyne and 2-butyne?
  - $Br_2/CCl_4$
  - $AgNO_3 + NH_4OH$
  - Dil. Cold  $KMnO_4$
  - $KMnO_4$
- Ammonical  $AgNO_3$  give white ppt. after reaction with any compound then this reflects the presence of
  - One – CHO group
  - One triple bond
  - A terminal alkyne
  - Compound is unsaturated
- Which will undergo reaction with ammonical  $AgNO_3$  :
  - $$\begin{array}{c} H_3C \\ \diagdown \\ CH-CH_2-CH=CH-CH_3 \\ \diagup \\ H_3C \end{array}$$
  - $CH_3-CH=CH-C \equiv CH$
  - $CH_3-CH_2-CH=CH-CH_2-CH_3$
  - $CH_2=CH-CH_2-CH_3$

### DPP – 04 Aromaticity

- Which of the following statements is not correct ?
  - An aromatic molecule must be cyclic
  - An aromatic ring must be planar
  - An aromatic ring must involve cyclic delocalization of  $(4n + 2) \pi$ -electrons
  - An aromatic ring must involve cyclic delocalization of  $4n \pi$ -electrons.
- The general formula of arenes is :
  - $C_nH_{2n}$
  - $C_nH_{2n-4}$
  - $C_nH_{2n+2}$
  - $C_nH_{2n-6}$
- Number of  $\pi$  electrons in  are :
  - 2
  - 4
  - 5
  - 6
- Identify the aromatic compound ?
  - 
  - 
  - 
  - 

5. Which of the following is not an aromatic compound:



6. Among the following the anti aromatic species is :



7. Which of the following compound is an Aromatic in nature.



8. Which of the following ion is nonaromatic in nature.



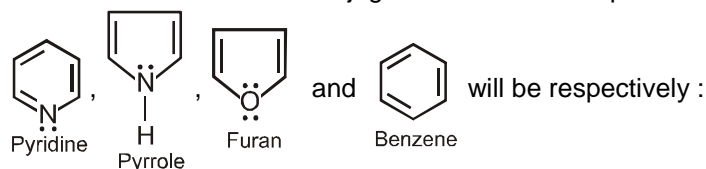
9. Which of the following molecules have all C–C bonds are of equal length?



10. In the compound  $C_6H_5Z$  which of the following set of groups is predominately ortho/para directing ?

- (1)  $Z = -NO_2, -Cl, -OH$  (2)  $Z = -OMe, -CN, -NH_2$   
 (3)  $Z = -NHCOCH_3, -Cl, -COOH$  (4)  $Z = -NHCOCH_3, -CH_3, -OH$

11. Number of  $\pi$  electrons in conjugation for these compounds



- (1) 8, 6, 6, 6 (2) 6, 4, 6, 6 (3) 6, 6, 6, 6 (4) 6, 6, 8, 6

### DPP – 05 Electrophilic substitution

1. The characteristic reaction of benzene is :

- (1) Electrophilic addition (2) Nucleophilic substitution  
 (3) Electrophilic substitution (4) Nucleophilic addition.

2. Which of the following compounds reacts slower than benzene in electrophilic bromination ?

- (1)  $C_6H_5CH_3$  (2)  $C_6H_5OH$  (3)  $C_6H_5NO_2$  (4)  $C_6H_5NH_2$

3. The decreasing order of reactivity towards electrophilic substitution reaction of the following compounds is :

- (i) benzene, (ii) chlorobenzene, (iii) nitrobenzene, (iv) toluene  
 (1)  $i > iii > iv > ii$  (2)  $iv > i > iii > ii$  (3)  $iv > i > ii > iii$  (4)  $iv > ii > i > iii$

4.  $-NH_2$  group in aniline is :

- (1) m-directing and deactivating (2) o, p-directing and deactivating  
 (3) o, p-directing and activating (4) m-directing and activating

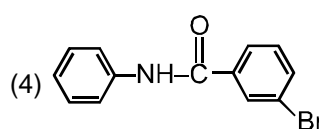
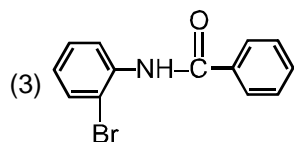
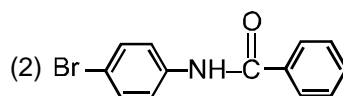
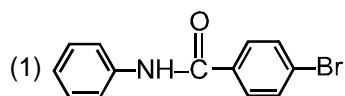
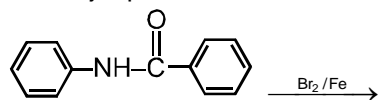
5. Among the following groups, the group that deactivates the benzene ring for further electrophilic substitution is:

- (1) methyl                      (2) amino                      (3) hydroxyl                      (4) nitro

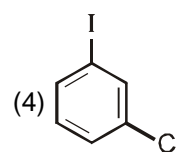
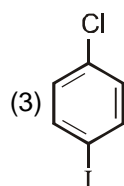
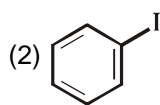
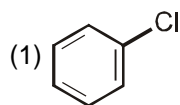
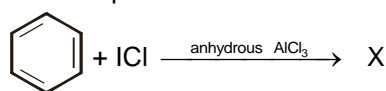
6. o,p-directing group are mostly :

- (1) activating group              (2) deactivating groups              (3) neutral groups              (4) none of these

7. The major product obtained in the following is :



8. The compound X in the reaction,



9. Benzene when heated with conc.  $\text{H}_2\text{SO}_4$  forms:

- (1) benzene sulphate                      (2) benzene sulphite  
(3) benzene hydrogen sulphate              (4) benzene sulphonic acid

10. Benzene reacts with acetyl chloride in presence of anhydrous aluminium chloride to form:

- (1) acetophenone              (2) phenyl acetate              (3) chlorobenzene              (4) benzoic acid

# Answers

## DPP – 01

1. (3) 2. (3) 3. (1) 4. (4) 5. (2) 6. (3) 7. (4)  
8. (2) 9. (4) 10. (3) 11. (4) 12. (3) 13. (2) 14. (2)  
15. (3) 16. (3) 17. (3) 18. (4) 19. (3) 20. (3)

## DPP – 02

1. (1) 2. (2) 3. (2) 4. (2) 5. (3) 6. (1) 7. (1)  
8. (3) 9. (2) 10. (3) 11. (2) 12. (2)

## DPP – 03

1. (3) 2. (1) 3. (2) 4. (3) 5. (1) 6. (2) 7. (1)  
8. (2) 9. (3) 10. (2)

## DPP – 04

1. (4) 2. (4) 3. (4) 4. (2) 5. (2) 6. (2) 7. (4)  
8. (4) 9. (4) 10. (4) 11. (3)

## DPP – 05

1. (3) 2. (3) 3. (3) 4. (3) 5. (4) 6. (1) 7. (2)  
8. (2) 9. (4) 10. (1)