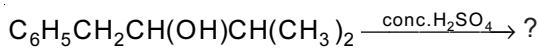


Hydrocarbons

1. The main product of the following reaction is



[AIEEE-2010]

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

2. One mole of a symmetrical alkene on ozonolysis gives two moles of an aldehyde having a molecular mass of 44 u. The alkene

[AIEEE-2010]

- (1) Ethane
- (2) Propene
- (3) 1-butene
- (4) 2-butene

3. 2-Hexyne gives trans-2-Hexene on treatment with

[AIEEE-2012]

- (1) Li/NH₃
- (2) Pd/BaSO₄
- (3) Li AlH₄
- (4) Pt/H₂

4. Which branched chain isomer of the hydrocarbon with molecular mass 72 u gives only one isomer of mono substituted alkyl halide?

[AIEEE-2012]

- (1) Neopentane
- (2) Isohexane
- (3) Neohexane
- (4) Tertiary butyl chloride

5. The major organic compound formed by the reaction of 1, 1, 1-trichloroethane with silver powder is

[JEE (Main)-2014]

- (1) Acetylene
- (2) Ethene
- (3) 2-Butyne
- (4) 2-Butene

6. Which of the following compounds will exhibit geometrical isomerism?

[JEE (Main)-2015]

- (1) 1 - Phenyl - 2 - butene
- (2) 3 - Phenyl - 1 - butene
- (3) 2 - Phenyl - 1 - butene
- (4) 1, 1 - Diphenyl - 1 propane

7. Which compound would give 5-keto-2-methyl hexanal upon ozonolysis?

[JEE (Main)-2015]

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

8. The reaction of propene with HOCl (Cl₂ + H₂O) proceeds through the intermediate

[JEE (Main)-2016]

- (1) CH₃ – CH⁺ – CH₂ – Cl
- (2) CH₃ – CH(OH) – CH⁺₂
- (3) CH₃ – CHCl – CH⁺₂
- (4) CH₃ – CH⁺ – CH₂ – OH

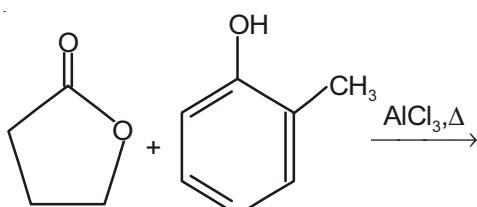
9. 3-Methyl-pent-2-ene on reaction with HBr in presence of peroxide forms an addition product. The number of possible stereoisomers for the product is

[JEE (Main)-2017]

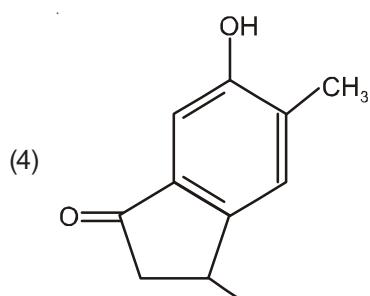
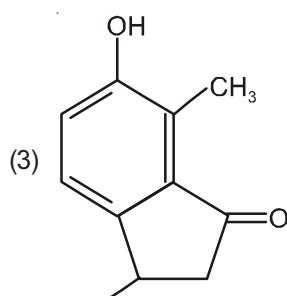
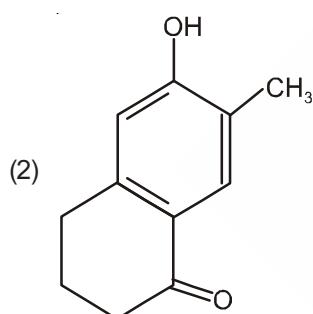
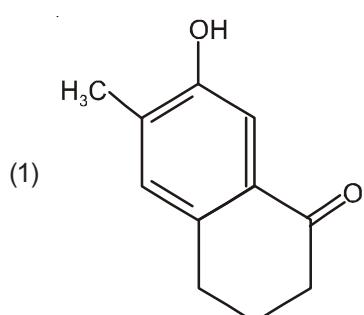
- (1) Two
- (2) Four
- (3) Six
- (4) Zero

10. The *trans*-alkenes are formed by the reduction of alkynes with
[JEE (Main)-2018]
 (1) H₂ - Pd/C, BaSO₄ (2) NaBH₄
 (3) Na/liq. NH₃ (4) Sn - HCl

