

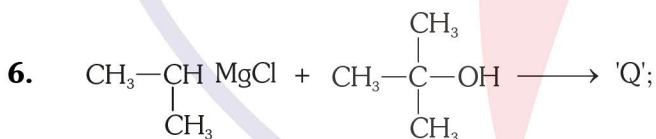
1. The order of reactivity of alkyl halides in Wurtz reaction is  
 (1)  $R-I > R-Br > R-Cl$  (2)  $R-I < R-Br < R-Cl$   
 (3)  $R-Br > R-I < R-Cl$  (4)  $R-I > R-Cl > R-Br$

2. Kolbe's electrolysis of a mixture of pot. Propanoate and pot. 3-Methylbutanoate gives  
 (1) Butane and isobutane  
 (2) Butane and 2,5-dimethylhexane  
 (3) Butane, 2,5-dimethylhexane and isohexane  
 (4) Butane and isohexane

3. The Corey-House alkane synthesis is carried out by treating an alkyl halide with  
 (1) Lithium metal  
 (2) Copper metal  
 (3) Lithium metal followed by reaction with cuprous iodide and then treating the product with an alkyl halide  
 (4) Cuprous iodide followed by reaction with alkyl halide

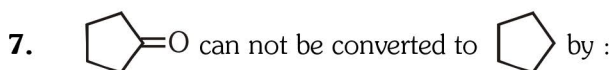
4. Which of the following compound is not suitable to obtain from wurtz reaction ?  
 (1) ethane (2) butane  
 (3) isobutane (4) hexane

5. When ethyl chloride and n-propyl chloride undergoes wurtz reaction which is not obtained  
 (1) n-butane (2) n-pentane  
 (3) n-hexane (4) isobutane



What is 'Q' ?

- (1) isobutane (2) isopropane  
 (3) tert. butyl chloride (4) propane



- (1) Red P + HI  
 (2) Wolf Kishner reduction  
 (3) Clemmensen reaction  
 (4)  $\text{LiAlH}_4$

8. Which of the following reactions does not involve a C—C bond formation

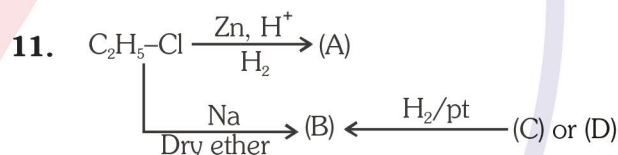
- (1) Hydrolysis of a Grignard reagent  
 (2) Combination of two alkyl free radicals  
 (3) Corey-House synthesis of alkanes  
 (4)  $RNa + R-Br \longrightarrow R-R + NaBr$

9. Which of the following reactions of methane is incomplete combustion :-

- (1)  $2\text{CH}_4 + \text{O}_2 \xrightarrow{\text{Cu}/523\text{K}/100\text{atm.}} 2\text{CH}_3\text{OH}$   
 (2)  $\text{CH}_4 + \text{O}_2 \xrightarrow{\text{Mo}_2\text{O}_3} \text{HCHO} + \text{H}_2\text{O}$   
 (3)  $\text{CH}_4 + \text{O}_2 \longrightarrow \text{C(s)} + 2\text{H}_2\text{O(l)}$   
 (4)  $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2\text{(g)} + 2\text{H}_2\text{O(l)}$

10. Which is correct about Wurtz reaction ?

- (a) It can proceed through free radical mechanism  
 (b) Alkanes having even no. of C-atom can be prepared  
 (c) Sodium in Ammonia is used  
 (d) Sodium in dry ether is used  
 (1) c, d (2) a, b, d  
 (3) b,c (4) a, b, c, d

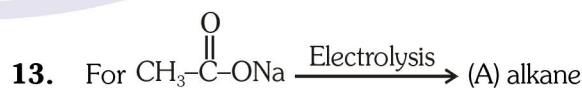


The incorrect statement is :

- (1) (A) is  $\text{C}_2\text{H}_6$  (2) (C) can be 1-butene  
 (3) (A) and (B) are alkane (4) (D) is ethene

12. Arrange the following in their boiling points.

- (i) n-butane (ii) iso-butane  
 (iii) n-pentane (iv) iso-pentane  
 (v) neopentane  
 (1) iii > i > ii > iv > v (2) v > iv > ii > i > iii  
 (3) iii > iv > v > i > ii (4) ii > i > v > iv > iii



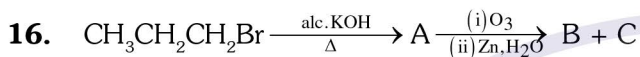
Which is incorrect ?

