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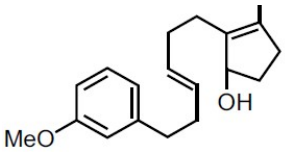
CHEMISTRY

TARGET : JEE Advanced - 2023

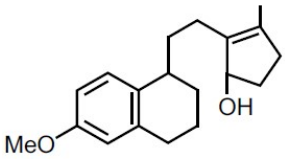
CAPS – 9

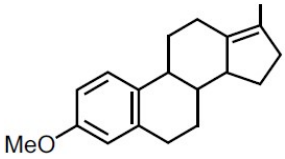
Hydrocarbons

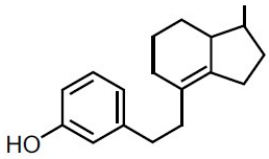
Part-I

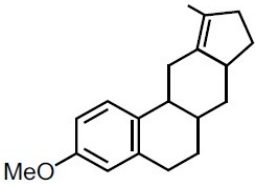
1. 

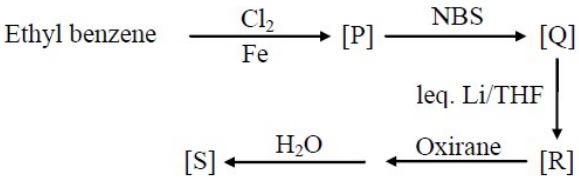
Major product is -

(A) 

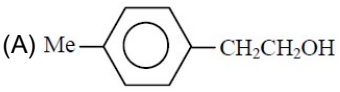
(B) 

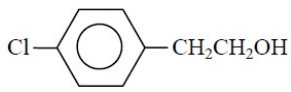
(C) 

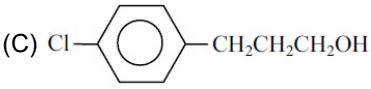
(D) 

2. 

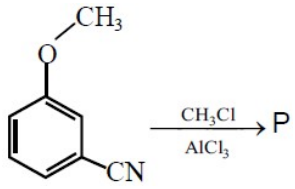
[S] is –

(A) 

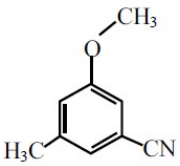
(B) 

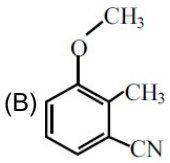
(C) 

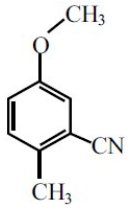
(D) None of these

3. 

Most probable structure of P is :

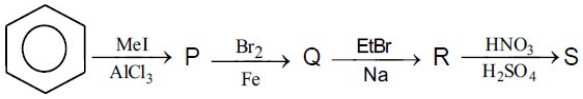
(A) 

(B) 

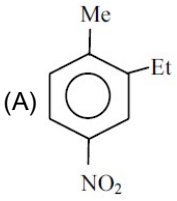
(C) 

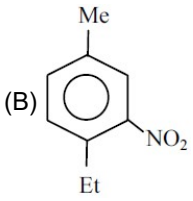
(D) Reaction will not take place due to strong deactivating nature of –CN

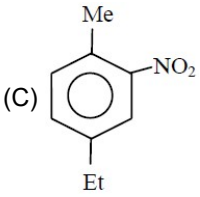
4. The major product in the reaction

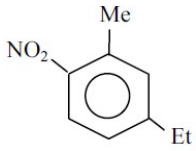


S is -

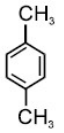
(A) 

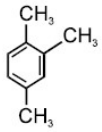
(B) 

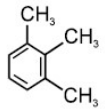
(C) 

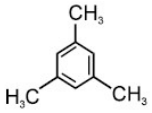
(D) 

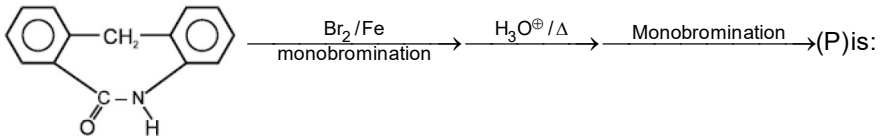
5. Which of the following aromatic ring undergoes fastest D exchange with DF / BF_3.