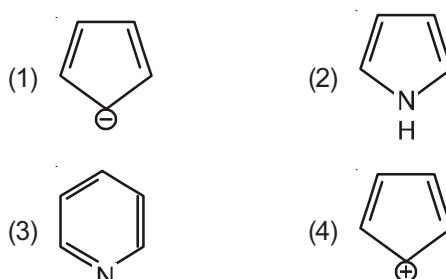
11. The major product of the following reaction is



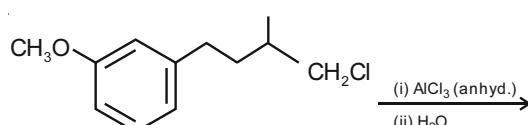
[JEE (Main)-2019]



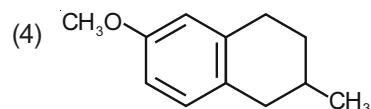
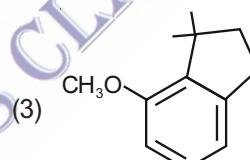
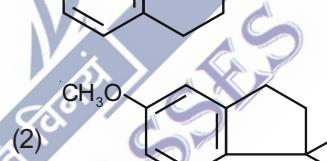
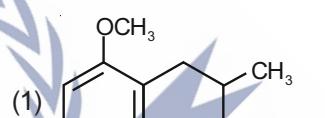
12. Which of the following compounds is not aromatic?
[JEE (Main)-2019]



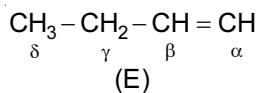
13. The major product of the following reaction is



[JEE (Main)-2019]



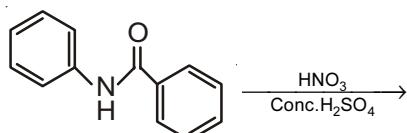
14. Which hydrogen in compound (E) is easily replaceable during bromination reaction in presence of light?



[JEE (Main)-2019]

- (1) γ -hydrogen
 (2) α -hydrogen
 (3) δ -hydrogen
 (4) β -hydrogen

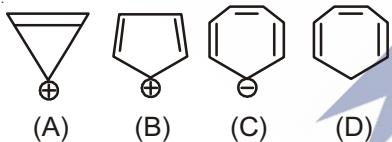
15. What will be the major product in the following mononitration reaction?



[JEE (Main)-2019]

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

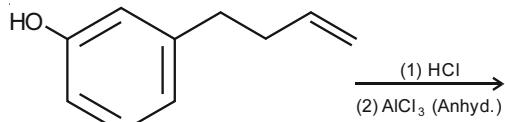
16. Which compound(s) out of following is/are not aromatic?



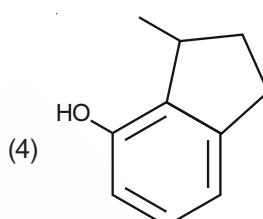
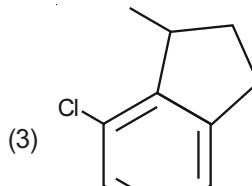
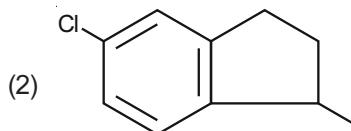
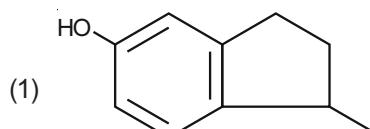
[JEE (Main)-2019]

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

17. The major product of the following reaction is

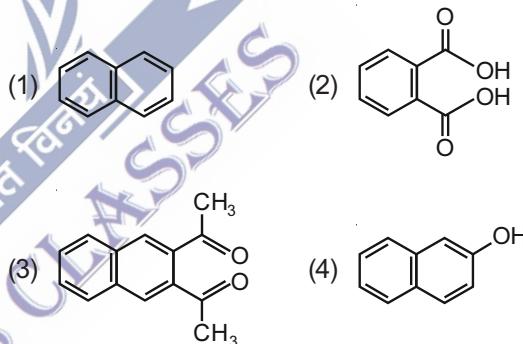


[JEE (Main)-2019]

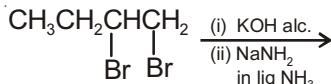


18. Among the following four aromatic compounds, which one will have the lowest melting point?

[JEE (Main)-2019]



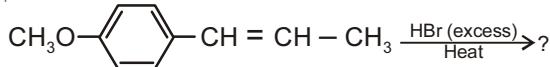
19. The major product of the following reaction is



