Single Correct Answer Type:

1. Amongst the following phenols which one is most acidic?

   (A) Picric acid (B) 2-Nitrophenol (C) 2,4-Dinitrophenol (D) m-Nitrophenol

2. An organic compound (A) with molecular formula C_7H_8O dissolves in NaOH and gives characteristic colour with $FeCl_3$. On treatment with Br_2, it gives a tribromo product $C_7H_5OBr_3$. The compound is:

   (A) p-Hydroxybenzene (B) 2-Methyl-2-phenyl propane

   (C) m-Cresol (D) p-Cresol

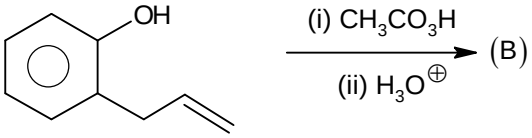
3. Identify Z in the following series

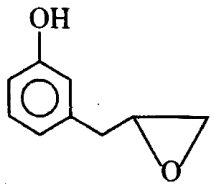
   $$C_2H_5OH \xrightarrow{PBr_3} X \xrightarrow{\text{alc.KOH}} \xrightarrow[(ii)H_2O+heat]{(i)H_2SO_4} Z$$

   (A) $CH_2 = CH_2$ (B) $CH_3 - CH_2OH$

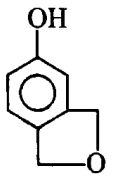
   (C) $CH_3 - CH_2 - O - CH_2 - CH_3$ (D) None

4. Consider the following reaction and identify (B).

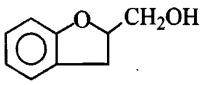
   

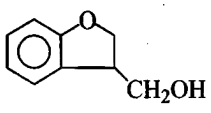
   (A)

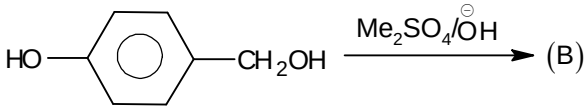
   (B)

   (C)

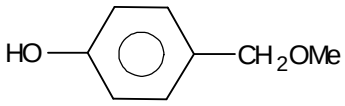
   

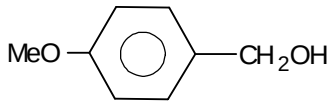
   (D)

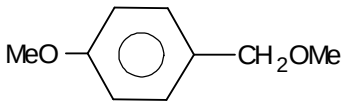
5. 

   (A)

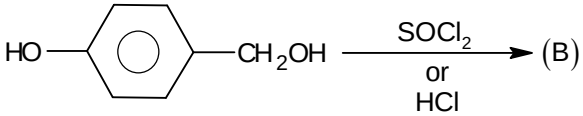
   The product (B) is:

   (A) 

   (B) 

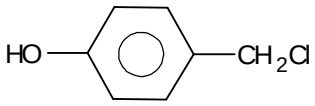
   (C) 

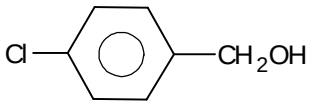
   (D) All

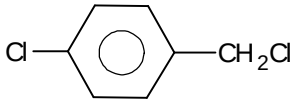
6. 

   (A)

   The product (B) is:

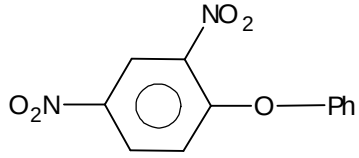
(A) 

(B) 

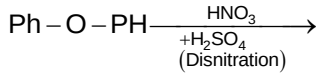
(C) 

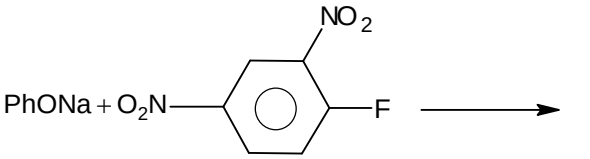
(D) All

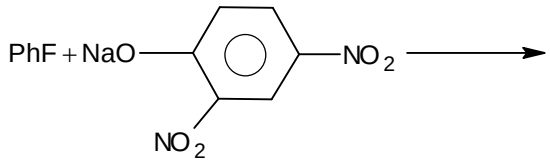
7. Which of the following is the best synthesis of the ether (A) shown below:

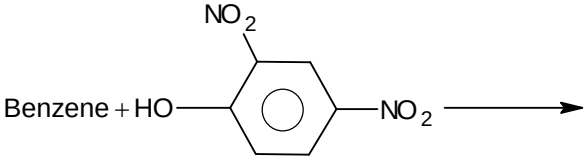


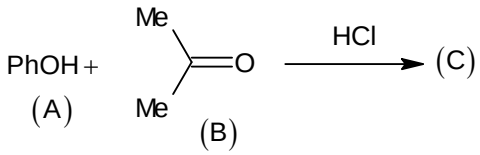
(A)

