competishun
Power of real gurus

CHEMISTRY

TARGET : JEE Advanced – 2021

CAPS – 14

Haloalkanes and Haloarenes

Answer Key

1.	(C)	**2.**	(D)	**3.**	(B)	**4.**	(D)	**5.**	(A)
6.	(D)	**7.**	(B)	**8.**	(B)	**9.**	(D)	**10.**	(A)
11.	(D)	**12.**	(B)	**13.**	(D)	**14.**	(B)	**15.**	(C)
16.	(D)								

17. 1 → A; 2 → D; 3 → E; 4 → G; 5 → I

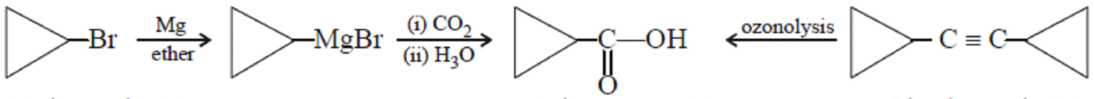
18. (A) → r; (B) → q; (C) → p; (D) → p

19. (A) → Q; (B) → R; (C) → P; (D) → Q

20. A → P; B → R; C → S; D → Q

21. A → P,Q; B → P, Q; C → Q; D → R

22.



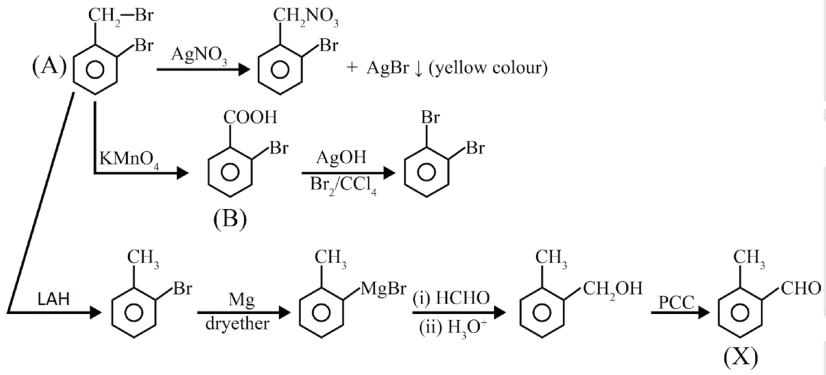
Cyclopropyl bromide (C) — Cyclopropane carboxylic acid (B) — Dicyclopropyl acetylene (A)

23. **(2.00)**

24. **(8)**

Solution

1.



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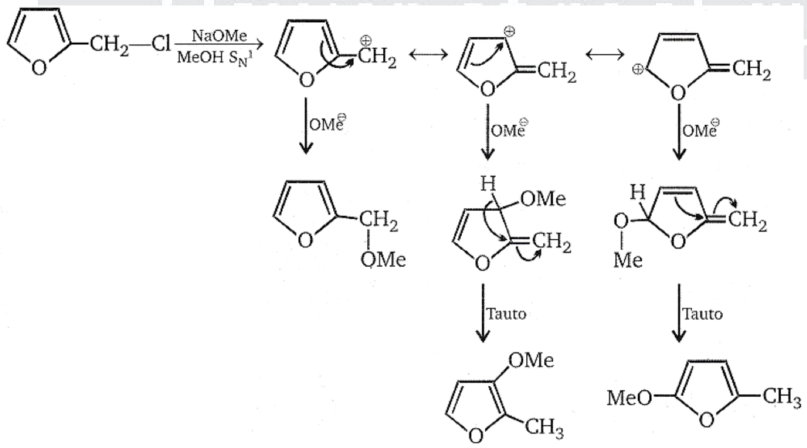

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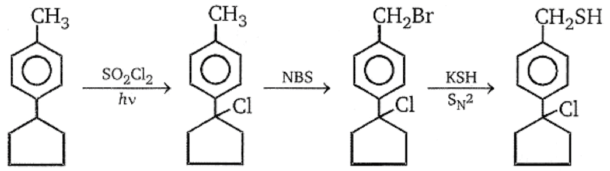
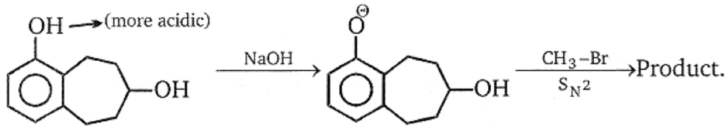


4. Consider σ-bond resonance as well as inductive effect.

5.