[JEE (Main)-2019]

- (1) $\text{CH}_3\text{CH}_2\text{C}\equiv\text{CH}$
 (2) $\text{CH}_3\text{CH}=\text{CHCH}_2\text{NH}_2$
 (3) $\begin{matrix} \text{CH}_3\text{CH}_2\text{CH}-\text{CH}_2 \\ | \qquad | \\ \text{NH}_2 \qquad \text{NH}_2 \end{matrix}$
 (4) $\text{CH}_3\text{CH}=\text{C}=\text{CH}_2$

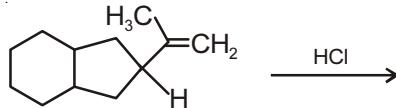
20. The major product in the following conversion is



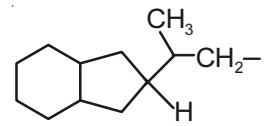
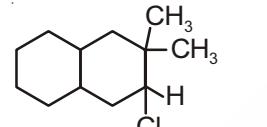
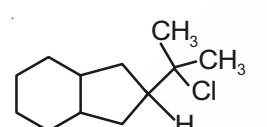
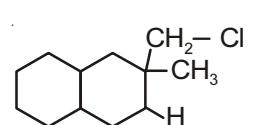
[JEE (Main)-2019]

- (1) HO--CH₂-CH(Br)-CH₃
- (2) CH₃O--CH₂-CH(Br)-CH₃
- (3) HO--CH(Br)-CH₂-CH₃
- (4) CH₃O--CH(Br)-CH₂-CH₂-CH₃

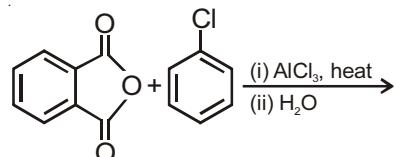
21. The major product of the following reaction is



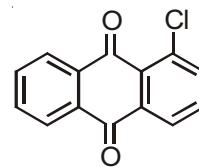
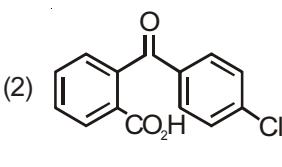
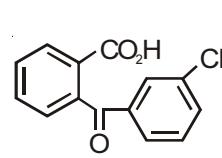
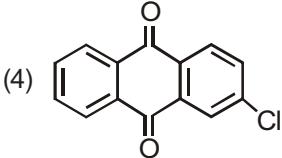
[JEE (Main)-2019]

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

22. The major product of the following reaction is



[JEE (Main)-2019]

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

23. Which one of the following alkenes when treated with HCl yields majorly an anti-Markovnikov product?

[JEE (Main)-2019]

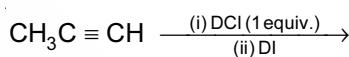
- (1) F₃C-CH=CH₂ (2) CH₃O-CH=CH₂
 (3) H₂N-CH=CH₂ (4) Cl-CH=CH₂

24. Polysubstitution is a major drawback in :

[JEE (Main)-2019]

- (1) Reimer-Tiemann reaction
 (2) Acetylation of aniline
 (3) Friedel-Crafts acylation
 (4) Friedel-Crafts alkylation

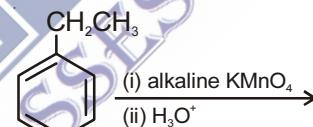
25. The major product of the following reaction is



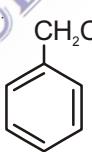
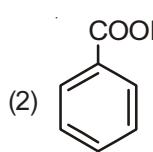
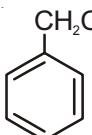
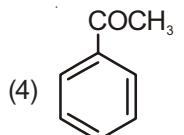
[JEE (Main)-2019]

- (1) CH₃C(I)(Cl)CHD₂ (2) CH₃CD(I)CHD(Cl)
 (3) CH₃CD(Cl)CHD(I) (4) CH₃CD₂CH(Cl)(I)

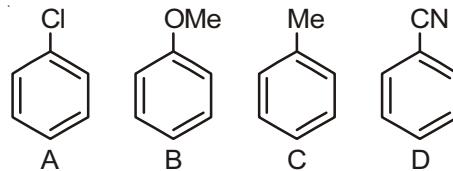
26. The major product of the following reaction is