(A) 

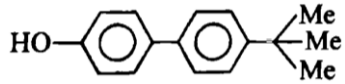
(B) 

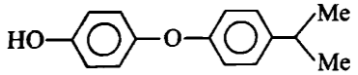
(C) 

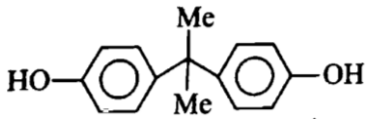
(D) 

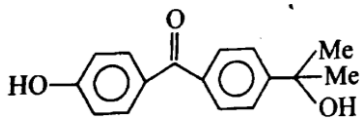
8. 

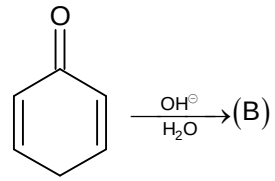
The compound (C) is:

(A) 

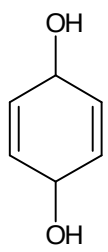
(B) 

(C) 

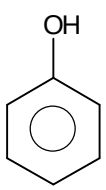
(D) 

9. 

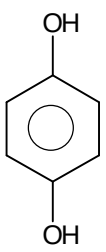
The product (B) is:



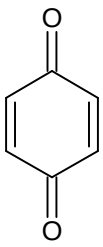
(A)



(B)

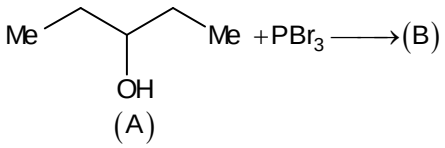


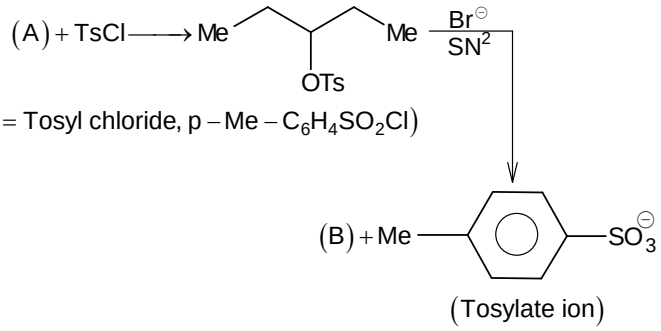
(C)



(D)

10. Which is the best method for the conversion of (A) pentan-3-ol to 3-bromopentane (B)?

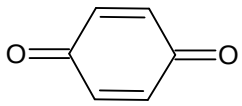
(A) 

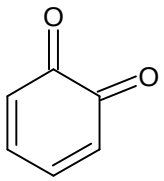
(B) 

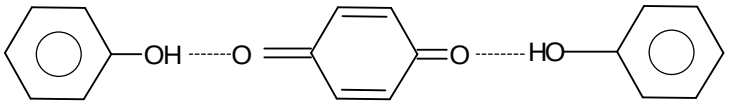
(C) $(A) \xrightarrow{HBr} (B)$

(D) Both (A) and (B)

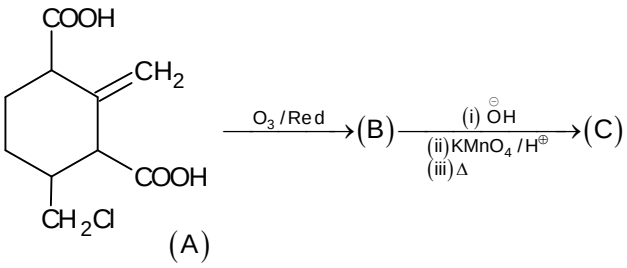
11. Phenol $\xrightarrow[\text{oxid}]{\text{Aerial}}$ coloured product. This is due to the formation of:

(A) 

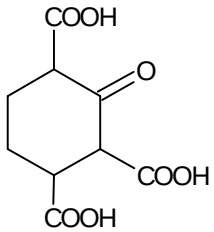
(B) 

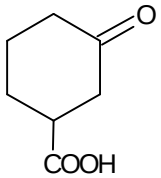
(C) 

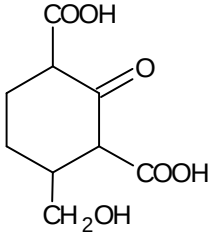
(D) All

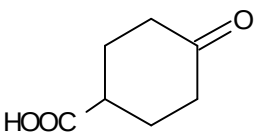
12. 

