

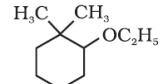
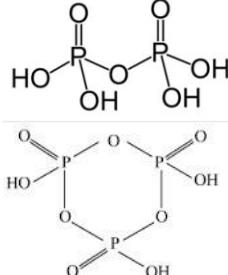
FIRST TERM EXAMINATION

APRIL/MAY 2018

CLASS XII

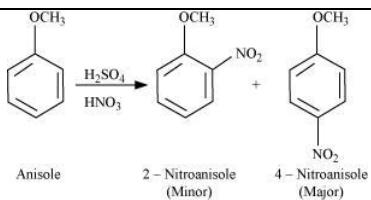
Marking Scheme – SUBJECT[CHEMISTRY]

[THEORY]

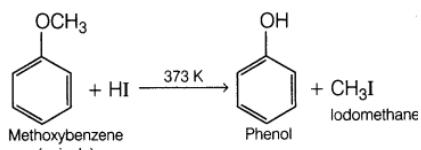
Q.NO.	Answers	Marks (with split up)
1.	$\text{CH}_3\text{CH}_2\text{CH}_2\text{I}$, as iodine is a better leaving group	$\frac{1}{2} + \frac{1}{2}$
2.	Absence of d orbitals/can't expand its covalency beyond four	1
3.		1
4.	Chloro/bromo ethane and sodium tert-butoxide	$\frac{1}{2} + \frac{1}{2}$
5.	4	1
6.	a) 1-Phenyl propan-2-ol b) 3-chloromethyl-2-isopropylpentan-1-ol	1+1
7.	a) equimolar mixture of a pair of enantiomers with no optical activity b) carbon atom attached to four different group of atoms	1+1
8.		1+1
9.	a) AgNO_2 b) Na in dry ether	
10.	Lucas reagent- anhy ZnCl_2 , conc HCl Primary-no turbidity at room temp Secondary- turbidity after sometime Tertiary-immediate turbidity	$\frac{1}{2}$ each
11.	a) $4\text{H}_3\text{PO}_3 \rightarrow 3\text{H}_3\text{PO}_4 + \text{PH}_3$ b) $\text{Ba}(\text{N}_3)_2 \rightarrow \text{Ba} + 3\text{N}_2$	1+1
	OR	
	Temp-700K Pressure-200atm Catalyst-iron oxide with potassium oxide and aluminum oxide	$\frac{1}{2}$ $\frac{1}{2}$ 1

12.	<p>Alkyl halide + Soda alkoxide → Ether</p> <p>Salicylaldehyde</p>	1+1
13.	<p>a) Weaker force between haloalkanes and water molecules/can't form H bond with water b) Partial double bond character/sp² hybridized/shorter bond length c) To prevent chloroform getting oxidized by air, to poisonous compound phosgene, in presence of sunlight</p>	1+1+1
14.	<p>a) $4\text{AgNO}_3 + \text{H}_3\text{PO}_2 + 2\text{H}_2\text{O} \rightarrow 4\text{Ag} + 4\text{HNO}_3 + \text{H}_3\text{PO}_4$ b) $\text{Zn} + 4\text{HNO}_3 (\text{conc}) \rightarrow \text{Zn}(\text{NO}_3)_2 + 2\text{NO}_2 + 2\text{H}_2\text{O}$ c) $3\text{CuSO}_4 + 2\text{PH}_3 \rightarrow \text{Cu}_3\text{P}_2 + 3\text{H}_2\text{SO}_4$</p>	1+1+1
15.	$4\text{NH}_3 + 5\text{O}_2 \rightleftharpoons 4\text{NO} + 6\text{H}_2\text{O}$ $2\text{NO} + \text{O}_2 \rightleftharpoons 2\text{NO}_2$ $3\text{NO}_2 + \text{H}_2\text{O} \rightarrow 2\text{HNO}_3 + \text{NO}$	1+1+1
16.	<p>a) $\text{C}_2\text{H}_5\text{Cl} + \text{AgCN} \rightarrow \text{C}_2\text{H}_5\text{NC}$ b) $(\text{CH}_3)_3\text{CBr} + \text{alc. KOH} \rightarrow (\text{CH}_3)_2\text{C=CH}_2$ c) $\text{CH}_3\text{CH}_2\text{Br} + \text{NaI} \rightarrow \text{CH}_3\text{CH}_2\text{I}$</p>	1+1+1
17.	<p>Step 1: Protonation of ethanol to form ethyl oxonium ion:</p> <p>Step 2: Formation of carbocation (rate determining step):</p> <p>Step 3: Elimination of a proton to form ethene:</p>	1+1+1
18.	<p>a) $\text{NH}_4\text{Cl} + \text{NaNO}_2 \rightarrow \text{N}_2 + 2\text{H}_2\text{O} + \text{NaCl}$ b) $\text{P}_4 + 3\text{NaOH} + 3\text{H}_2\text{O} \rightarrow 3\text{NaH}_2\text{PO}_2 + \text{PH}_3$</p> <p>ii) The angles in white phosphorus being 60° makes it reactive due to strain whereas red phosphorus with polymeric structure has greater bond dissociation energy and is less reactive</p>	1+1+1
19.	<p>a) PCC b) $\text{LiAlH}_4 / \text{NaBH}_4$ c) Zn dust</p>	1+1+1
20.	<p>i) Aq KOH, $\text{HNO}_3, \text{AgNO}_3$/Benzyl chloride white ppt of AgCl/soluble in NH_4OH/ chlorobenzene doesn't answer the test ii) A-aniline, B-benzene diazonium halide, C-phenol, D -Benzoquinone [or structure]</p>	1 $\frac{1}{2}$ each

21.



a)



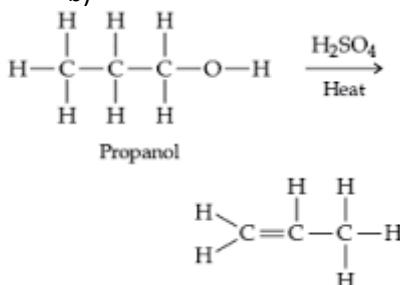
ii) Structure of 2-Methylpropan-2-ol.

