

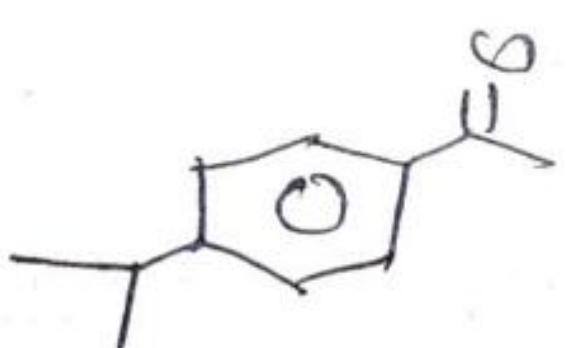
M.Sc. second year semester - IV

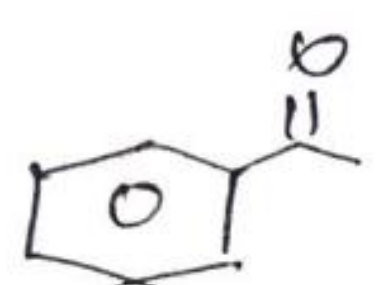
paper - XXII, CH-543/2

Organic synthesis - II

Multiple choice question.

- ① which of the following statements is/are correct for designing of organic synthesis.
- (a) A understanding of reaction mechanisms.
 - (b) A working knowledge of reliable reactions.
 - (c) An understanding of stereochemistry.
 - ✓(d) All of these.
- ② which of the following reagents is used as chloromethylation.
- ✓(a) CH_2O , HCl & ZnCl_2
 - (b) CH_3Cl & NaOH .
 - (c) CO , HCl & AlCl_3
 - (d) HCN , HCl & AlCl_3
- ③ which of the following reagents is used for formulation of aromatic compounds.
- (a) ~~CHCl_3~~ & OH^-
 - (b) $\text{Me}_2\text{N}=\text{CH}-\text{OPOCl}_2$
 - (c) CO , HCl & AlCl_3
 - ✓(d) All of these
- ④ Amino group is best ~~protecting~~ protected by using -
- (a) Acetyl chloride
 - (b) Acetic anhydride.
 - (c) Amide
 - ✓(d) Both (a) & (b)

5) synthetic equivalent of  are:

- (a)  (b)  (c) both (a) + (b)
(d) 

6) The more reactive acid derivative is - - - -

- (a) $(RCO_2)_2O$ (b) $RCOCl$ (c) $RCONH_2$
(d) $RCOOR'$

7) The more stable acid derivative is - - - -

- (a) $(RCO)_2O$ (b) $RCOCl$ (c) $RCONH_2$
(d) $RCOOR'$

8) $Pb(OAc)_4$ oxidise - - -

- (a) Hydroquinone (b) vicinol diol (c) α -hydroxy acid
(d) All of the above

9) dicyclohexyl carbodiimide (DCC) is an example of - - - reagent

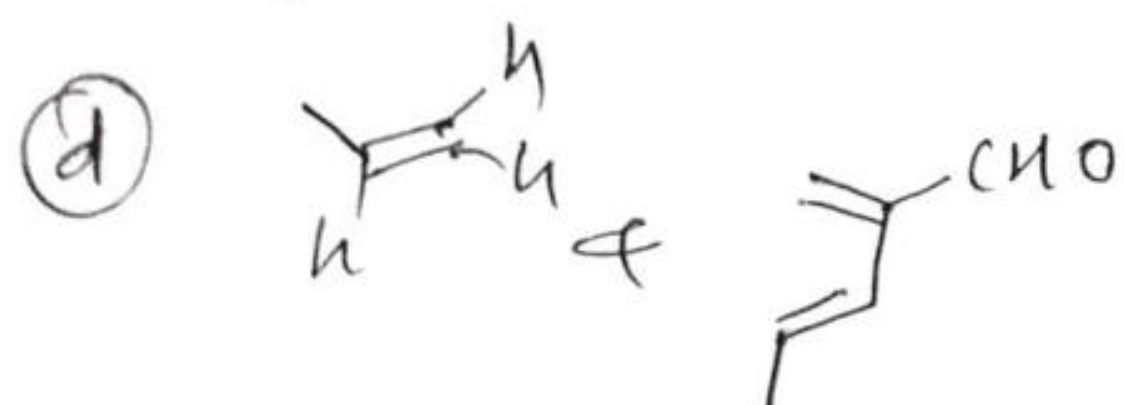
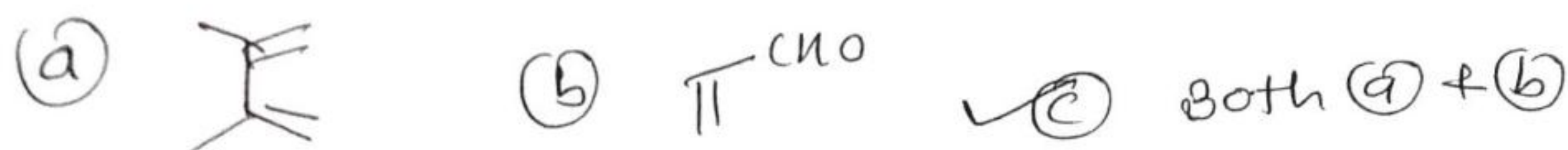
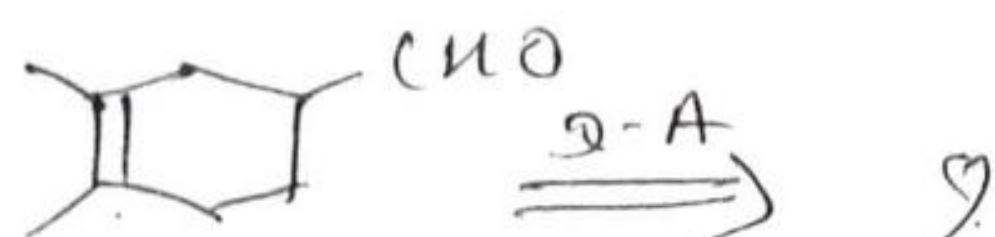
- (a) dehydrating agent (b) methylating agent
(c) protecting agent (d) dehydrogenating agent

10) major products of the following reaction is/are - - -

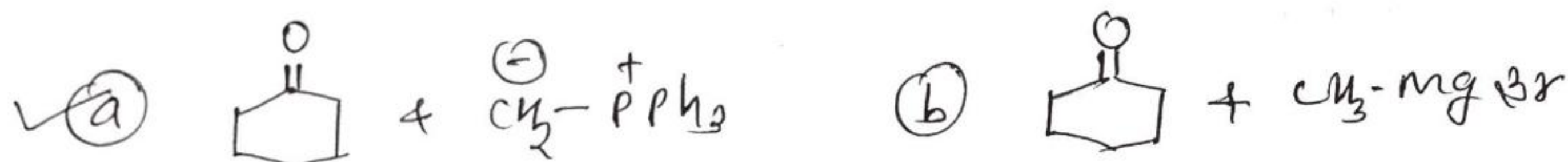


- (a)  (b)  (c) both (a) + (b)
(d) None of these.

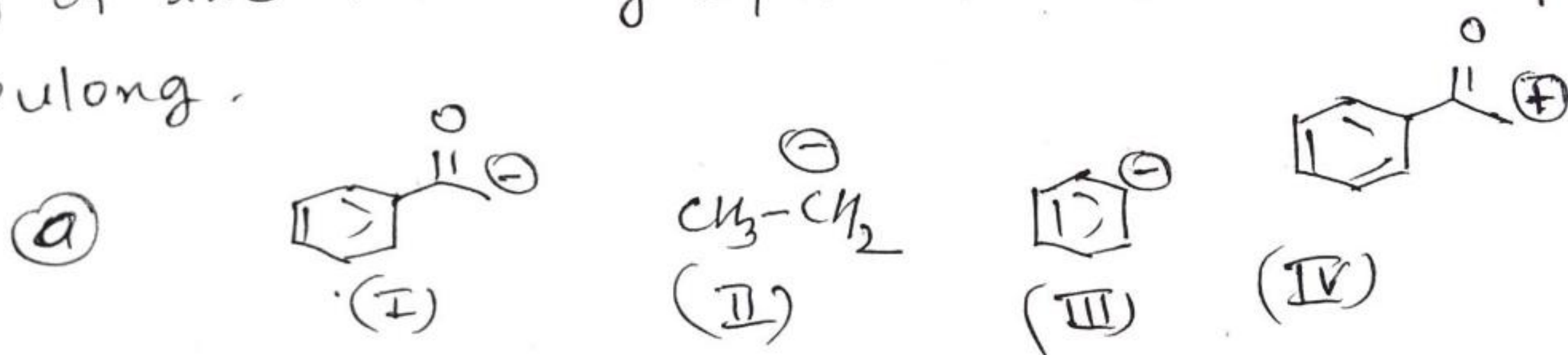
(11) Synthetic equivalent of the following reaction is



(12) Synthetic equivalent of the following reaction is



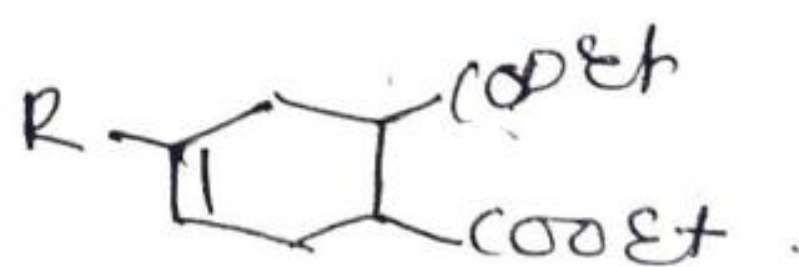
(13) Which of the following synthons is an example of Umpolung.