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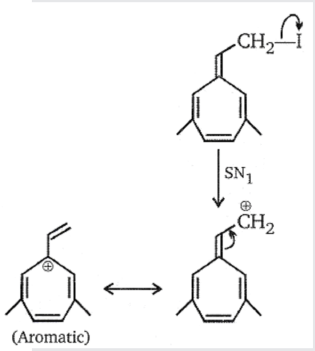

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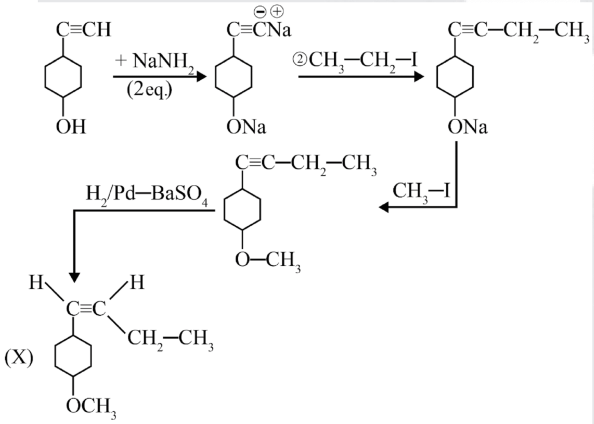

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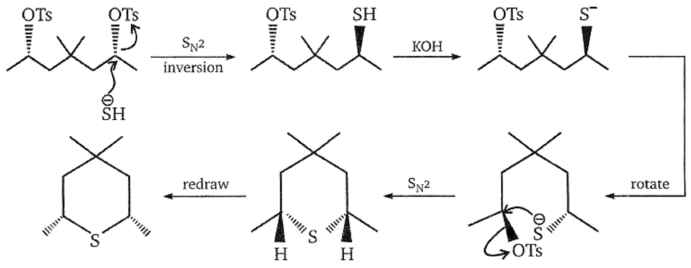

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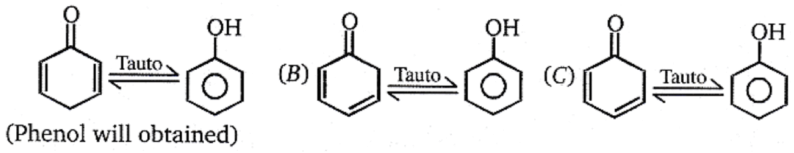

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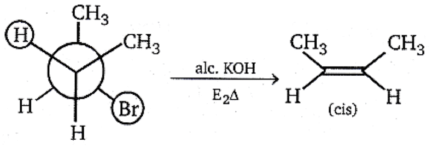
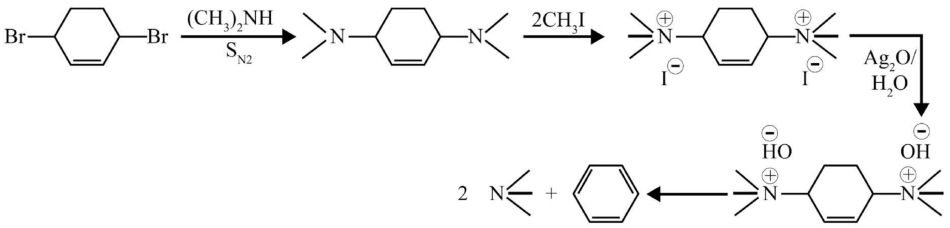


11. Anti-elimination reaction.

12.