OR

i) a)



b)



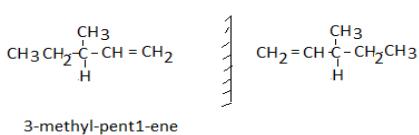
ii) acid catalyzed hydration equation with either of these



22.

i) 1-Chloro -2,2-dimethylpropane, 1-chloro-2-methylbutane, Chloropentane -branching reduces surface area/vanderwaals force decreases

ii)

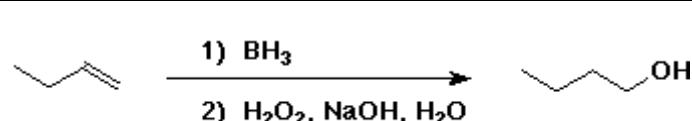


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1

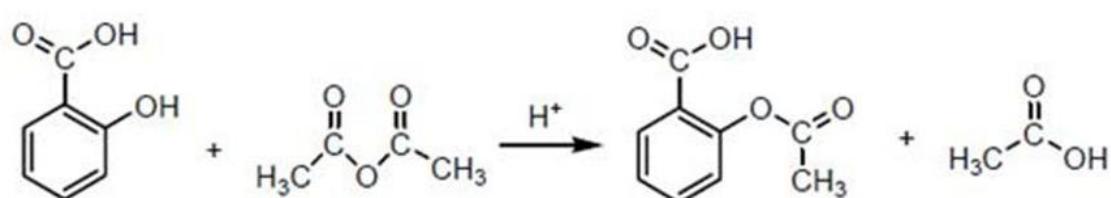
23.

a)



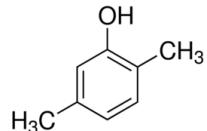
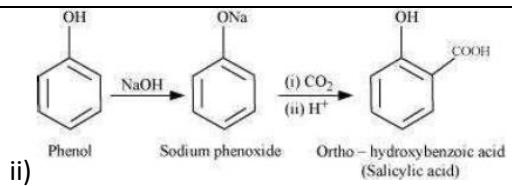
1+1+1

b)

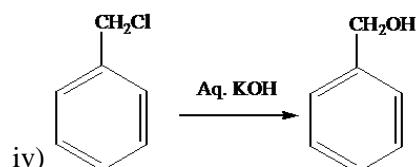


c)

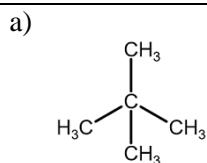
24	<p>a) Para isomer, due to symmetry b) chlorine is an electron withdrawing by inductive effect, yet it is ortho para directing in electrophilic substitution reaction as it is opposed by resonance effect/ e density is greater at o- and p- position/directs incoming nucleophile to o- and p- position c) Partial double bond character/instability of phenyl cation/e rich haloarene</p>	
25	<p>a) Odd e molecule b) Gains e /undergoes reduction/stable +3 state c) Interelectronic repulsion of non-bonding e/N-N bond weak ii)</p> <p></p>	1 1 1 1+1
	OR	
	<p>A-white phosphorus, B- red phosphorus, C-PCl₃, D-H₃PO₃ $P_4 + 6Cl_2 \rightarrow 4PCl_3$ $PCl_3 + 3H_2O \rightarrow 3HCl + H_3PO_3$ Structure of PCl₃</p> <p></p>	½ each 1 1 1
26	<p>i) a)</p> <p></p> <p>b)</p> <p></p> <p>ii)</p> <p></p> <p>ii) neutral ferric chloride/phenol -violet color/cyclohexanol doesn't</p>	1 1 1+1 1
	OR	
	i)	



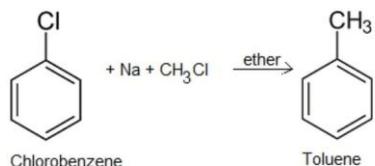
- iii) a) absence of H bonds in ethers
b) electron withdrawing nitro group stabilizes the phenoxide ion whereas electron releasing methoxy group doesn't



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b) neopentane

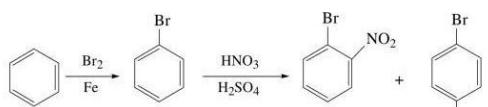


c) example

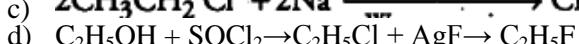
OR

i)

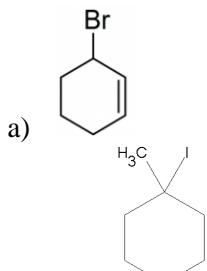
a)



b)



ii)



1

1

3

1

1

1

1

1