(a) Structure I (b) Structure-II (c) Structure III

(d) Structure IV

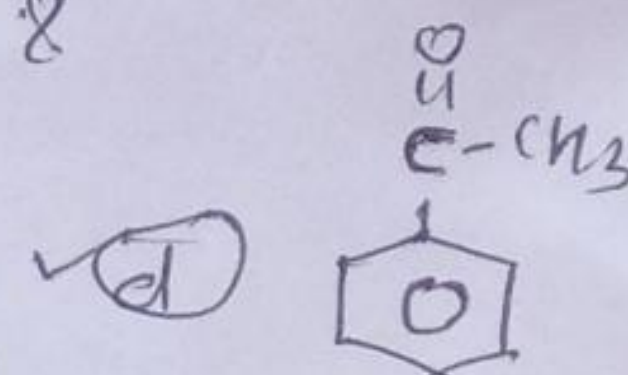
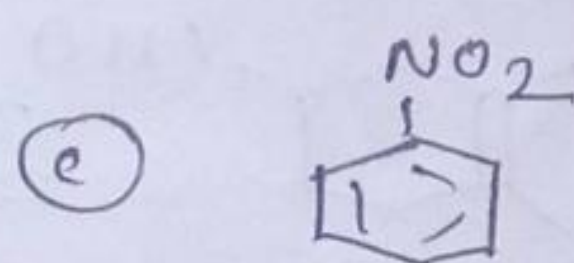
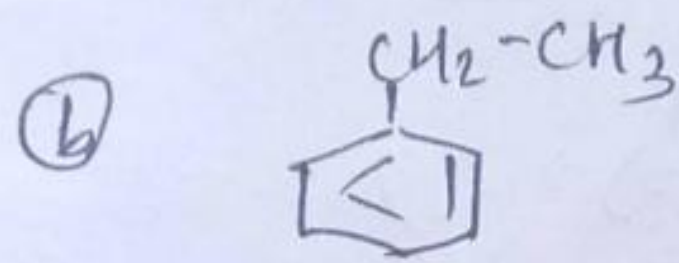
(14) Which reaction would result in a structure having a cyclohexene such as the following as a molecular signature?



(a) The Friedel-Crafts alkylation (b) Wittig reaction

(c) The Diels-Alder reaction (d) The Claisen reaction

15) which of the most suitable starting material for the synthesis of m-ethyl aniline?



16) which combination of reagents is appropriate for the following transformation?



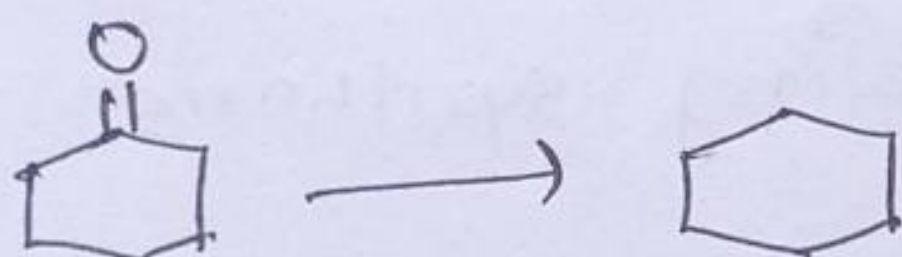
☒ a) 1) HO-CH2-CH2-OH, H⁺; 2) LiAlH4, Et2O; 3) H3O⁺

b) 1) NaBH4, MeOH; 2) LiAlH4, Et2O; 3) H3O⁺

c) 1. LiAlH4, Et2O; 2. H3O⁺

d) NaBH4, MeOH.

17) which reaction condition are not appropriate for the following transformation?



a) Zn(Hg)/HCl

b) H2N-NH2/NaOH

☒ c) LiAlH4/Et2O

d) HS-CH2-CH2-CH2-SH/H⁺, then H2/Ni

18) which of the following (to be converted by FURT) is not a good alternative target for the synthesis of a carboxylic acid, RCO2H?

☒ a) R-OH

b) R-CHO

c) R-C(=O)-CH3

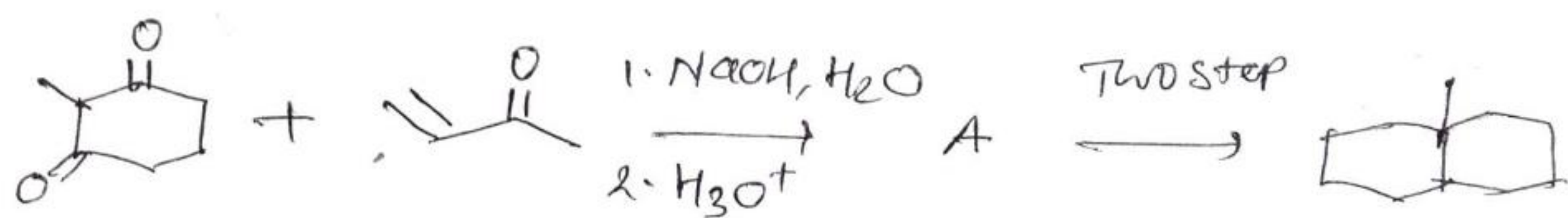
d) R-CN

19) A logical approach for designing organic syntheses, which involves breaking down of the target molecule into available starting material by imaginary breaking of bond or by FURT is known as - - -

a) disconnection approach b) Retrosynthetic analysis

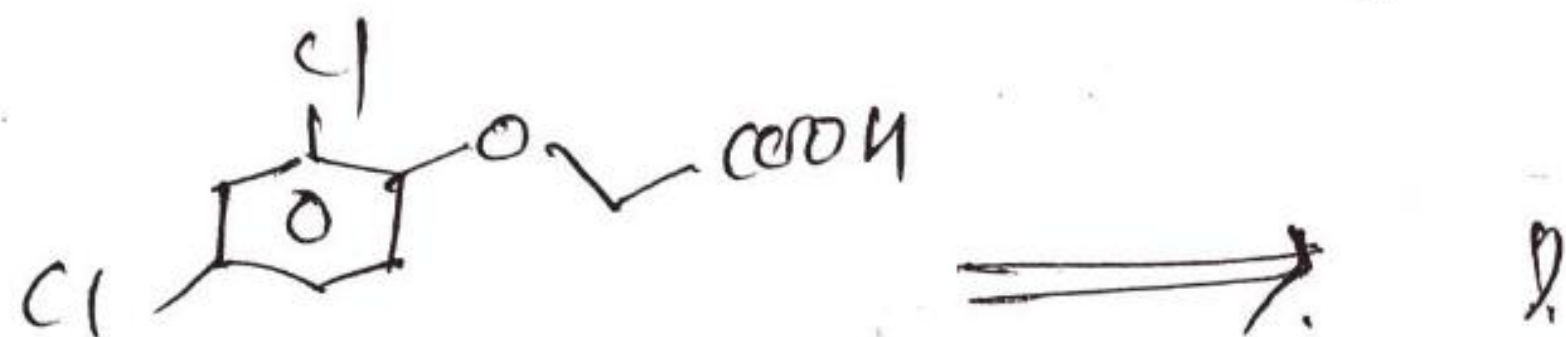
c) Retrosynthesis d) All of these.

Q) which of the intermediate compound A in the following transformation?



- (a)
 (b)
 (c)
 (d)

(21) Synthesis of the following reaction is.

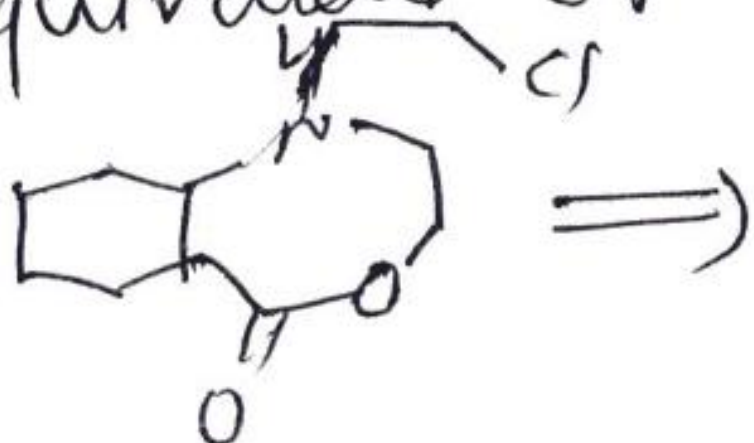


- (a)
 (b)
 (c)
 (d) None of these

(22) Salicylic acid is treated with acetyl chloride in presence of base to give Aspirin. It is an example of - - -

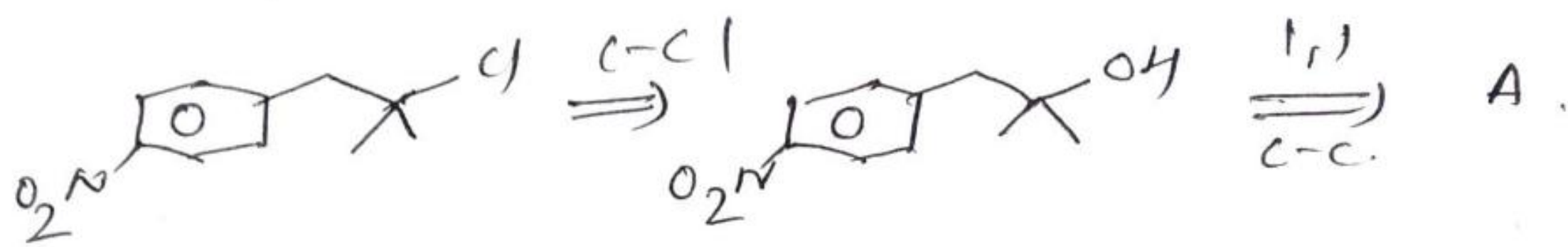
- (a) chemoselectivity (b) stereoselectivity
 (c) Both a & b (d) None of these

(23) Synthetic equivalent of the following reaction is.



- (a)
 (b)
 (c) both (a) & (b)
 (d) None of these

(24) which of the ^{Synthetic Equivalents} ~~intermediate~~ compound A in the following retrosynthetic analysis.

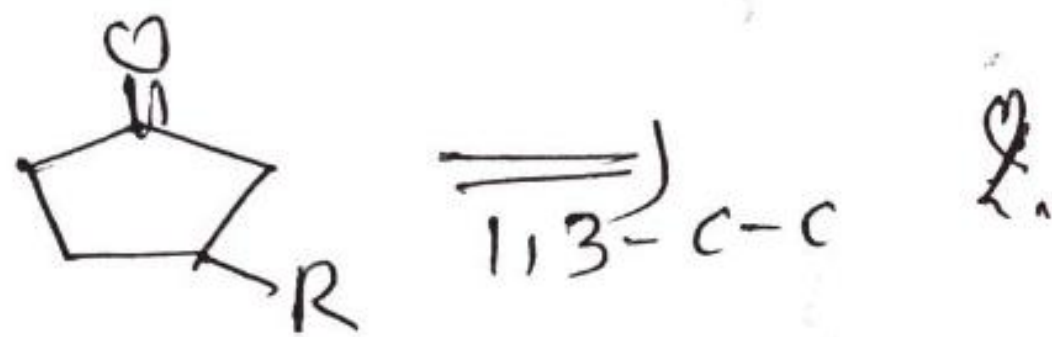


- ☒ (a) &

 (b) &
- (c) +

 (d) None of these.