[JEE (Main)-2019]

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

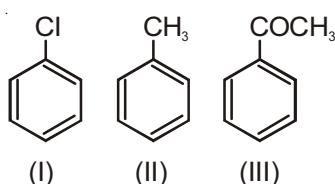
27. The increasing order of reactivity of the following compounds towards aromatic electrophilic substitution reaction is



[JEE (Main)-2019]

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

28. The increasing order of the reactivity of the following compounds towards electrophilic aromatic substitution reactions is :



[JEE (Main)-2019]

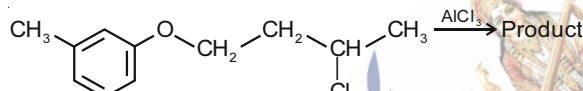
- (1) $| < ||| < ||$ (2) $||| < || < |$
 (3) $|| < | < |||$ (4) $||| < | < ||$

29. Which of these factors does not govern the stability of a conformation in acyclic compounds?

[JEE (Main)-2019]

- (1) Angle strain
 - (2) Steric interactions
 - (3) Electrostatic forces of interaction
 - (4) Torsional strain

30. The major product obtained in the given reaction is:



[JEE (Main)-2019]

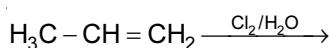
- (1)

(2)

(3)

(4)

31. The major product of the following addition reaction is



[JEE (Main)-2019]

- [SCE] (Main)

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

32. But-2-ene on reaction with alkaline KMnO_4 at elevated temperature followed by acidification will give :

[JEE (Main)-2019]

- (1) 2 molecules of CH_3CHO
(2) 2 molecules of CH_3COOH
(3) $\begin{array}{cccc} \text{CH}_3 & -\text{CH} & -\text{CH} & -\text{CH}_3 \\ | & & | & \\ \text{OH} & & \text{OH} & \end{array}$
(4) One molecule of CH_3CHO and one molecule of CH_3COOH

33. Heating of 2-chloro-1-phenylbutane with EtOK/EtOH gives X as the major product. Reaction of X with $\text{Hg}(\text{OAc})_2/\text{H}_2\text{O}$ followed by NaBH_4 gives Y as the major product. Y is: [JEE (Main)-2019]

[JEE (Main)-2019]

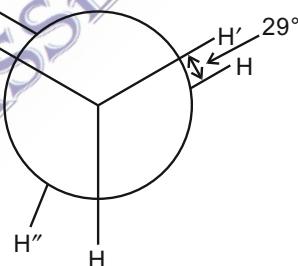
- (1) 

(2) 

(3) 

(4) 

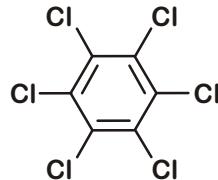
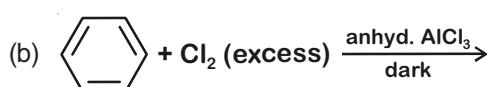
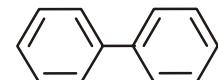
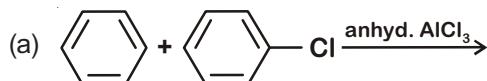
34. In the following skew conformation of ethane, $\text{H}' - \text{C} - \text{C} - \text{H}''$ dihedral angle is

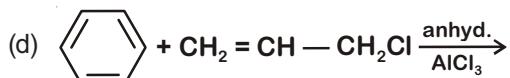
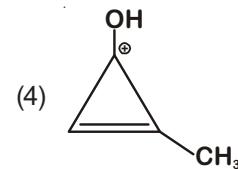
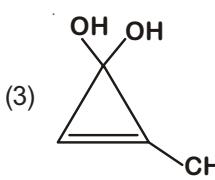
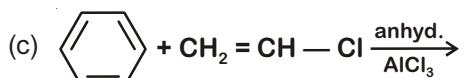


[JEE (Main)-2019]

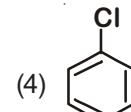
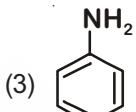
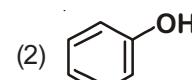
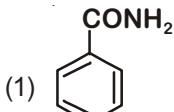
- (1) 120° (2) 58°
 (3) 151° (4) 149°

35. Consider the following reactions





38. Which of these will produce the highest yield in Friedel Crafts reaction? [JEE (Main)-2020]

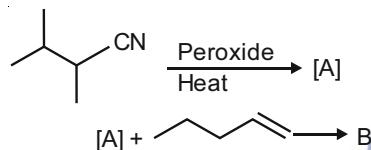


Which of these reactions are possible?