(A) 

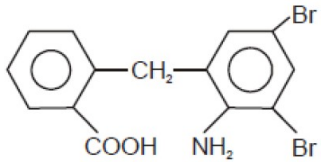
(B) 

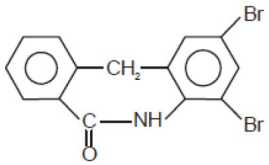
(C) 

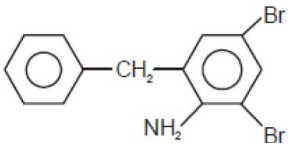
(D) 

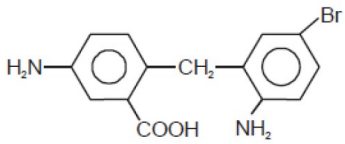
6. 

(P)is:

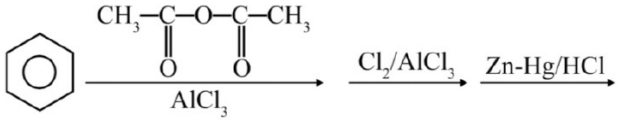
(A) 

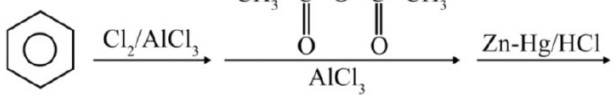
(B) 

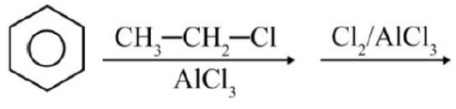
(C) 

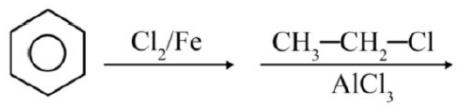
(D) 

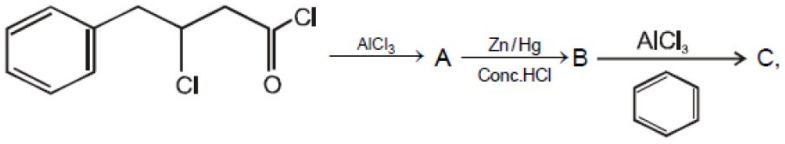
7. Which steps is used to produce 1–Chloro–3–ethylbenzene

(A) 

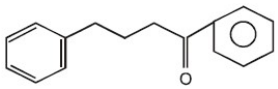
(B) 

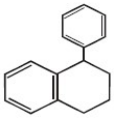
(C) 

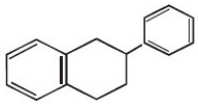
(D) 

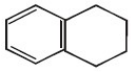
8. 

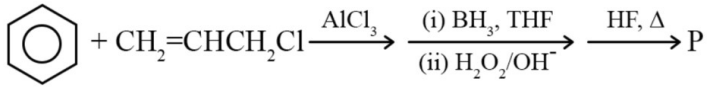
The product C is :

(A) 

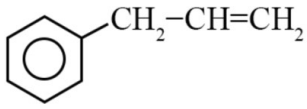
(B) 

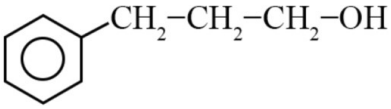
(C) 

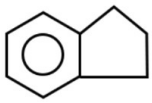
(D) 

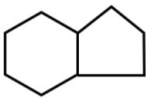
9. 

The compound 'P' is:

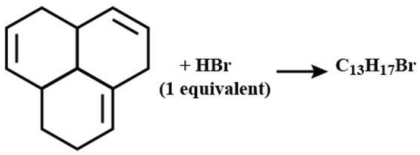
(A) 

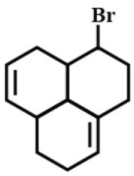
(B) 

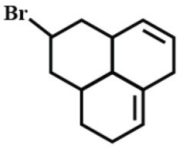
(C) 

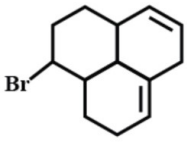
(D) 

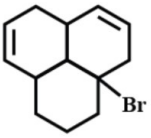
10. Which of the following bromides is the major product of the reaction shown below, assuming that there are no carbocation rearrangement?