(25) Synthetic equivalent of the following reaction is.



- ☒ (a) & RLi

 (b) & RLi

 (c) & CH3MgBr
- (d) None of these.

(26) Synthetic Equivalent of the following reaction is.

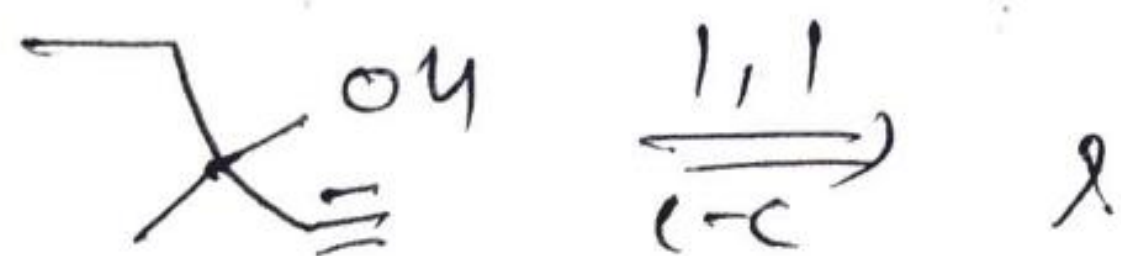


- ☒ (a) +

 (b) &

 (c) & HCHO
- (d) None of these.

(27) Synthetic Equivalent of the following reaction is.

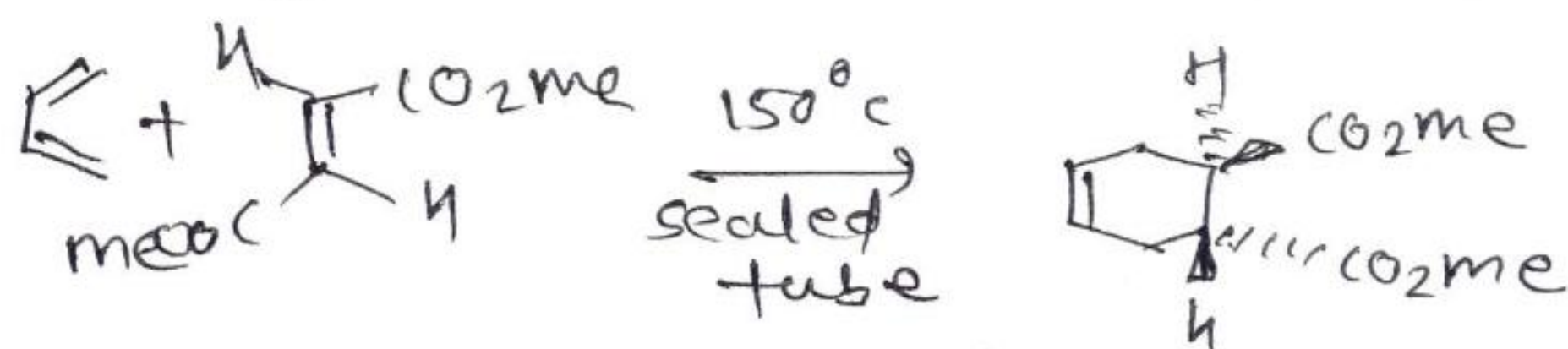


- (a) +

 (b) +
- (c) Both (a) & (b)

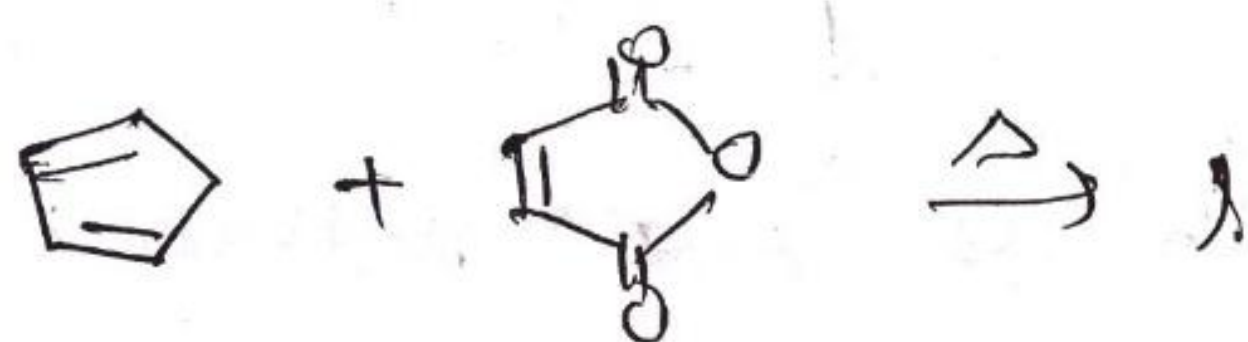
 (d) None of these.

(28) The following reaction it is an example of.



- (a) chemoselectivity (b) stereospecific
(c) stereoselective (d) None of these

(29) The major products of the following reaction is.



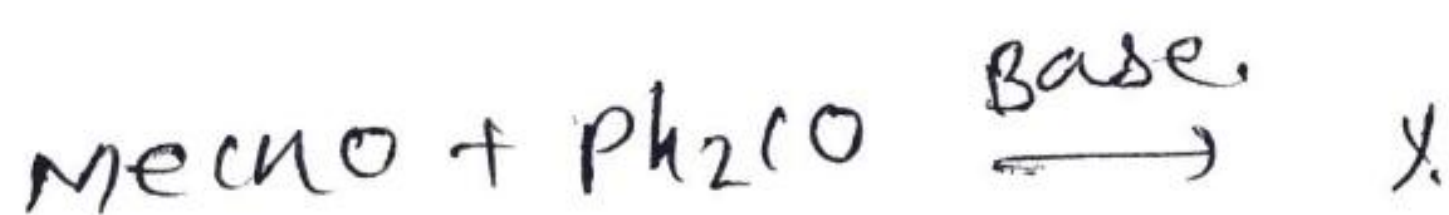
- (a) (b) (c)
(d) None of these

(30) The major products of the following reaction is



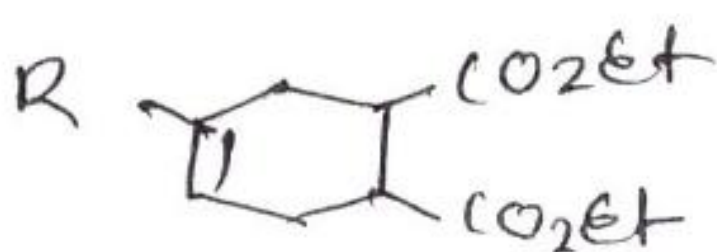
- (a) (b) (c) both (a) + (b)
(d)

(31) The major products of the following reaction is



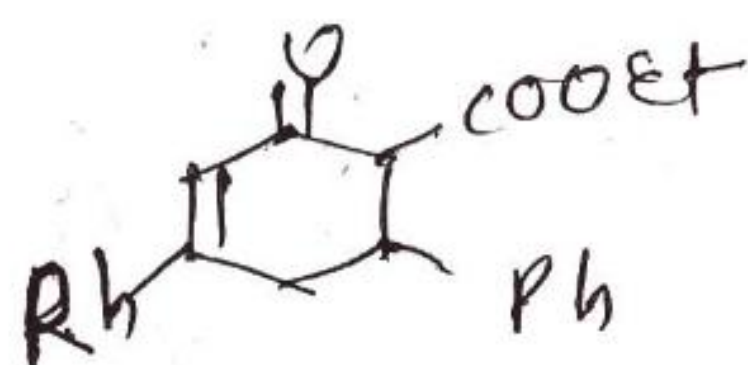
- (a) (b) (c) both (a) + (b)
(d) None of these

32) which reaction would result in a structure having a cyclohexene such as the following as a molecular signature?



