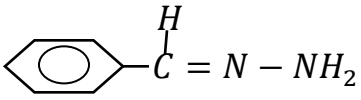
CHEMISTRY DEPARTMENT 2023
S.6 BRAINSTORMING TEST
TEST ON; SYNTHESIS

NAME……**INDEX number**…….
Signature …… **expected score(%)**…….

Instructions; Attempt *all questions in this paper.*

1. Write the equation to show how the following compounds can be synthesized and in each case outline a mechanism leading to formation of the major product.

(a)  from phenylmethanal ($4\frac{1}{2}$ marks)

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(b) 2-methylpropan-2-ol from 2-chloro-2-methylpropane ($2\frac{1}{2}$ marks)

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(c) Propyne from bromomethane ($1\frac{1}{2}$ marks)

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(d) 1-bromopropane from propene (03 marks)

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(f) $HCOOCH_2CH_3$ from ethanol (02 marks)

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e) Benzene sulphonic acid from benzene ($3\frac{1}{2}$ marks)

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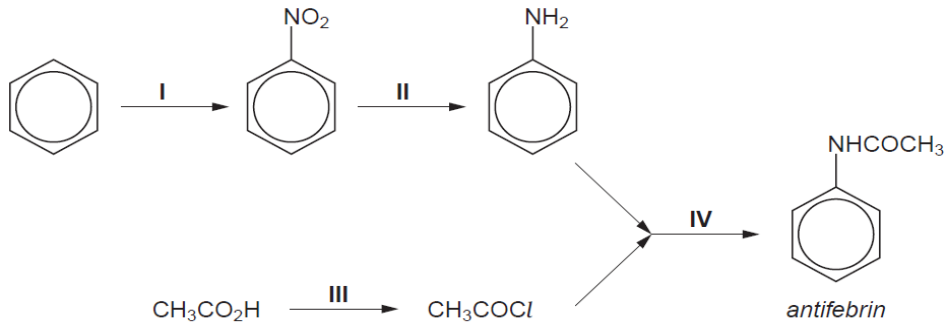
2. The antipyretic (fever-reducing) drug *antifebrin* can be made from benzene and ethanoicacid by the following route.



(a) What type of reaction is?

(i) reaction **I**.....(½ mark)

(ii) reaction **II**.....(½ mark)

(b) Suggest the reagents and conditions for

(i) reaction **I**.....(1 mark)

(ii) reaction **II**..... (1mark)

(ii) reaction **III**.....
(1mark)

3. Write equations and indicate the conditions under which the following *conversions can be effected*

(a) CH_3CH_2OH from bromomethane (2½ marks)

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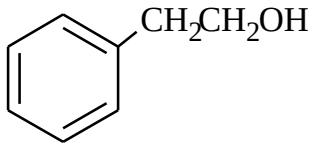
(b)



from phenylethanone

(4½ marks)

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(c) $CH_3CH_2CH_3$ from 1-iodobutane (2 marks)

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4. Using equations only show how each of the following conversions can be effected.

(a) Ethanol to 1-aminopropane (03 marks)

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(b) 2 – hydroxybutanoic acid from propan-1-ol. (03 marks)

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(c) Ethyne to phenylethanone oxime (03 marks)

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5. Write down equations and indicate the conditions for each of the following reactions:

i) $CH_2 = CH_2$ to $CH_3CH_2NH_2$ (3 marks)

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ii) CH_3CH_2Cl to CH_3COOH (2 marks)

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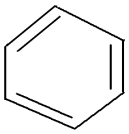
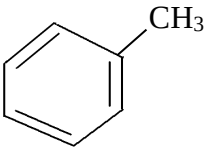
iii)  to 

(2 marks)

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6. Describe how the following conversions can be carried out. (No equation required)

(a) Iodoethaneto Aminomethane (3 marks)

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(b) Benzene to Ethylphenylamine (3 marks)

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(c) Phenylmethanol to cyclohexanone (3 marks)

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7. Show how the following conversions could be carried out

(a) CH_3CO_2H from methanol (04marks)

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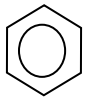
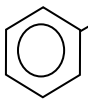
(b)  from  CH_2OH (04marks)

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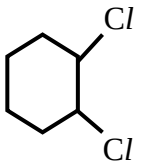
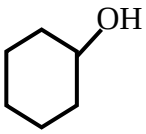
(c) 

from 

(2½ marks)

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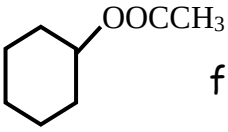
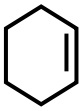
(d) 

from 
(2 marks)

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(e) ethanol to propane-1,2-diol (03marks)

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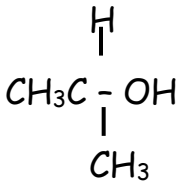
8. Write equation(s) to show how the following conversions can be effected.

a)  from ethanol (03marks)

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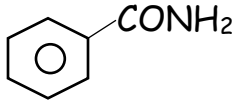
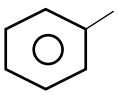
b)  from  ($2\frac{1}{2}$ marks)

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(c) Ethene to propanoic acid *($3\frac{1}{2}$ marks)*

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(d) Nitrobenzene to Iodobenzene (3½ marks)

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(e) Benzene to Benzaldehyde (2 marks)

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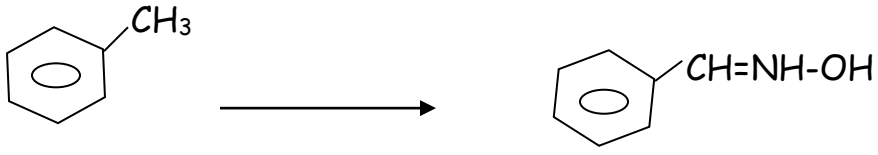
9. Write equations to show how the following conversions can be effected. Indicate conditions for the reactions.

(a) 

(03marks)

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(b) Carbon (C) $\longrightarrow$ $CH_3C \equiv CH$ (03marks)

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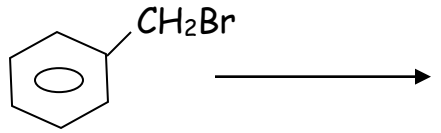
(c)  (03marks)

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(d) $CH_3CH=CHCH_3 \longrightarrow CH_3CHO$ (03 marks)

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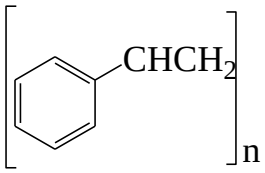
10. Write equations to show how the following compounds can be synthesized and in each case state the conditions for the reaction.

a  from $C_6H_5COCH_3$ (03 marks)

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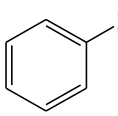
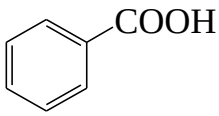
b.  from  (03 marks)

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c. CH_3COCH_3 from $CH_3HC=CH_2$ (03 marks)

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END.