- (1) A is ethane  
 (2) (A) is formed at anode  
 (3)  $\text{CO}_2$  evolves at cathode  
 (4) pH near cathode increases during the process

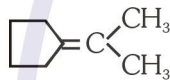
# HYDROCARBONS

14. Ozonolysis of 3-Methyl-1-butene gives a mixture of  
 (1) Propanal and ethanal  
 (2) Propanone and ethanal  
 (3) 2-Methylpropanal and methanal  
 (4) Butanone and methanal

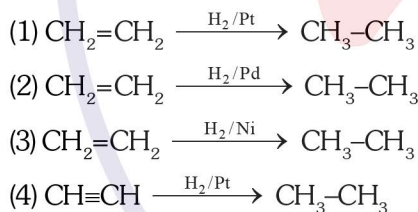
15. Oxidation of isobutylene with acidic potassium permanganate gives  
 (1) Acetone + CO<sub>2</sub> (2) Acetic acid  
 (3) Acetic acid + CO<sub>2</sub> (4) Acetic acid + acetone



In the above reaction A, B and C are given by the set

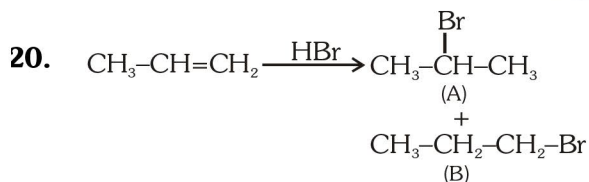
- (1) Propylene, acetone, formaldehyde  
 (2) Propene, ethanal, methanal  
 (3) Propyne, acetaldehyde, formaldehyde  
 (4) Propylene, propionaldehyde, formaldehyde
17. Which of the following alkenes on ozonolysis give a mixture of ketones only?
- (a)  $\text{CH}_3\text{-CH=CH-CH}_3$  (b)  $\text{CH}_3\text{-CH(CH}_3\text{)-CH=CH}_2$   
 (c)  (d)  $(\text{CH}_3)_2\text{C=C(CH}_3)_2$   
 (1) a and b (2) b and c  
 (3) b and d (4) c and d

18. Which reaction will not happen at room temperature:



19. Which of the following is not electrophilic addition reaction ?

- (1) Addition of H<sup>+</sup>/H<sub>2</sub>O on alkene  
 (2) Addition of dihydrogen on alkenes  
 (3) Addition of halogen on alkenes  
 (4) Addition of hydrogen halides on alkenes



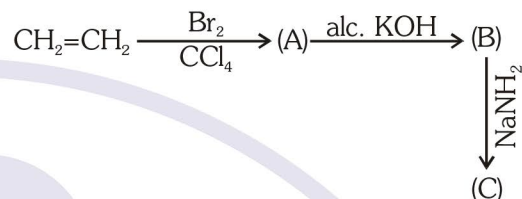
- (a) The product A is major  
 (b) Formation of A follows markovnikov rule

- (c) Carbocation formed in A is less stable than that formed in B  
 (d) Formation of B follows markovnikov rule

The correct statements are :

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

21. For the reaction



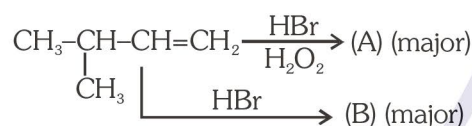
The product (C) is :