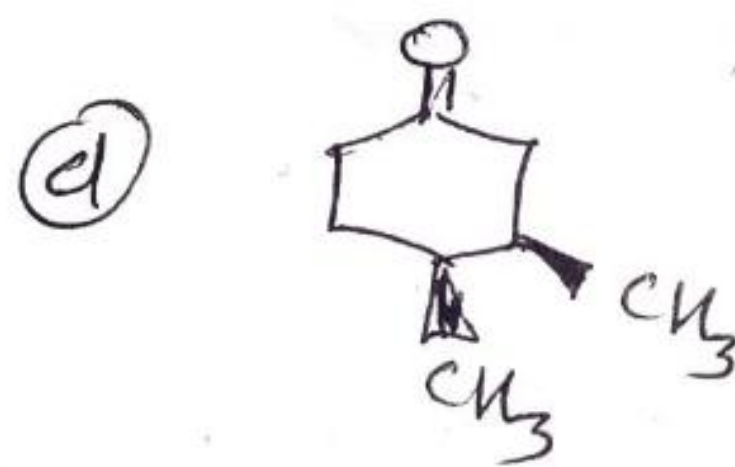
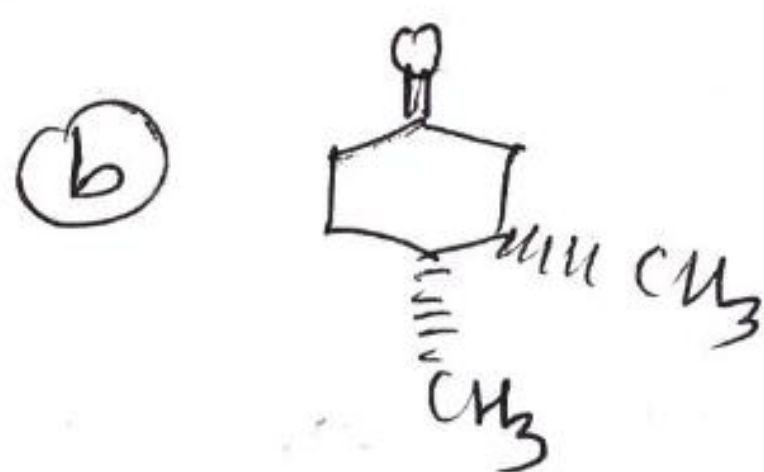
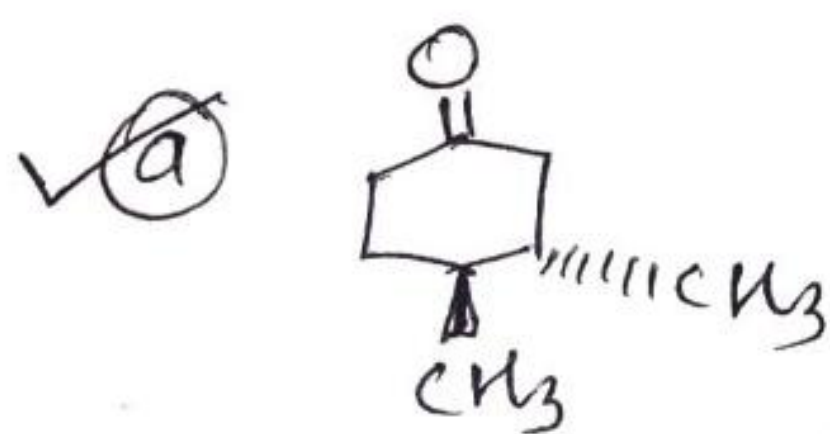
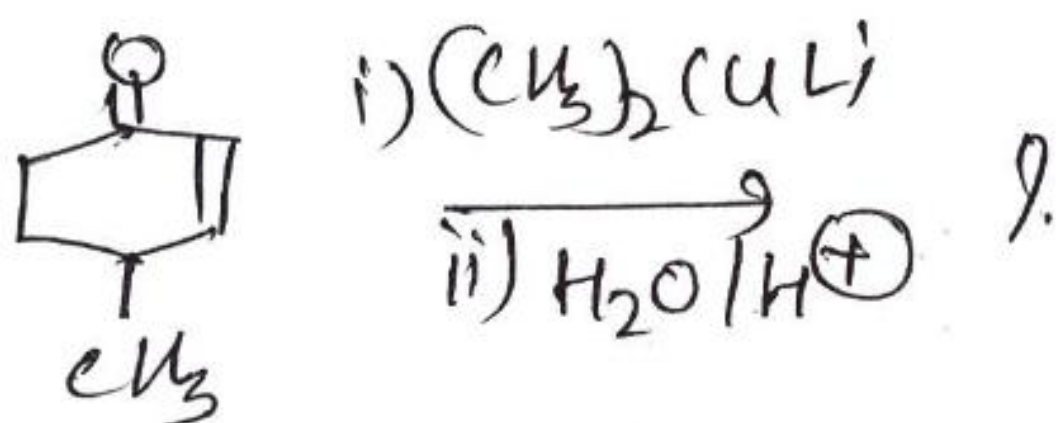
- (a) The Friedel Crafts alkylation
- (b) The Wittig reaction
- (c) The Diels Alder reaction
- (d) The Claisen reaction.

33) which reaction would result in a structure having a cyclohexenone such as the following as a molecular signature?



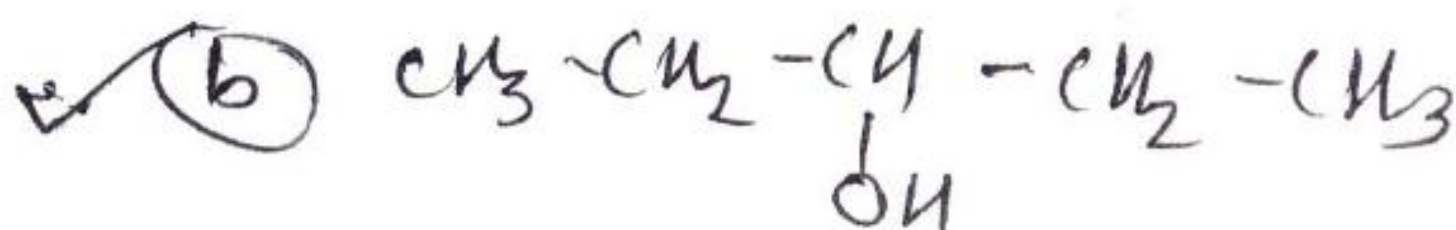
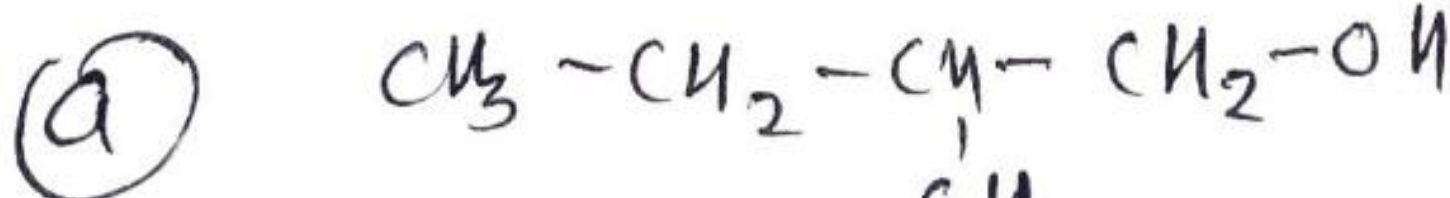
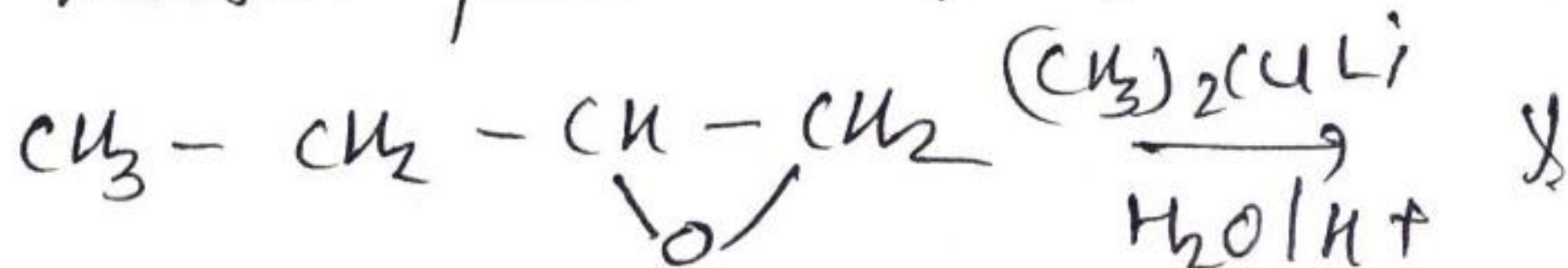
- (a) The Robinson Annulation reaction.
- (b) The Wittig reaction.
- (c) The Diels Alder reaction
- (d) None of these.

34) The major products of the following reaction is



(d) None of these.

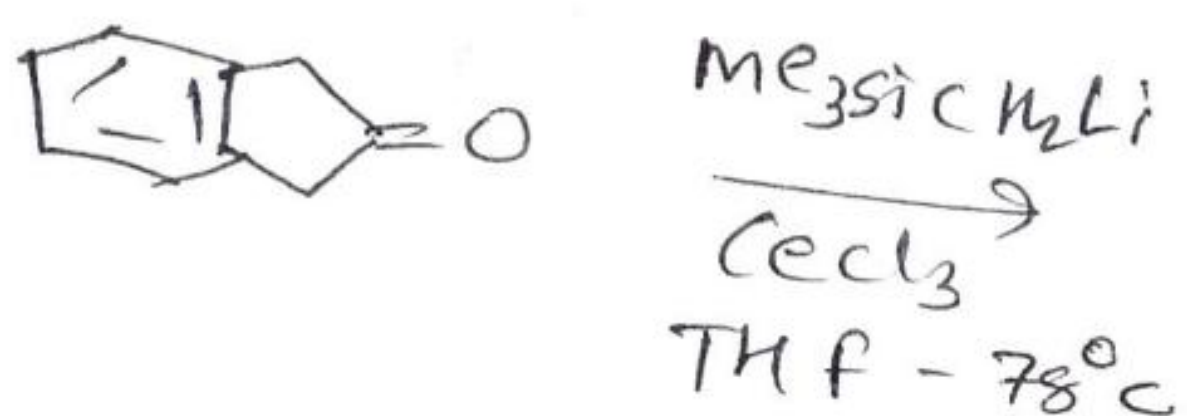
35) The major products of the following reaction is

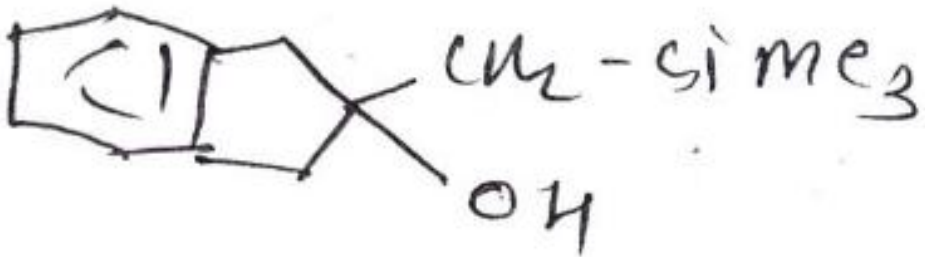
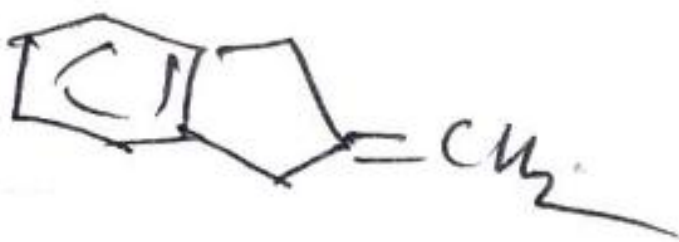


(c) Both (a) & (b)