The compound C is

(A) 

(B) 

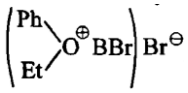
(C) 

(D) 

13. Which of the following statements is wrong about the following reaction?

$$PhOEt \xrightarrow[2.H_2O]{1.\ BBr_3} Products$$

(A) BBr_3 plays a role similar to the H in HI by forming a complex with the ether



(B) The liberated $Br^{\ominus}$ attacks Et, displacing $PhOBBr_2$, which is ultimately hydrolysed to give the products

(C) The products are $PhOH + EtBr + H_3BO_3$

(D) The products are $PhBr + EtOH + H_3BO_3$

14. Consider the reaction

$$C_3H_7 - OH + Et_3O^{\oplus}BF_4^{\ominus} \longrightarrow C_3H_7 - O - Et + EtOEt + HBF_4$$

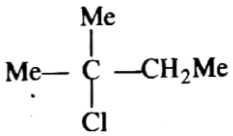
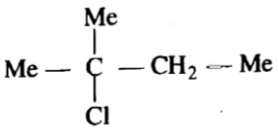
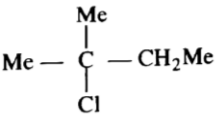
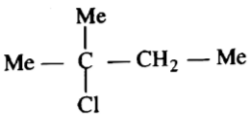
Which of the following statements is wrong?

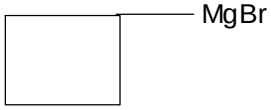
(A) The nucleophile in the reaction is C_3H_7OH (B) The necleophile in the reaction is $BF_4^{\ominus}$

(C) The leaving group is Et_2O (D) SN^2 reaction occurs

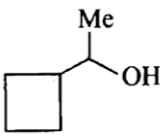
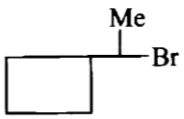
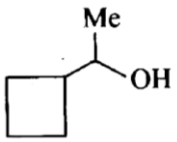
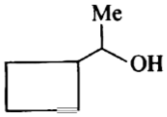
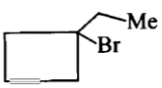
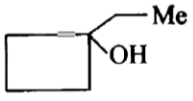
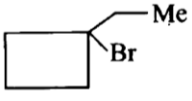
15. $(A) \xleftarrow{HCl+ZnCl_2} Me_3C - CH_2OH \xrightarrow[(or)\ PCl_5]{SOCl_2} (B)$

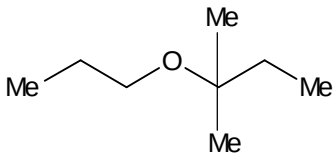
(A) and (B) are:

	A	B		A	B
(A)	$Me_3C—CH_2Cl$	$Me_3C—CH_2Cl$	(B)		$Me_3C—CH_2Cl$
(C)	$Me_3C—CH_2Cl$		(D)		

16.  $\xrightarrow[(ii)H_3O^+]{(i)\ CH_3CHO} (A) \xrightarrow{HBr} (B)$

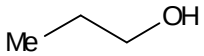
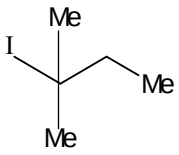
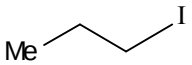
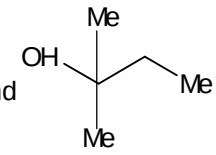
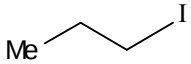
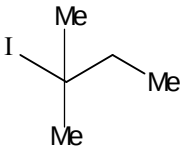
The compounds (A) and (B) are

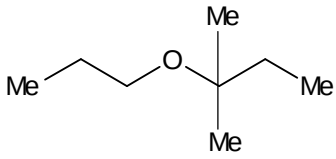
	A	B		A	B
(A)			(B)		
(C)			(D)		

17.  $\xrightarrow{HI}(A)+(B)$

(A)

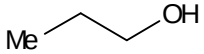
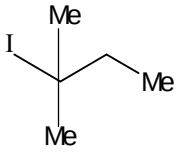
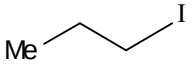
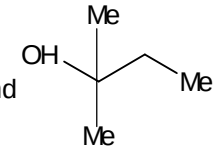
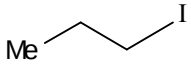
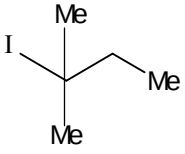
The products (A) and (B) are:

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

18.  $\xrightarrow{\text{Excess of HI}}(A)+(B)$

(A)

The products (A) and (B) are:

