

**Model Question Paper**  
**Carbonyl Compounds - Part I**

12th Standard

**Chemistry**

Reg.No. : 

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I. Answer all the questions.

II. Use blue pen only.

III. Question number 19 is compulsory.

Time : 01:00:00 Hrs

Total Marks : 75

5 x 1 = 5

**Part-A**

- 1) The chain isomer of 2-methyl propanal is  
(a) 2-butanone (b) butanal (c) 2-methyl propanol (d) but-3-ene-2-ol
- 2) Schiff's reagent gives pink color with  
(a) acetone (b) acetaldehyde (c) ethyl alcohol (d) methyl acetate
- 3) Isopropyl alcohol vapours with air over silver catalyst at 520K give  
(a) tert. butyl alcohol (b) acetaldehyde (c) acetone (d) 2-propanol
- 4) Methyl ketones are usually characterised by  
(a) the Fehling's solution (b) the iodoform test (c) the Schiff's test (d) the Tollen's reagent
- 5) Which of the following compounds is oxidised to give ethyl methyl ketone?  
(a) 2-propanol (b) 2-pentanone (c) 1-butanol (d) 2-butanol

**Part-B**

5 x 3 = 15

- 6) Give the structural formulae of  
(a) mesitylene  
(b) phoroin and  
(c) mesityl oxide
- 7) What is Rosenmund's reduction? What is the purpose of adding  $BaSO_4$  in it?
- 8) Name one reagent used to distinguish acetaldehyde and acetone.
- 9) Give four examples of carbonyl compounds?
- 10) Does formaldehyde undergo aldol condensation? Justify your answer.

**Part-C**

7 x 5 = 35

- 11) Compounds (A) and (B) belong to the same homologous series with the molecular formula  $CH_2O$  and  $C_2H_4O$  respectively. They reduce Tollen's reagent reaction of (A) with ammonia gives (C) which is used as urinary antiseptic. Reaction of (B) with  $con.H_2SO_4$  gives a trimer (D) which is used as hypnotic. Identify (A),(B),(C) and (D)
- 12) Compound (A) and (B) are having the same molecular formula  $C_3H_6O$ . (A) gives red colour with decolourised Schiff's reagent whereas (B) cannot. Reduction of A as well as (B) with sodium ethoxide and hydrazine give  $C_3H_8$ (C). But oxidation of (A) and (B) give  $C_3H_6O_2$ (D) and  $C_2H_4O_2$  (E) respectively. Identify (A),(B),(C),(D) and (E) and explain the reactions involved.
- 13) An organic compound (A)  $C_3H_6O$  obtained by the oxidation of compound (B)  $C_3H_8O$ . Treatment of A with  $PCL_5$  gives  $C_3H_6CL_2$  which on hydrolysis followed by oxidation gives a mono basic acid (D)  $C_3H_6O_2$ . Identify the compounds (A),(B),(C) and (D).
- 14) Explain the mechanism of aldol condensation of acetaldehyde.
- 15) Explain the mechanism of aldol condensation of acetone.
- 16) Write the mechanism of crossed aldol condensation.
- 17) Explain the mechanism of cannizaro reaction.

**Part-D**

2X10=20

- 18) a) Explain the mechanism of Claisen or Claisen Schmidt reaction.  
b) Write the difference between acetaldehyde and acetone.
- 19) a) a) Explain Popott's rule with an example.  
b) Explain the isomerism in aldehydes and ketones.

(OR)

- b) a) What is the action of ammonia on i) formaldehyde ii) acetaldehyde iii) benzaldehyde?  
b) Distinguish acetaldehyde and benzaldehyde.

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