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

22. An alkene A on ozonolysis gives a mixture of ethanal and pentan-3-one. The IUPAC name of A is.

- (1) 3-ethyl-3-pentene  
 (2) 3-ethylidene pentane  
 (3) 3-ethyl pent-2-ene  
 (4) 1,1-diethyl prop-1-ene

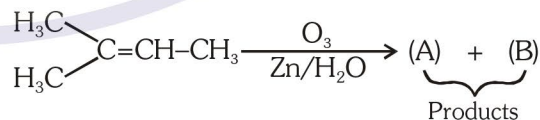
23. For the reaction :



The incorrect statement is :

- (1) A and B are chain isomers  
 (2) A and B are position isomers  
 (3) A is 1-bromo-3-methyl butane  
 (4) B is 2-bromo-2-methyl butane

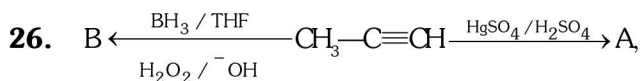
24. For the reaction



- (1) One of the product only show positive tollens test  
 (2) Both product shows positive tollen's test  
 (3) Both product shows positive haloform test  
 (4) Both 1 & 3 are correct

25. Which of the following compound will not give a precipitate with Tollen's reagent

- (1) ethyne (2) 1-butyne  
(3) 3-methyl-1-butyne (4) 1-pentene



A and B are

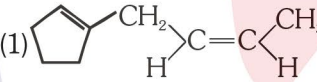
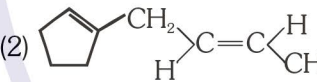
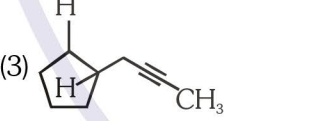
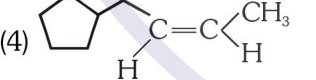
- (1)  $\text{CH}_3\text{CH}_2\text{CHO}$ ,  $\text{CH}_3\text{COCH}_3$   
(2)  $\text{CH}_3\text{COCH}_3$ ,  $\text{CH}_3\text{CH}_2\text{CHO}$   
(3)  $\text{CH}_3\text{COCH}_3$  both  
(4)  $\text{CH}_3\text{COCH}_3$ ,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$



A and B are

- (1)  $\text{MeCH}_2\text{C}\equiv\text{CNa}$ ,  $\text{MeCH}_2\text{C}\equiv\text{C-Et}$   
(2)  $\text{MeCH}_2\text{CH}=\text{CH}_2$ ,  $\text{MeCH}_2\text{-CHEt-CH}_3$   
(3)  $\text{MeCH}_2\text{CH}=\text{CHNH}_2$ ,  $\text{MeCH}_2\text{CH}=\text{CH-NHBr}$   
(4)  $\text{MeCH}_2\text{C}\equiv\text{C-NH}_2$ ,  $\text{MeC}\equiv\text{C-NH-Br}$



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

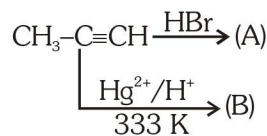
29. To distinguish between propene and propyne, the reagent would be -

- (1) Bromine  
(2) Alkaline  $\text{KMnO}_4$   
(3) Ammonical silver nitrate  
(4) Ozone

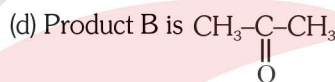
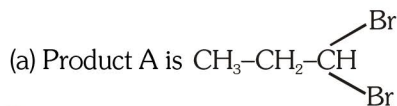
30. The most suitable reagent to differentiate ethyne and ethene is :

- (1)  $\text{Br}_2$  in  $\text{CCl}_4$  (2)  $\text{NaHCO}_3$   
(3)  $\text{NaOH}$  (4)  $\text{NaNH}_2$

31. For the reaction :

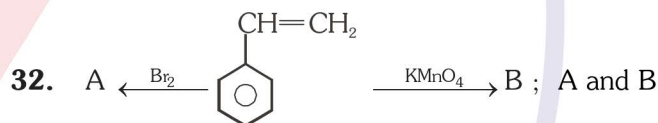


Consider statements :-



The correct statements are :