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

19. Which of the following reactions is possible?

(A) $Me_3C-ONa+Me_3C-Br\rightarrow Me_3C-O-CMe_3$

(B) $Me_2CH-ONa+Me_2CHBr\rightarrow Me_2CH-O-CHMe_2$

(C) $PhONa+PhBr\rightarrow PhOPh$ (D) $PhONa+CH_3Br\rightarrow PhOCH_3$

20. Which of the following reactions is possible?

(A) $(CH_3)_3C-CH_2-ONa+(CH_3)_3C-CH_2Br\rightarrow(CH_3)_3C-CH_2-O-CH_2-C(CH_3)_3$

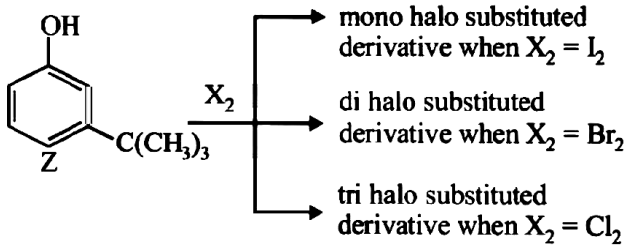
(B) $CH_3CH=CH-ONa+CH_3CH=CH-Br\rightarrow CH_3CH=CH-O-CH=CH-CH_3$

(C) $(CH_3)_3C-ONa+CH_3CH_2Br\rightarrow(CH_3)_3C-O-CH_2-CH_3$

(D) $CH_3CH_2ONa+PhBr\rightarrow CH_3CH_2O-Ph$

Numerical Based:

21. The reactivity of compound Z with different halogens under appropriate conditions is given below:



How many among the below given statements correctly explains pattern of electrophilic substitution?

(I) The steric effect of the halogen

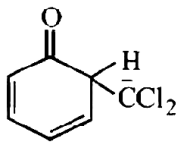
(II) The steric effect of the tert-butyl group

(III) The electronic effect of the phenolic group

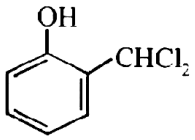
(IV) The electronic effect of the tert-butyl group

(V) The mesomeric effect of tert-butyl group

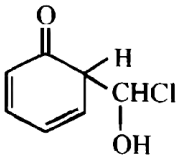
22. When phenol is reacted with $CHCl_3$ and NaOH followed by acidification, salicylaldehyde is obtained. How many among following species are involved in the above mentioned reaction as intermediates?



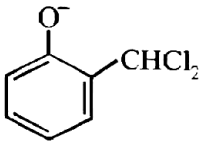
(I)



(II)



(III)



(IV)

23. Which of the following statements is/are true?

(I) Ethers are soluble in conc. H_2SO_4 but separate out on addition of water

(II) Ethers are used as solvents for BF_3 and Grignard reagent

(III) Mononitration of p-methylanisole gives 2-nitro-4-methylanisole

(IV) Monobromination of p-ethoxyphenol gives 2-bromo-4-ethoxyphenol

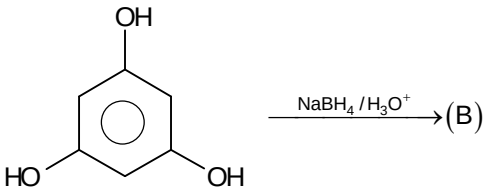
(V) 4-Chlorophenol (I) will dissolve in NaOH but 4-chloro-1-methyl benzene (II) will not

(VI) 4-Methyl benzoic (III) acid will dissolve in aq. $NaHCO_3$ but 4-methyl phenol (IV) will not

(VII) 2, 4, 6 – Trinitrophenol (V) will dissolve in aq. $NaHCO_3$ but 4-methyl phenol (VI) will not

(VIII) 4-Ethyl phenol (VII) will dissolve in aq. NaOH but ethyl phenyl ether (VIII) will not

24. Generally, phenols, 1, 3, 1, 4 – benzenediols and 1, 3, 5 – benzenetriols do not react with aq. $NaBH_4/H_3O^+$. However, 1, 3, 5-benzenetriol (phloroglucinol) gives a high yield of product (B)

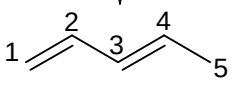


Phloroglucinol

(A)

The compound (B) has how many functional groups on benzene ring?

25. $A(C_5H_{10}O) \xrightarrow[\text{(Chiral ether)}]{\text{Hot HI}} C_5H_{10}I_2(B) \xrightarrow[KOH + EtOH]{\text{Hot}}$



(C)

1,3 – Pentadiene

How many members are there in the ring of structure of A?

KEY

1.	A	2.	C	3.	B	4.	C	5.	B
6.	A	7.	B	8.	C	9.	B	10.	D
11.	D	12.	B	13.	D	14.	B	15.	B
16.	B	17.	A	18.	C	19.	D	20.	C
21.	3	22.	2	23.	8	24.	2	25.	5