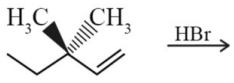
(A) 

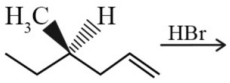
(B) 

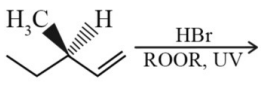
(C) 

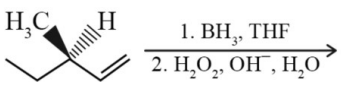
(D) 

11. Which of the following reactions results in the formation of a pair of diastereomers?

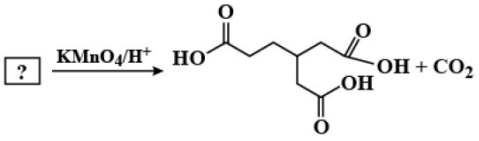
(A) 

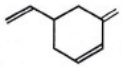
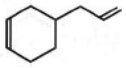
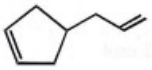
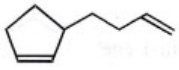
(B) 

(C) 

(D) 

12. Which of the following compound was the starting material for the oxidation shown below?



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

13. In which of the following reactions 1,3-butadiene will be obtained as a major product?

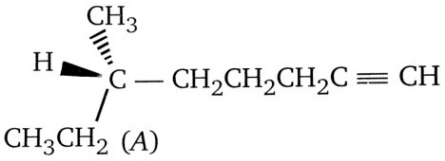
(A) $Br - CH_2 - CH_2 - CH_2 - CH_2 - Br \xrightarrow[(CH_3)_3COH]{(CH_3)_3COK(2mole)}$

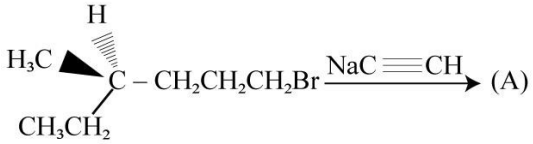
(B) $HO - CH_2 - CH_2 - CH_2 - CH_2 - OH \xrightarrow{conc.H_2SO_4}$

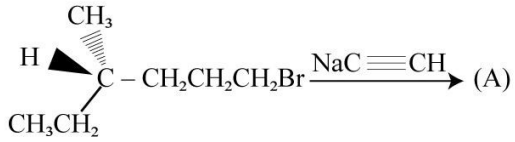
(C) $H_2C = CH - C \equiv CH \xrightarrow[Ni_2B]{H_2(1mole)}$

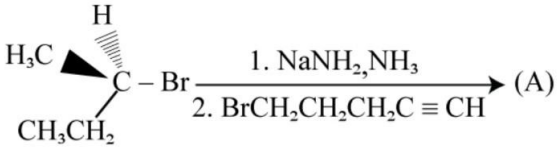
(D) All of these

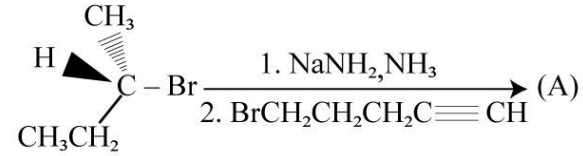
14. Which combination is best for preparation of the compound (A) shown below?



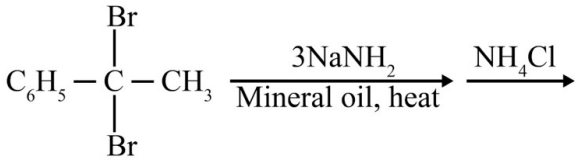
(A) 

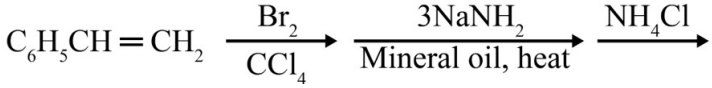
(B) 

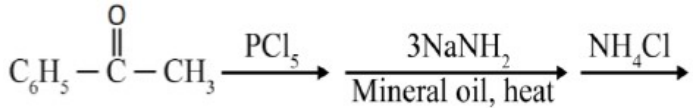
(C) 