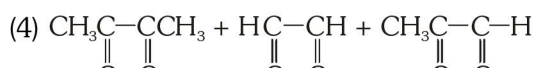
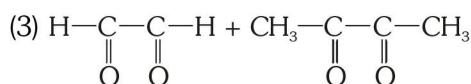
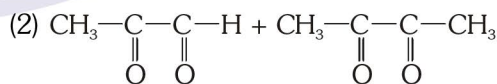
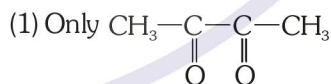
- (1) b, d (2) a, c  
(3) only b (4) only a



respectively are

- (1) o-bromo styrene, benzoic acid  
(2) p-bromostyrene, benzaldehyde  
(3) m-bromostyrene, benzaldehyde  
(4) Styrene dibromide, benzoic acid.

33. The ozonolysis product of 1, 2-dimethyl benzene is/are :-



# HYDROCARBONS

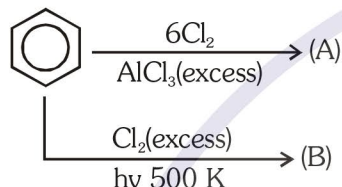
34. For the reaction :



Correct statement is :-

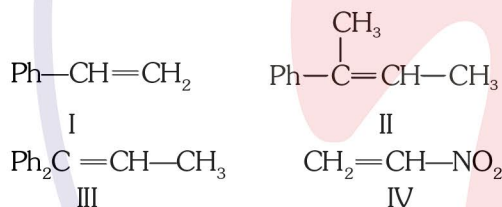
- (1) A is n-propyl benzene
- (2) It is a friedel craft alkylation
- (3) A is iso propyl benzene
- (4) Both 2 & 3

35. For the reaction



- (1) A is not aromatic
- (2) B is aromatic
- (3) A is aromatic
- (4) B is hexachlorobenzene

36. Correct reactivity order for EAR of following compounds is



- (1) IV > I > II > III
- (2) III > II > I > IV
- (3) II > III > I > IV
- (4) II > III > IV > I

37. The intermediate during the addition of HCl to propene in the presence of peroxide is

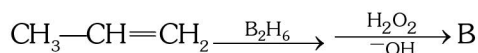
- (1)  $\text{CH}_3\dot{\text{C}}\text{HCH}_2\text{Cl}$
- (2)  $\text{CH}_3\overset{\oplus}{\text{C}}\text{H}-\text{CH}_3$
- (3)  $\text{CH}_3-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}_2$
- (4)  $\text{CH}_3\dot{\text{C}}\text{HCH}_3$

38.  $\text{C}_6\text{H}_5-\text{CH}=\text{CH}-\text{COOH} + \text{Br}_2 \longrightarrow \text{A}$

the number of chiral carbons in 'A' are

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

39.  $\text{CH}_3-\text{CH}=\text{CH}_2 \xrightarrow{\text{dil}/\text{H}_2\text{SO}_4} \text{A}$



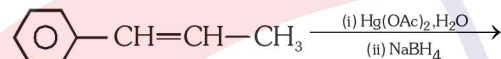
Wrong statement about the product is

- (1) A and B have the same functional group
- (2) A and B are position isomers.
- (3) A and B show chain isomerism
- (4) Mixed ether is the isomer of both A and B

40. Which of the following alkene is most reactive for hydration

- (1) ethene
- (2) propene
- (3) 1-butene
- (4) 2-methyl propene

41. The major product of the following reaction is



- (1)  $\text{C}_6\text{H}_5-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{OH}$
- (2)  $\text{C}_6\text{H}_5-\text{CH}_2-\underset{\text{OH}}{\text{CH}}-\text{CH}_3$
- (3)  $\text{C}_6\text{H}_5-\underset{\text{OH}}{\text{CH}}-\text{CH}_2-\text{CH}_3$
- (4)  $\text{HO}-\text{C}_6\text{H}_4-\text{CH}=\text{CH}-\text{CH}_3$

