

**2022**

Time : 3 hours

Full Marks : 60 (40)

Candidates are required to give their answers in their own words as far as practicable.

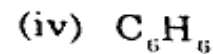
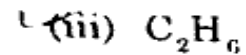
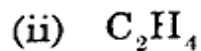
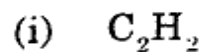
The figures in the margin indicate full marks.

Answer any five questions in

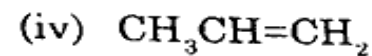
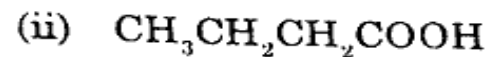
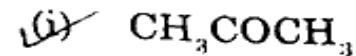
which questions no 1 is compulsory.

1. Choose the correct alternative for each of the following questions : 1×12=12

(a) The C–H bond distance is longest in :



(b) Isopropyl alcohol is oxidised with  $K_2Cr_2O_7$  and  $H_2SO_4$  give :



(c) Chlorobenzene can be obtained from benzene diazonium chloride by :

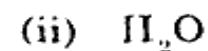
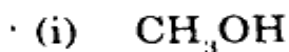
(i) Wurtz Reaction

~~(ii)~~ Fittig Reaction

(iii) Friedel Crafts Reaction

(iv) Gattermann's Reaction

(d) Which of the following is more acidic ?



(iii)  $C_6H_5OH$

(iv)  $CH_3O.CH_3$

(e) Phenol on distillation with zinc dust gives :

(i) Benzaldehyde

(ii) Acetophenone

(iii) Benzene

(iv) Toluene

(f) The IUPAC name of tertiary-butyl alcohol is :

(i) 2-methylbutan-1-ol

(ii) 2-methyl propan-2-ol

(iii) 2-methylbutane-1-ol

(iv) 2-methylpropan-1-ol

(g) Which of the following is trihydric alcohol :

(i) Glycerol

(ii) Citric acid

(iii) Fumaric acid

(iv) Maleic acid

(h) Vinegar is dilute aqueous solution of :

(i) Ethanoic acid

(ii) Citric acid

(iii) Benzoic acid

(iv) Oxalic acid

(i) Ammonium acetate on heating gives :

(i) Acetamide

(ii) Acetone

(iii) Acetic anhydride

(iv) Acetic acid and ammonia

(j) Which of the following gives Iodoform test :

(i)  $CH_3COOH$

(ii)  $HCHO$

(iii)  $CH_3OH$

(iv)  $CH_3COCH_2CH_3$

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(3)

(Turn over)

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(4)

Contd.

(k) Which of the following is most reactive ?

(i)  $\text{CH}_3\text{CHO}$

(ii)  $\text{CH}_3\text{COCH}_3$

(iii)  $\text{HCHO}$

(iv)  $\text{C}_6\text{H}_5\text{CHO}$

(l) Which of the following is most acidic ?

(i)  $\text{FCH}_2\text{COOH}$

(ii)  $\text{BrCH}_2\text{COOH}$

(iii)  $\text{ICH}_2\text{COOH}$

(iv)  $\text{ClCH}_2\text{COOH}$

2. (a) What are alkylhalids and aryl halides ?

2

(b) How would you prepare benzylchlorids

and chlorobenzen ?

6

(c) How would you distinguish them ?

4

3. (a) Define Grignard's reagent with suitable example.

2

(b) How will you prepare ethylmagnesium iodide in the laboratory ?

6

(c) Starting from methylmagnesium iodide how will you prepare the following :

(i) Acetone

(ii) Ethyl alcohol

4

4. (a) Give structure of glycol and how will you prepare glycols.

6

(b) How does ethylene glycol react with

(i)  $\text{HI}$

(ii) Phosphorus pentachlorids

6

5. (a) How Phenol is commercially prepared from Cummen (isopropylbenzene) or benzene diazonium salt.

6

(b) Discuss acidic nature of o-nitrophenol, m-nitrophenol and p-nitrophenol.

6

6. (a) Discuss the structure and reactions of carbonyl compounds.

6

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(5)

(Turn over)

S169/100/6

(6)

Contd.

- (b) Give the preparation and synthetic applications of diethyl malonate. 6
7. (a) Describe any two method for the preparation of succinic acid. 6
- (b) Give one method each for the preparation of
- Fumaric acid
  - Malic acid

✓ 8. Explain any three of the following reaction :  
4×3=12

- Claisen rearrangement
  - Kolbe's synthesis
  - ~~Reimer Tiemann reaction~~
  - ~~Pinacol-Pinacolone rearrangement~~
  - ~~Bouveault-Blanc reduction~~
9. Discuss mechanism of any three of the following reaction : 4×3=12

- Beckmann rearrangement
- Perkin reaction
- Wittig reaction
- Benzoin condensation
- Baeyer villiger oxidation

✓ 10. How will you bring about following conversions  
(any four) 3×4=12

- Propan-1-ol to propan-2-ol
- Ethene to ethanoic acid
- Acetaldehyde to acetic acid
- Ethanol to propane
- Benzoyl Chloride to benzaldehyde

————— x —————  
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(7)

(Turn over)

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(8)

(P-500)

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