(D) 

15. In which reaction last product is Ph – C ≡ CH ?

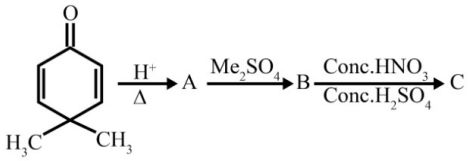
(A) 

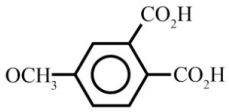
(B) 

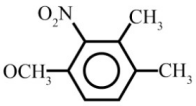
(C) 

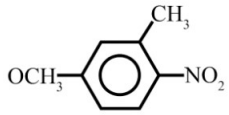
(D) All

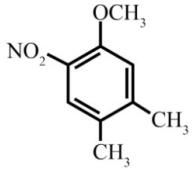
16. Identify the end product in the given sequence of reaction



(A) 

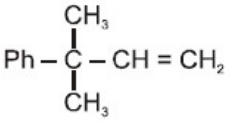
(B) 

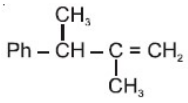
(C) 

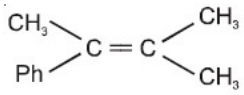
(D) 

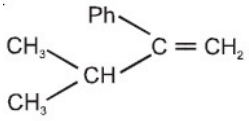
MULTIPLE CHOICE QUESTIONS

17. Which of the following compounds will give same major product on acid catalysed hydration

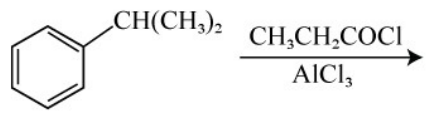
(A) 

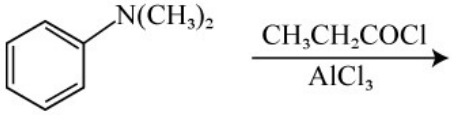
(B) 

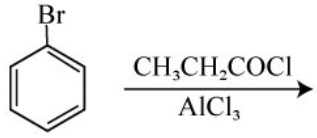
(C) 

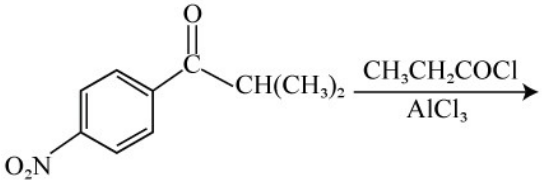
(D) 

18. Which of the following reactions are less possible by Friedel-craft's acylation as per expectation?

(A) 

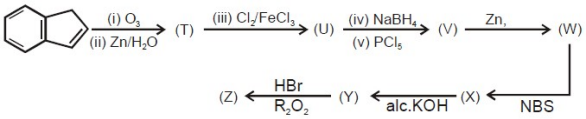
(B) 

(C) 

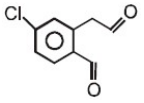
(D) 

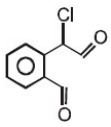
Compersion 19 to 21

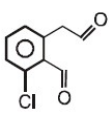
Observe the following reaction and answer.

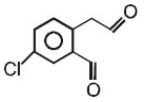


19. The compound (U) is (the major isomer is):

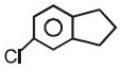
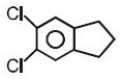
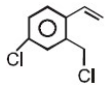
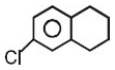
(A) 

(B) 

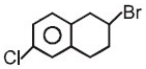
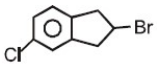
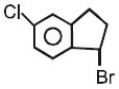
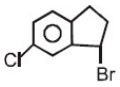
(C) 

(D) 

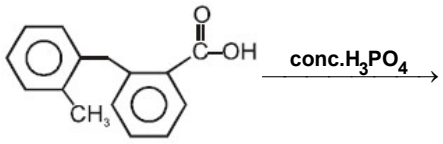
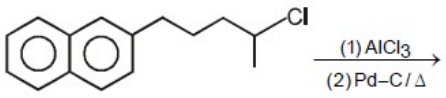
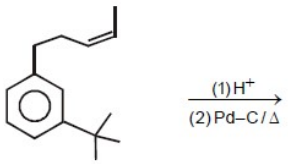
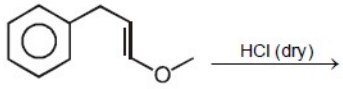
20. The compound (W) is