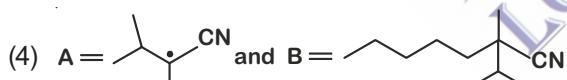
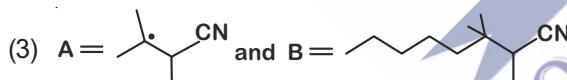
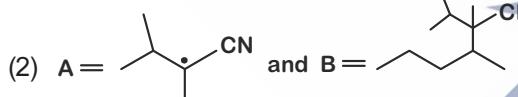
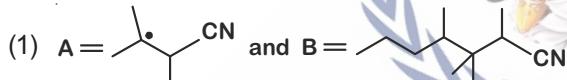
[JEE (Main)-2020]

- (1) (b) and (d) (2) (a) and (d)
 (3) (a) and (b) (4) (b), (c) and (d)

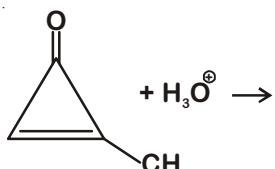
36. The major products A and B in the following reactions are



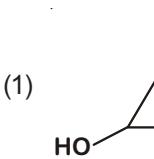
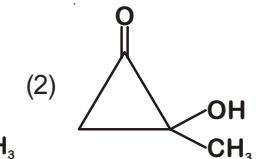
[JEE (Main)-2020]



37. The major product in the following reaction is



[JEE (Main)-2020]

- (1) 
 (2) 

39. The correct order of heat of combustion for following alkadienes is



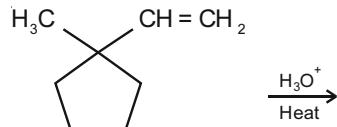
[JEE (Main)-2020]

- (1) (c) < (b) < (a)
 (3) (b) < (c) < (a)
 (4) (a) < (b) < (c)

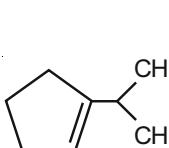
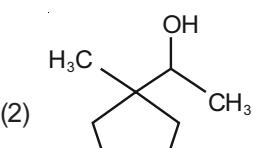
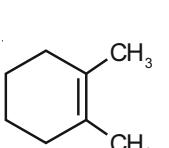
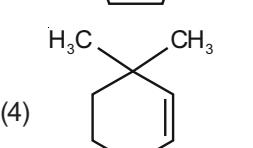
40. The number of sp^2 hybrid orbitals in a molecule of benzene is [JEE (Main)-2020]

- (1) 24
 (2) 18
 (3) 12
 (4) 6

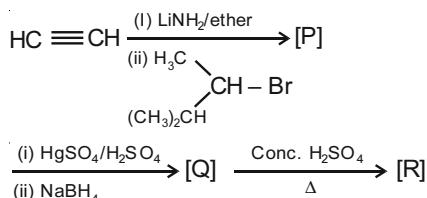
41. The major product in the following reaction is



[JEE (Main)-2020]

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

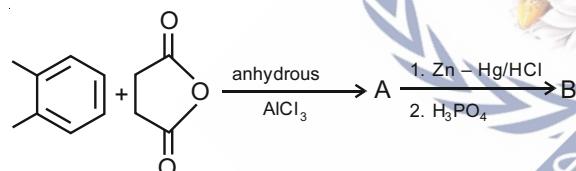
42. The major product [R] in the following sequence of reactions as:



[JEE (Main)-2020]

- (1) $\begin{array}{c} \text{H}_3\text{C} \\ | \\ \text{C} = \text{CH}-\text{CH}_3 \\ | \\ (\text{CH}_3)_2\text{CH} \end{array}$
- (2) $\begin{array}{c} \text{H}_2\text{C} \\ || \\ \text{C} = \text{CH}_2-\text{CH}_3 \\ | \\ \text{CH}(\text{CH}_3)_2 \end{array}$
- (3) $\begin{array}{c} \text{H}_3\text{C} \\ | \\ \text{C} = \text{C}(\text{CH}_3)_2 \\ | \\ \text{H}_3\text{CCH}_2 \end{array}$
- (4) $\begin{array}{c} \text{H}_3\text{C} \\ | \\ \text{CH}-\text{CH}=\text{CH}_2 \\ | \\ (\text{CH}_3)_2\text{CH} \end{array}$