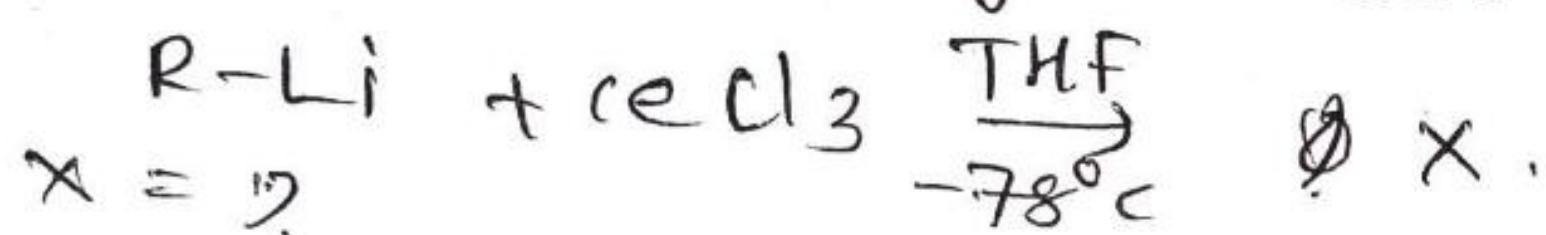
(d) None of these

36) The major products of the following reaction is -



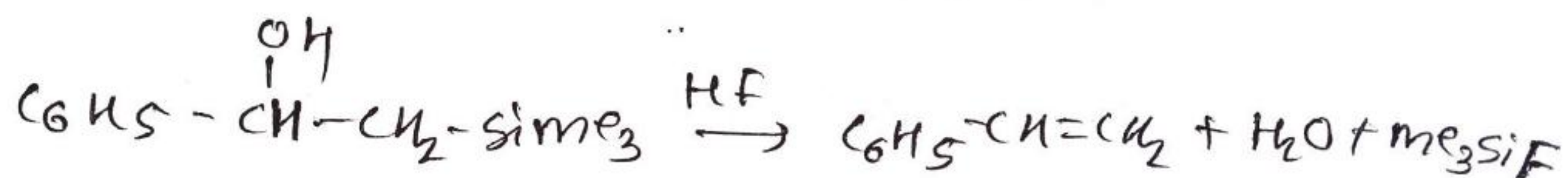
- ☒ (a) 
☐ (b) 
☐ (c) Both (a) & (b)
 ☐ (d) None of these.

37) In the following reaction X will be.



- ☒ (a) R-CeCl_2
☐ (b) R-Ce-R
☐ (c) R_3Ce
☐ (d) None of these.

38) The following elimination reaction is known as



- ☐ (a) Saytzev elimination
 ☒ (b) Peterson reaction
☐ (c) both (a) & (b)
 ☐ (d) None of these

39) which of the following statements is/are correct

- ☐ (a) silicon forms stronger single bond with electronegative elements than carbon.
☐ (b) silicon forms weaker bond with electropositive elements with respect to carbon.
☐ (c) silicon has lower electronegativity (1.8) than carbon (2.5).

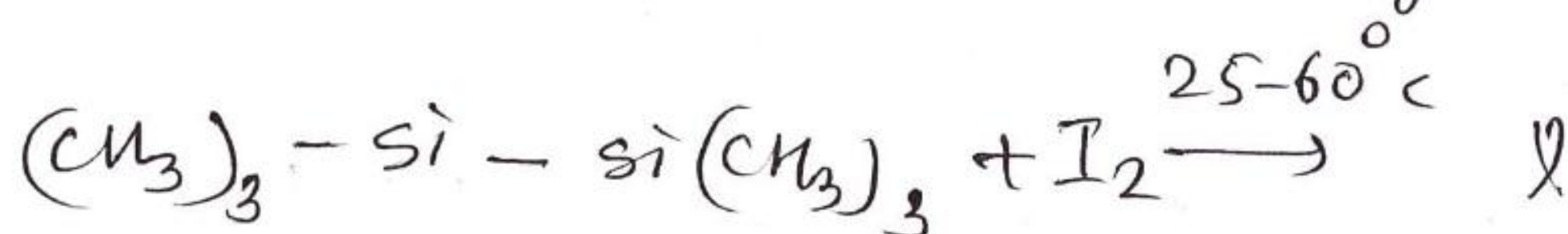
☒ (d) All of these

④ what is ~~the~~ ^{product} of the following reaction & are

$$\text{SiCl}_4 + 3 \text{Mg} \xrightarrow{\text{CH}_3} \text{?}$$

- (a) $(\text{CH}_3)_2\text{MgCl}_2$ (b) $(\text{CH}_3)_4\text{Si}$ (c) $(\text{CH}_3)_3\text{SiCl}$
 (d) CH_3SiCl_3

④① The products of the following reaction is...

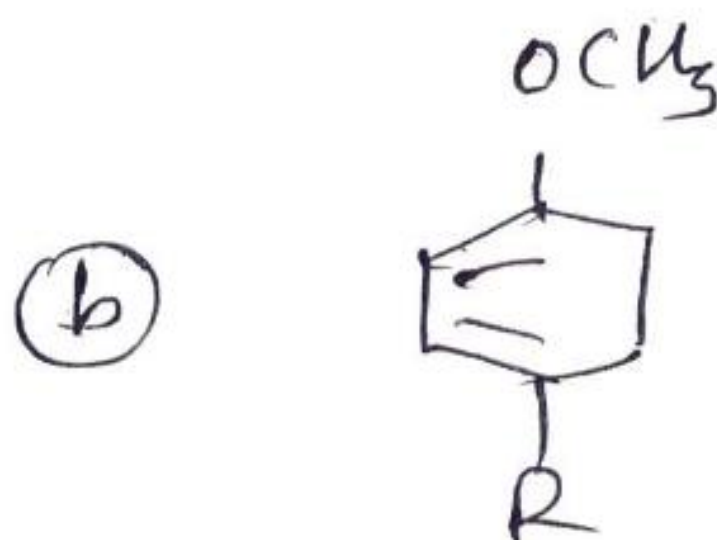
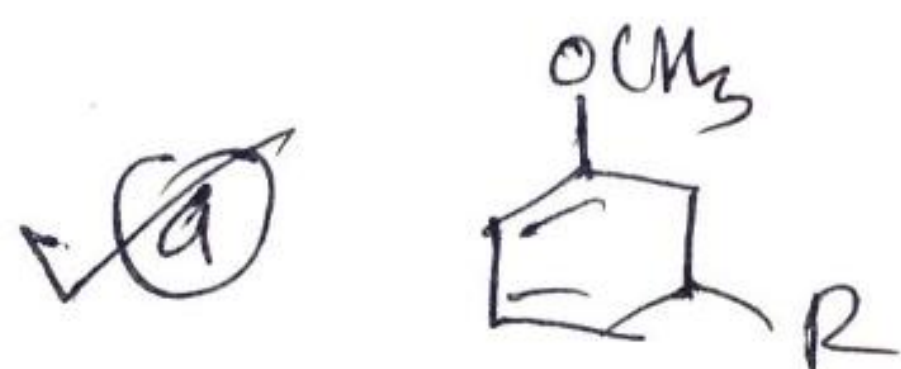
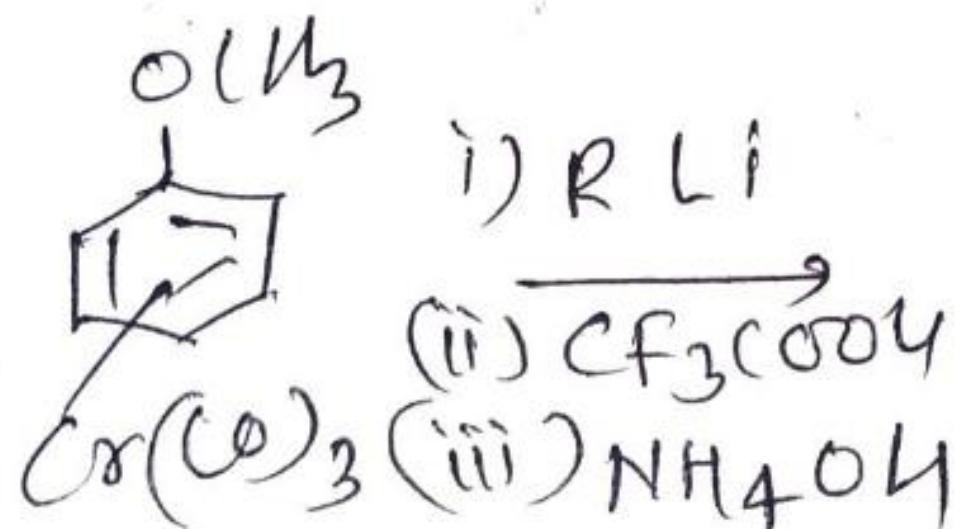


- (a) $(\text{CH}_3)_3\text{SiI}$ (b) $(\text{CH}_3)_2\text{SiI}_2$ (c) CH_3SiI_3
 (d) None of these.

④② which of the following application & properties of (arene) chromium complexes in organic synthesis is/are.