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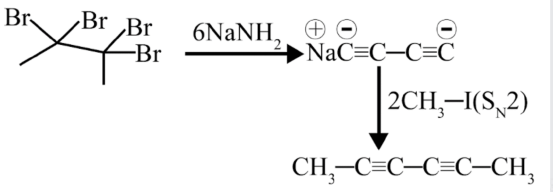

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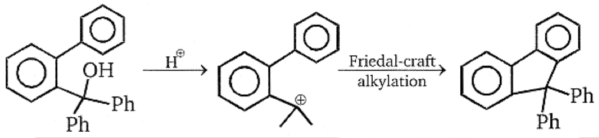

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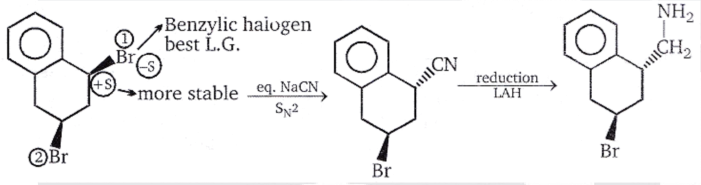

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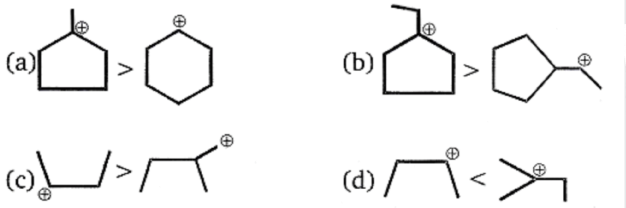


17. (1) (A) Reaction faster due to 3° R – I

(2) (D) More reactive due to SN2 reaction

(3) (E) More reactive due to SN2 reaction. In polar aprotic solvent Cl^- is better Nu^-.

(4) (G) More reactive due to good leaving group.

(5) (I) More reactive due to resonance stabilized transition state formed.

18. A gives E1cB due to bad leaving group F, carbanion will form.

B gives E1 elimination, carbocation is formed.

C give E2 elimination transition state is formed.

In D, Tertiary halide in the presence of strong base undergoes E2 elimination.

19. In A, Strong base favors E2 elimination

In B, Strong base + presence of EWG favors E1cB mechanism.

In C, Ag2O Moist gives intermediate carbocation.

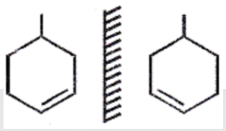
In D, Strong base favors E2 elimination.

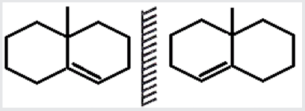
20. (A) Substitution takes place in only compound (P). In compound (S), HBr will be eliminated hence elimination reaction, not substitution. Hence compound (1).

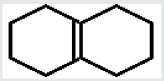
(B) Williamson ether synthesis $\Rightarrow$ substitution cannot take place on benzene hence compound (R).

(C) Aq. ethanol will substitute Br^- with EtO^- and H^+ ions released in the solution turning the solution acidic in compound (S) Hence compound (S).

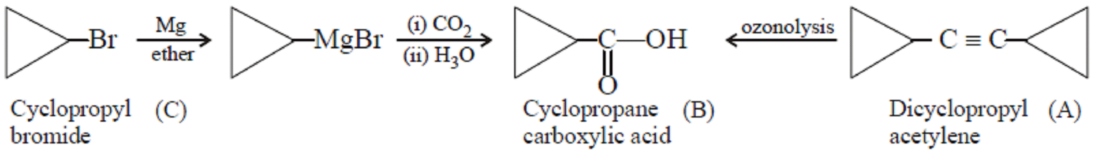
(D) In compound (R), after cleavage, positive charge will be on benzene -ring which is highly unstable. Hence compound (Q).

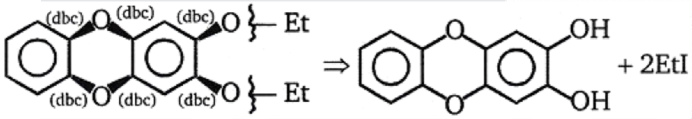
21. A. 

B. 

C. 

D. Violation of bredt's rule.

22. 

23. 

24. X = 3 [Hoffman alkene + saytzaff alkene (Cis/ trans)],

Y = 3 [Hoffman alkene + saytzaff alkene (Cis/ trans)],

Z = 2 one type of alkene is formed, which can give geometrical isomerism,

P = 0 $\Rightarrow$ 3 + 3 + 2 + 0 = 8