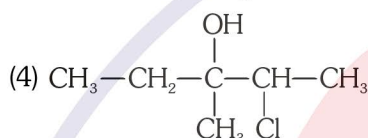
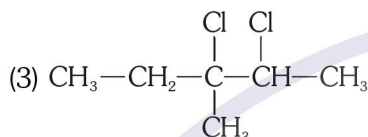
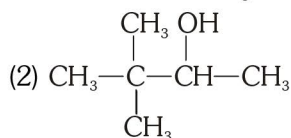
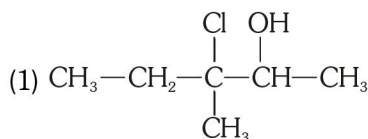
42.  $\text{Cyclohexene} \xrightarrow{\text{A}} \text{Cyclohexane-1,2-diol} ; \text{Reagent 'A' is}$

- (1)  $\text{BH}_3, \text{H}_2\text{O}_2 / \text{OH}^-$
- (2)  $\text{H}_2\text{O} / \text{H}^+$
- (3)  $\text{Hg}(\text{OCOCH}_3)_2, \text{H}_2\text{O} / \text{NaBH}_4$
- (4)  $\text{Cl}_2 / \text{aq. NaOH}$

43. Which of the following alkenes on hydration gives a tertiary alcohol

- (1) 2-Butene
- (2) Isobutylene
- (3) Ethene
- (4)  $\alpha$ -Butylene

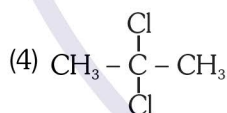
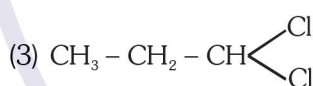
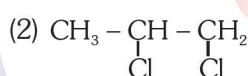
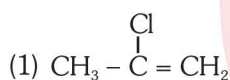
44. The predominant product formed when 3-methyl-2-pentene reacts with HOCl is



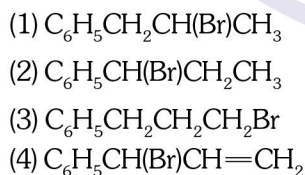
45. Propene on addition with HI, gives



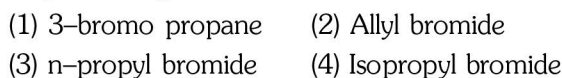
46. What is the main product of this reaction?



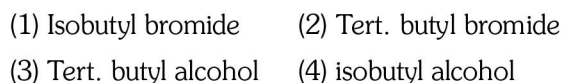
47. 3-Phenyl propene on reaction with HBr gives (as a major product)



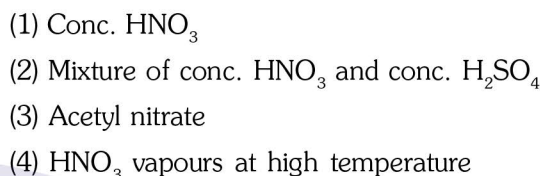
48. Reaction of HBr with propene in the presence of peroxide gives



49. Isobutylene  $\xrightarrow[\text{H}_2\text{O}_2]{\text{HBr}}$  "product". The product is



50. The nitrating agent for the nitration of alkanes is:



51. The chain propagating step is fastest in the reaction of an alkane with



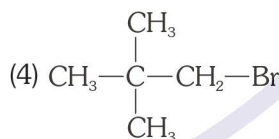
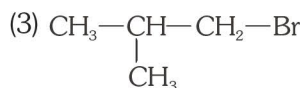
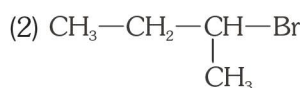
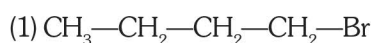
52. In the nitration of propane, the product obtained in maximum yield is



53. Only two isomeric monochloro derivatives are possible for (exclude stereo isomers)



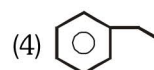
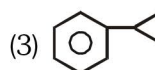
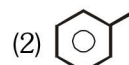
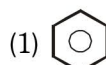
54. What is the chief product obtained when n-butane is treated with bromine in the presence of light at  $130^\circ\text{C}$ ?