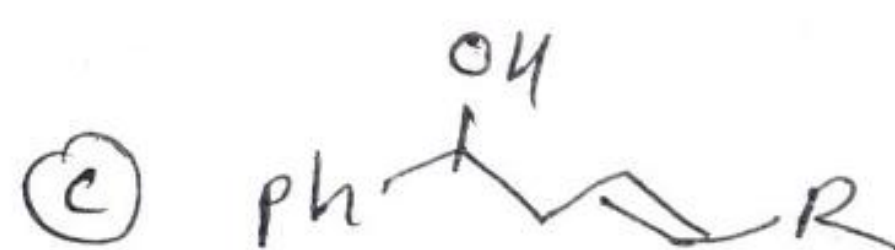
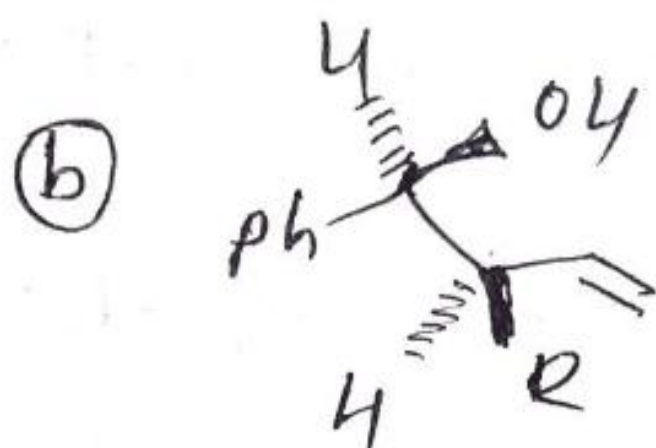
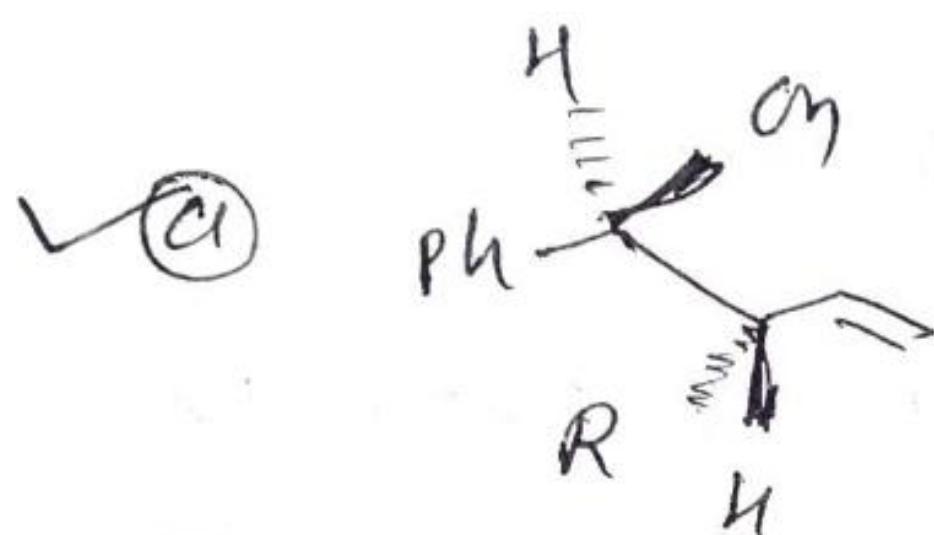
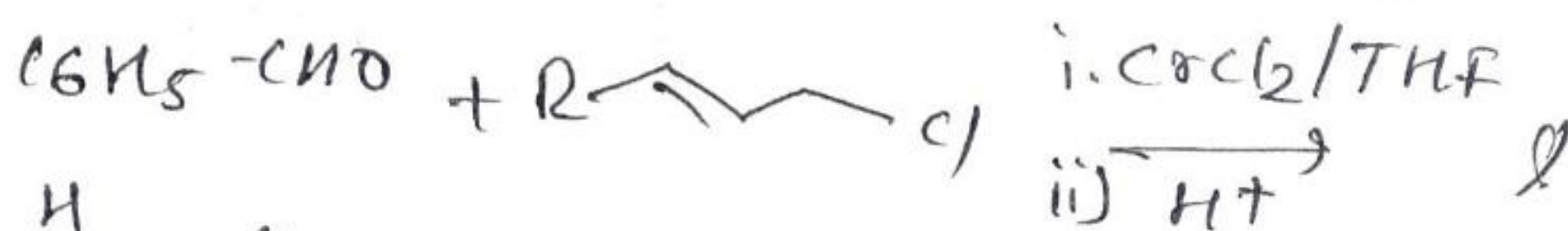
- (a) Nucleophilic substitution to arene ring.
 (b) Electrophilic substitution to arene ring.
 (c) Enhancement of acidity of benzylic hydrogen
 (d) All of these

④③ The major products of the following reaction is.



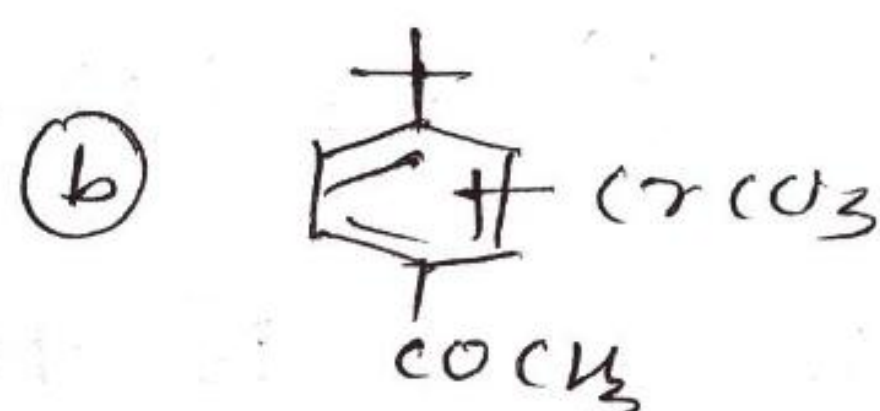
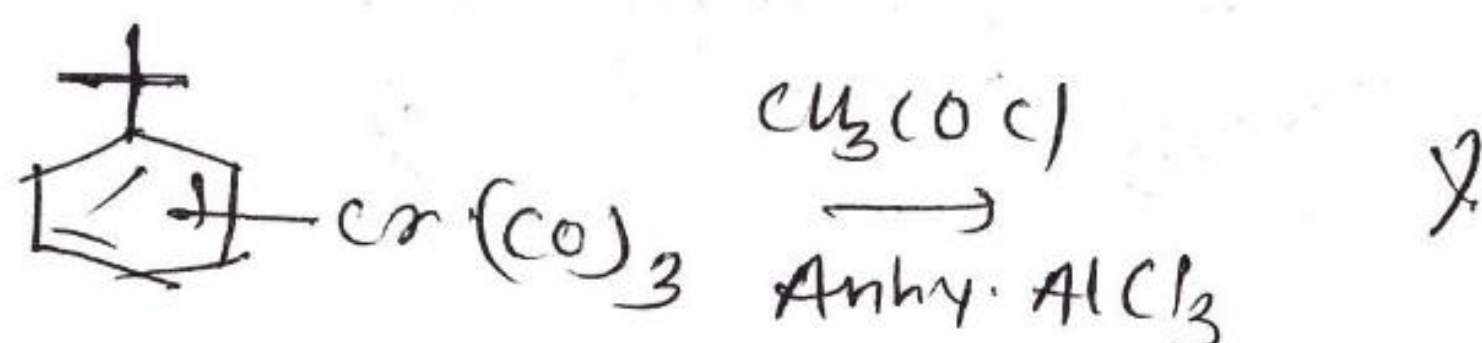
- (d) None of these.

4) The major products of the following reaction is/are



(d) None of these.

45) The major products of the following reaction is/are



(c) Both (a) & (b)

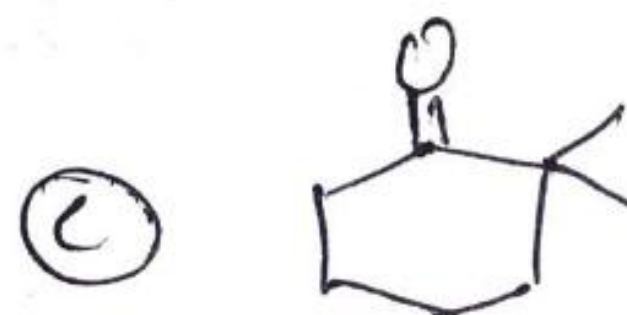
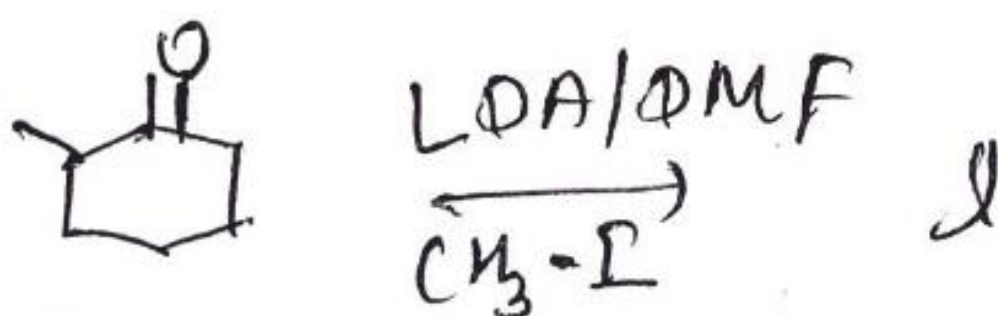
(d) None of these.

46) LDA favour the formation - - -

(a) Thermodynamic enolate (b) Kinetic enolate

(c) both (a) & (b) (d) None of these.

47) The major products of the following reaction is/are



(d) All of these.

48) which of the following statement is/are correct

(a) LDA is hindered non-nucleophilic strong base

(b) Abstraction of less hindered proton.

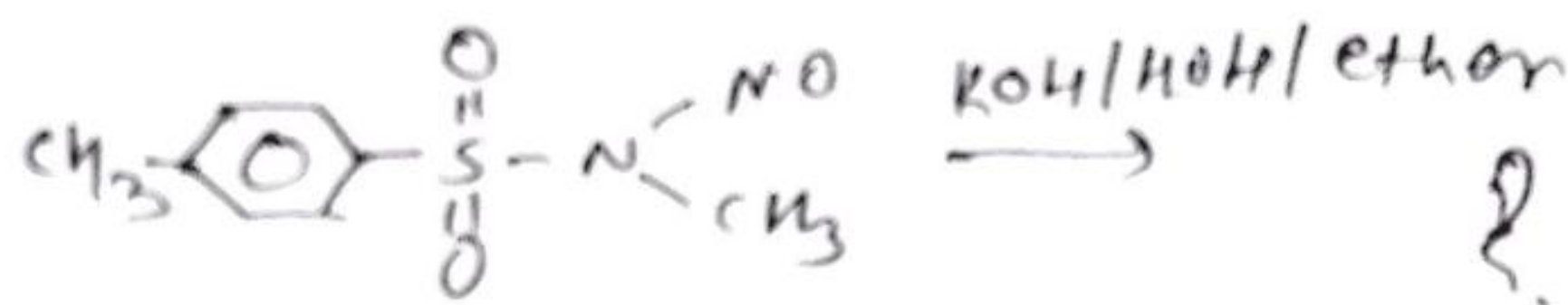
(c) It gives kinetic controlled enolate anion.

☒ (d) All of these.

48) Lithium diisopropylamide is prepared from

- (a) diisopropylamine (b) butyllithium
✓ (c) both (a) & (b) (d) Isopropyl alcohol & Butylchloride.