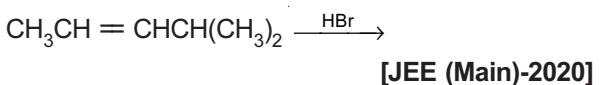
43. In the following reaction sequence the major products A and B are:



[JEE (Main)-2020]

- (1) A = ; B =
- (2) A = ; B =
- (3) A = ; B =
- (4) A = ; B =

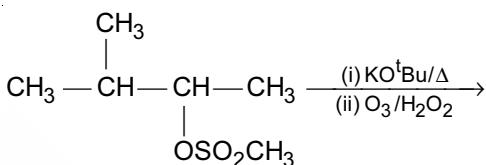
44. The major product formed in the following reaction is



[JEE (Main)-2020]

- (1) $\text{Br}(\text{CH}_2)_3\text{CH}(\text{CH}_3)_2$
 (2) $\text{CH}_3\text{CH}(\text{Br})\text{CH}_2\text{CH}(\text{CH}_3)_2$
 (3) $\text{CH}_3\text{CH}_2\text{CH}(\text{Br})\text{CH}(\text{CH}_3)_2$
 (4) $\text{CH}_3\text{CH}_2\text{CH}_2\text{C}(\text{Br})(\text{CH}_3)_2$

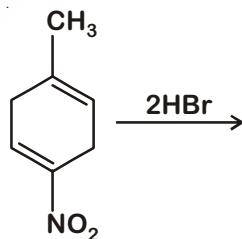
45. The major products of the following reaction are



[JEE (Main)-2020]

- (1) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}(=\text{O})-\text{CH}_3 \end{array} + \text{CH}_3\text{COOH}$
 (2) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}(=\text{O})-\text{CH}_3 \end{array} + \text{CH}_3\text{CHO}$
 (3) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}(=\text{O})-\text{CH}_2-\text{COOH} \end{array} + \text{HCOOH}$
 (4) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}(=\text{O})-\text{CH}_2-\text{CHO} \end{array} + \text{HCHO}$

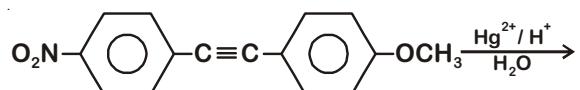
46. The major product of the following reaction is



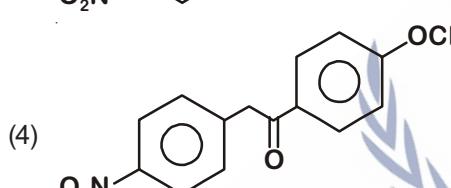
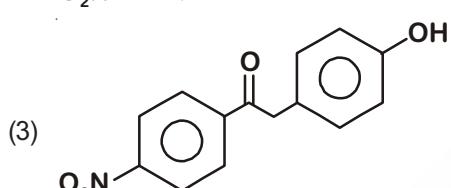
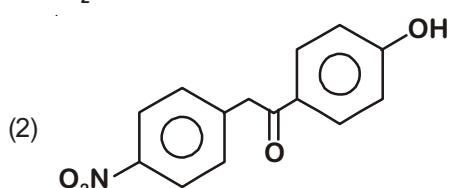
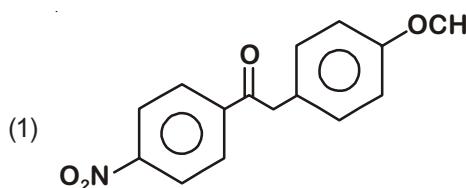
[JEE (Main)-2020]

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

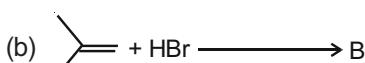
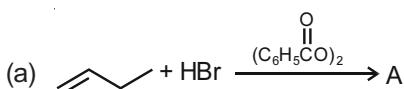
47. The major product obtained from the following reaction is



[JEE (Main)-2020]



48. The increasing order of the boiling points of the major products A, B and C of the following reactions will be



[JEE (Main)-2020]

- (1) A < C < B
- (2) C < A < B
- (3) B < C < A
- (4) A < B < C

49. In the following sequence of reactions the maximum number of atoms present in molecule 'C' in one plane is _____.



(A is a lowest molecular weight alkyne)

[JEE (Main)-2020]