55. The strongest deactivating effect on aromatic ring is



56. Which of the following is maximum reactive towards E.S.R. :-



# HYDROCARBONS

57. Correct order of reactivity of following compound with an electrophile :-

- (I)  $p\text{-CH}_3\text{-C}_6\text{H}_4\text{-CH}_3$   
 (II)  $\text{C}_6\text{H}_5\text{-CH}_3$   
 (III)  $p\text{-CH}_3\text{-C}_6\text{H}_4\text{-NO}_2$   
 (IV)  $p\text{-O}_2\text{N-C}_6\text{H}_4\text{-NO}_2$

- (1)  $\text{I} > \text{II} > \text{III} > \text{IV}$       (2)  $\text{II} > \text{I} > \text{IV} > \text{III}$   
 (3)  $\text{III} > \text{II} > \text{I} > \text{IV}$       (4)  $\text{IV} > \text{III} > \text{II} > \text{I}$

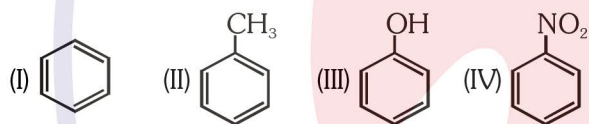
58. Toluene is more reactive than benzene towards electrophilic reagents due to :-

- (1) Inductive effect only  
 (2) Hyperconjugative effect only  
 (3) Both inductive as well as hyperconjugative effects  
 (4) Strong mesomeric effect

59. Nitration of benzene is

- (1) nucleophilic substitution  
 (2) nucleophilic addition  
 (3) electrophilic substitution  
 (4) electrophilic addition

60. Consider the following compounds :



Correct order of their reactivity in electrophilic substitution reactions would be :-

- (1)  $\text{I} > \text{II} > \text{III} > \text{IV}$       (2)  $\text{IV} > \text{III} > \text{II} > \text{I}$   
 (3)  $\text{III} > \text{II} > \text{I} > \text{IV}$       (4)  $\text{III} > \text{IV} > \text{I} > \text{II}$

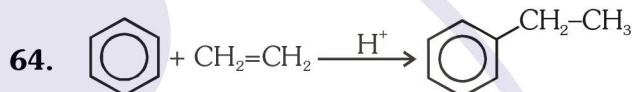
61. The active species in the nitration of benzene is

- (1)  $\text{NO}_2^+$       (2)  $\text{HNO}_3$       (3)  $\text{NO}_3^-$       (4)  $\text{NO}_2^-$

62. The function of anhydrous  $\text{AlCl}_3$  in the Friedel craft's reaction

- (1) To absorb water  
 (2) To absorb HCl  
 (3) To produce electrophile  
 (4) To produce Nucleophile

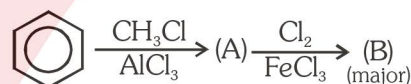
63. In which of the following compound the electrophile attack on o- and p- positions :



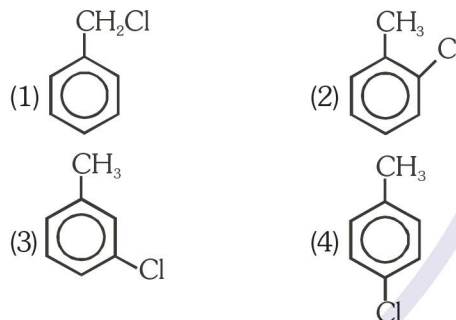
Incorrect statement about this reaction

- (1) Benzene is substrate  
 (2) Ethene is reagent  
 (3) Reaction is EAR with respect to ethene  
 (4) Reaction is NSR for benzene

65. For the reaction



Product B is :



## ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	3	3	3	4	4	4	1	3	2	4	3	3	3	1
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	2	4	3	2	3	3	3	1	4	4	2	1	2	3	4
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	1	4	4	4	3	2	2	2	3	4	3	1	2	4	1
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	4	2	3	1	4	1	2	1	2	4	2	1	3	3	3
Que.	61	62	63	64	65										
Ans.	1	3	2	4	2										