49) The major products of the following reaction is/are

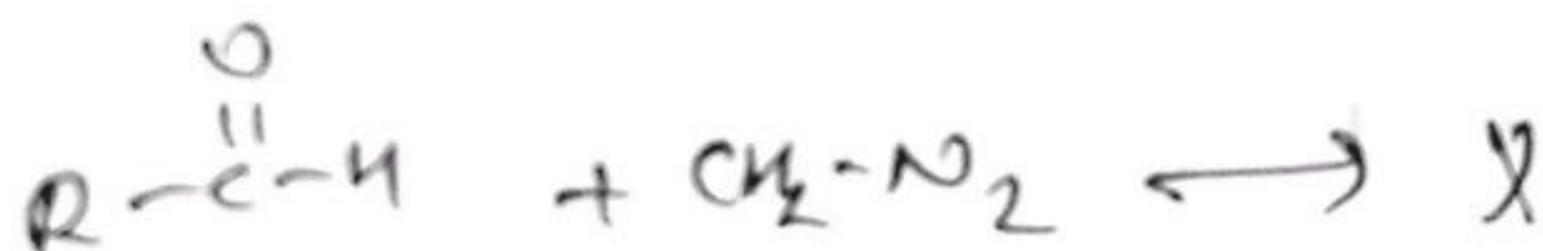


- ✓ (a) $\text{CH}_2\text{-N}_2$ (b) $\text{CH}_3\text{-NH}_2$ (c) $\text{CH}_3\text{-N}_2$ (d) All of these

50) The acetic acid is treated with diazomethane to form a -

- ✓ (a) methyl acetate (b) Ethyl acetate
(c) Ethanoic acid (d) None of these

51) The major products of the following reaction is/are



- (a) $\text{R-CH}_2\text{-OCH}_3$ ✓ (b) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ (c) $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$

(d) None of the

52) Which of the following statement is/are correct about TMSI.

- (a) TMSI is cleavage Ether. linkage containing C-O
(b) It cleavage Ester. containing C-O
(c) It cleavage of carbamates.
✓ (d) All of these.

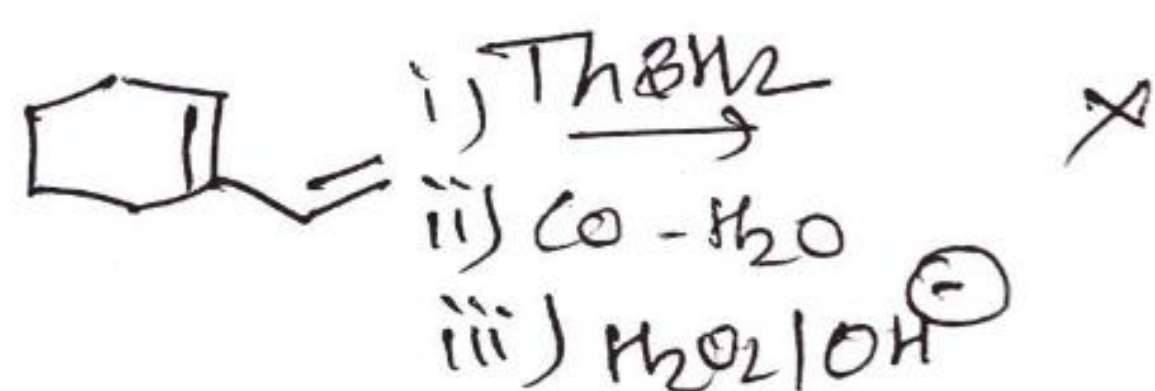
53 The 9-borabicyclo [3,3,1] nonane is prepared from

- ✓ (a) cyclo octa-1,5 diene + BH_3 (b) 2,3-dimethyl-2-butene + BH_3
 (c) 2-methyl-2-butene + BH_3 (d) None of these

54 Disiamyl borane or Si_2BH is prepared from.

- (a) cyclo octa-1,5 diene + BH_3
 (b) 2,3-dimethyl-2-butene + BH_3
 ✓ (c) 2-methyl-2-butene + BH_3
 (d) All of these.

54 The major products of the following reaction is/are



x will be - 2

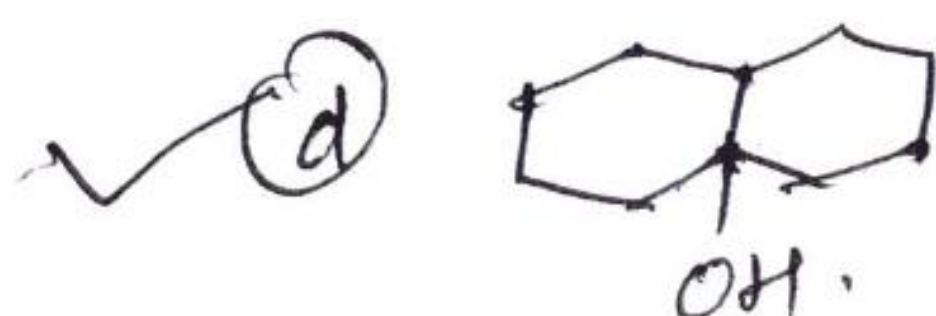
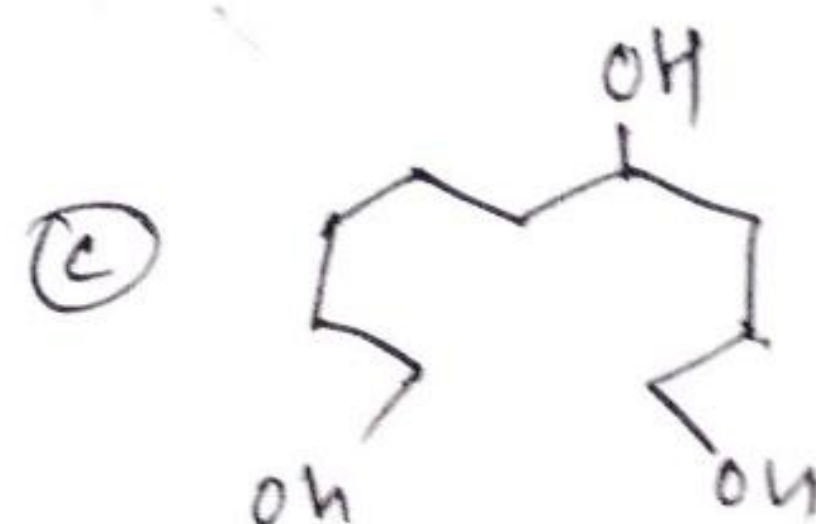
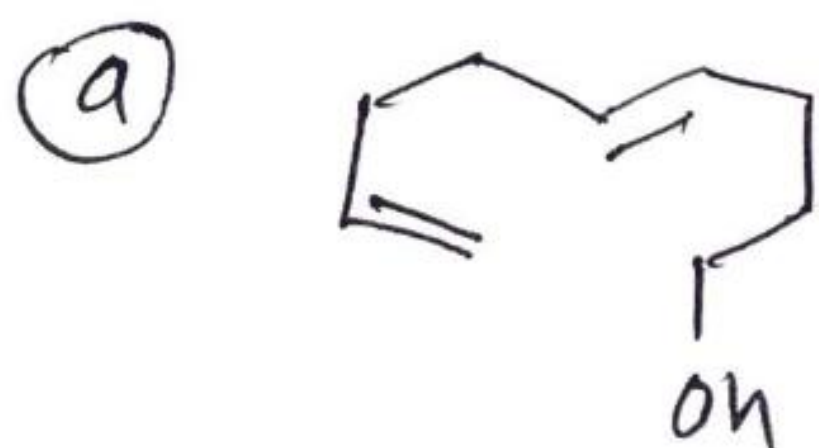
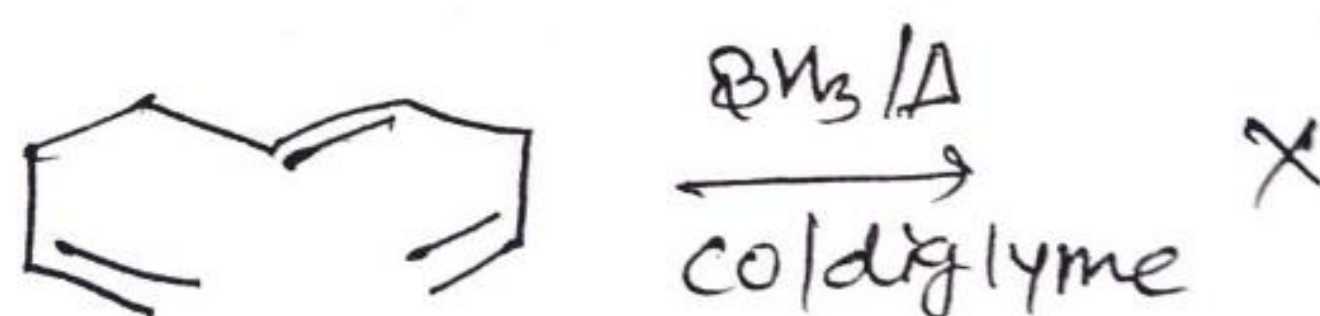


✓ (c)