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

21. The compound (Z) is

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

22. Match the reaction of column (I) with the characteristics given in column (II)

Column-I	**Column-II**
(A) 	(p) Formation of carbocation intermediate
(B) 	(q) Six membered ring closure in intramolecular reaction
(C) 	(r) Aromatic Electrophilic substitution
(D) 	(s) Dehydrogenation reaction
	(t) 5-membered ring closure in intramolecular reaction

(A) (a) – p, q, r; (b) – p, q, r, s; (c) – p, q, r, s; (d) – p, r, t

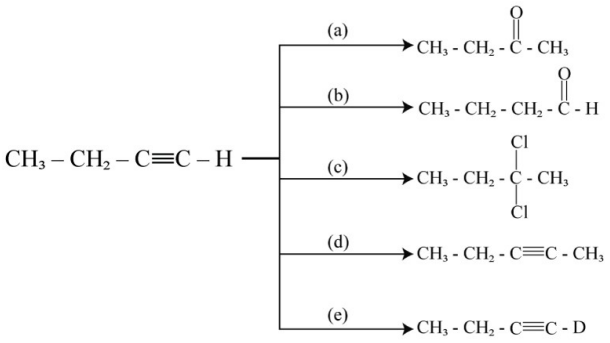
(B) (a) – p, q, r, s; (b) – p, q, r; (c) – p, q, s; (d) – p, r, s

(C) (a) – p, q, s; (b) – p, q, r; (c) – p, q, r, t; (d) – p, q, t

(D) (a) – p, q, t; (b) – p, q, r, t; (c) – p, q, r, s; (d) – p, s, t

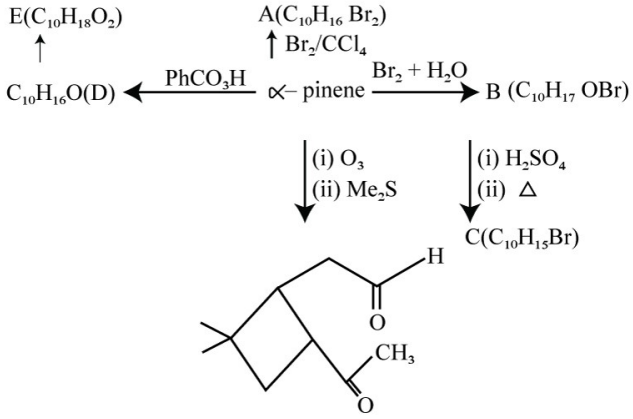
SUBJECTIVE CHOICE QUESTIONS

23. Find out reagents involved in following conversions:

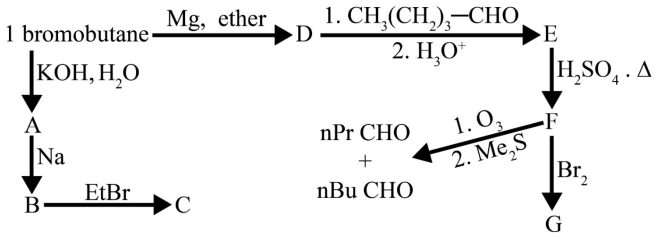


24. C_5H_{10} represents three isomeric alkenes A_1, A_2 and A_3. Each on hydrogenation gives 2-methylbutane. A_1 and A_2 on oxymercuration-demercuration give the same 3º alcohol. A_2 and A_3 on hydroboration oxidation give different 1º alcohol. Assign structures to A_1, A_2 and A_3 and explain the reactions.

25. One of the constituent of turpentine is α-pinene having molecular formula $C_{10}H_{16}$. The following scheme give reaction of α-pinene. Determine the structure of α–pinene & of the reaction products A through E.



26. Propose structures for intermediates & products A to G



27. What reagents would be required to carry out the following synthesis ?