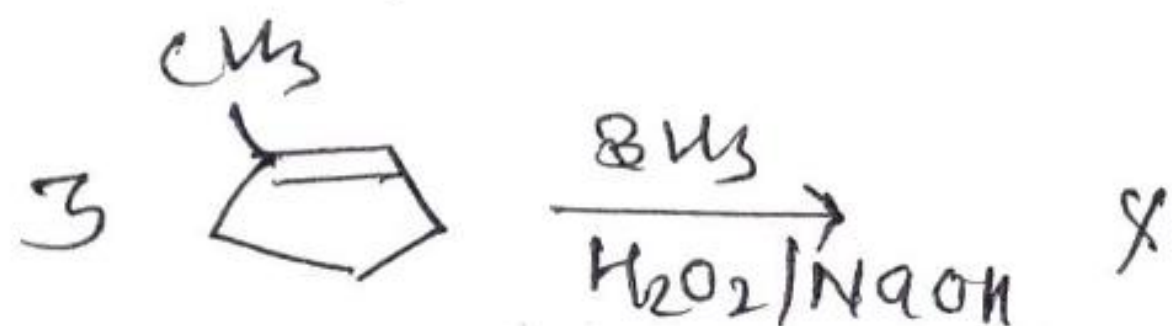


(d) None of these

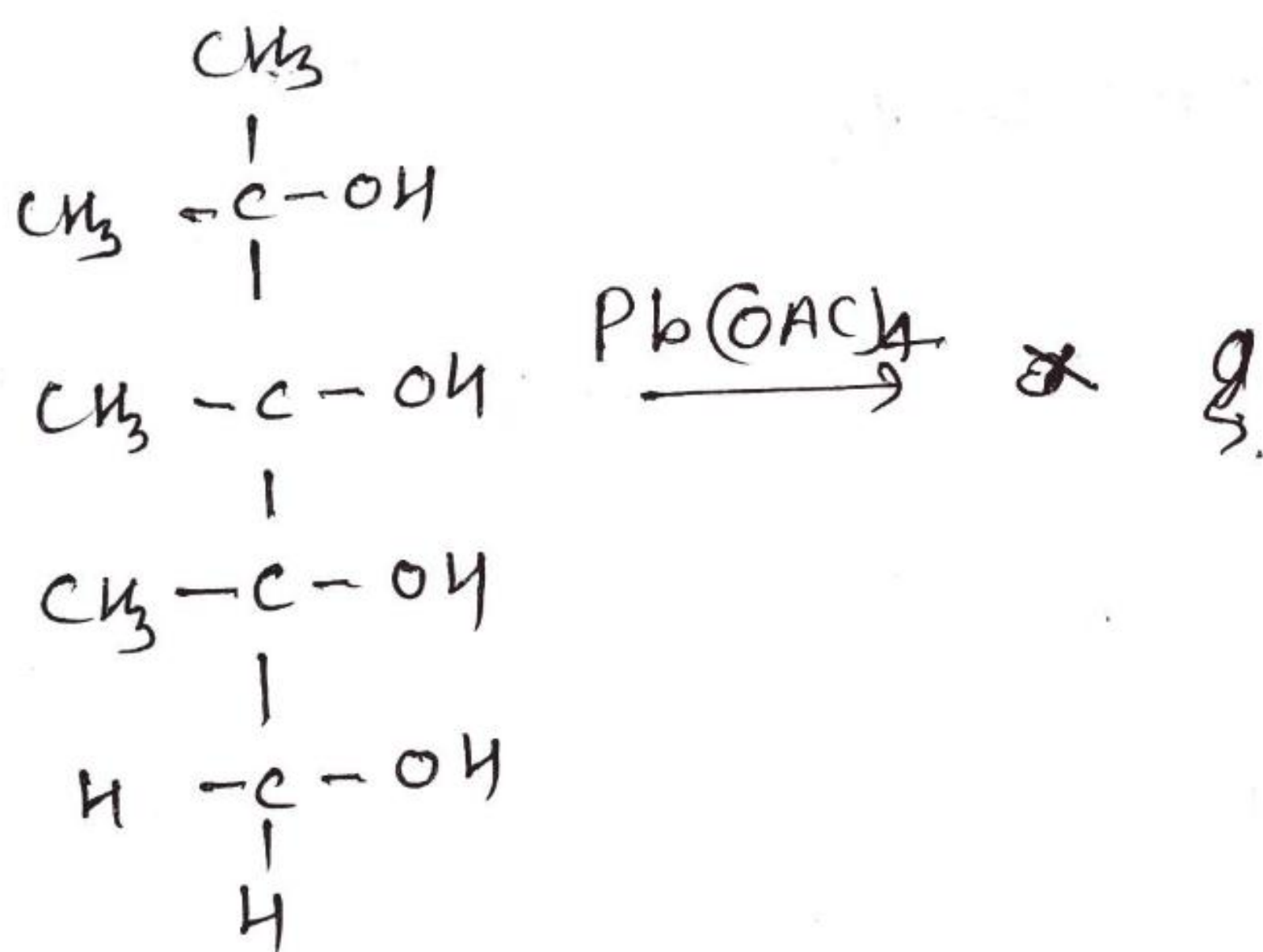
55 The ~~follow~~ consider the following reaction x will be.



56) The major products of the following reaction is/are

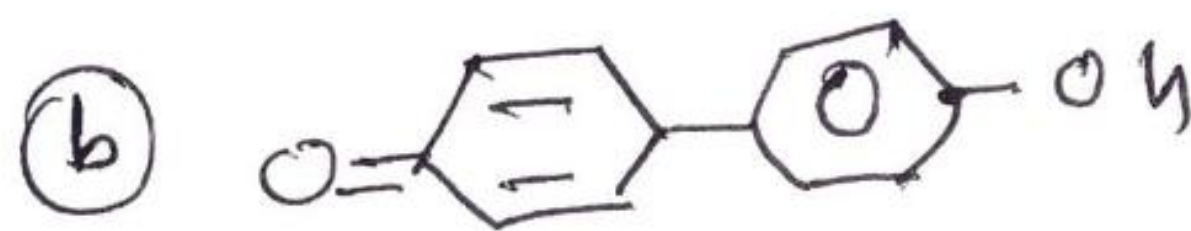
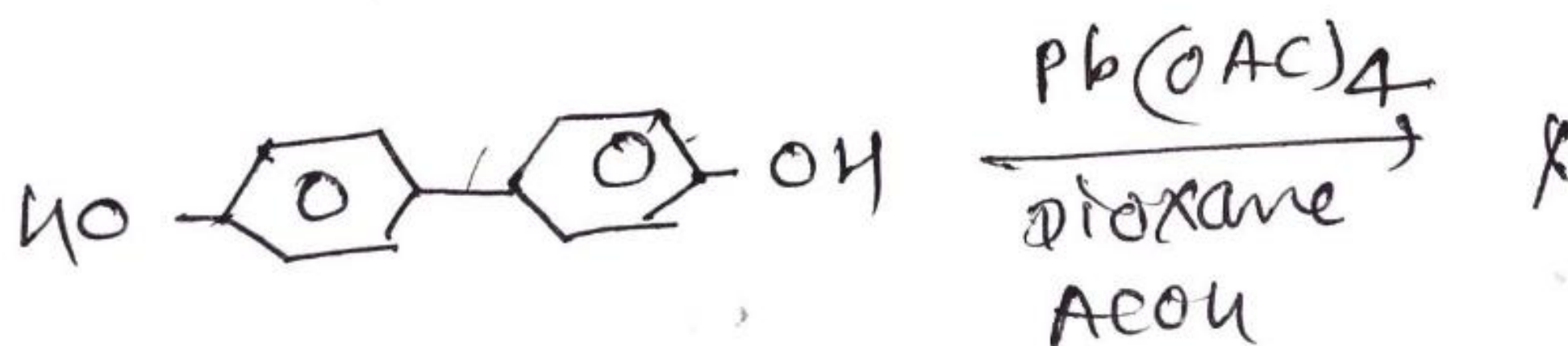


57) The major products of the following reaction is/are



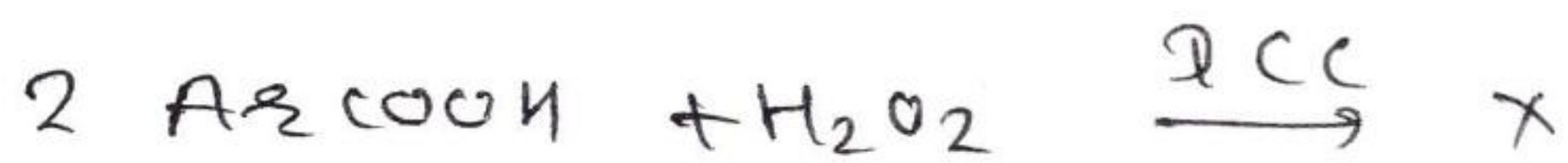
- (a) CC(=O)C (b) CC(=O)O (c) OC(=O)C (d) All of these

58) Consider the following reactions.

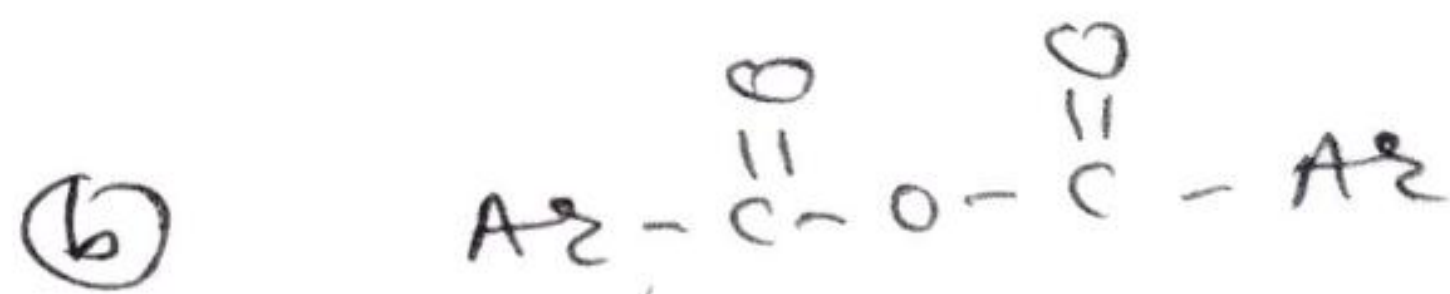
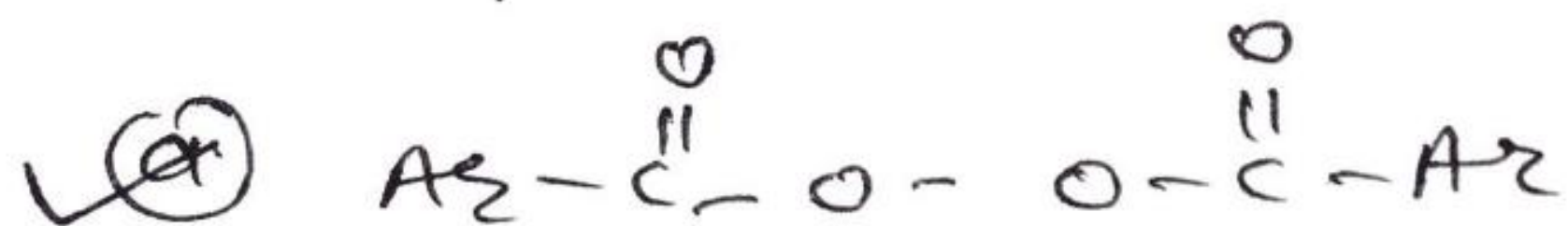


(d) None of these.

56) The major products of the following reaction is/are



x = ?



(d) None of these