



# CHEMISTRY

## NCERT - NCERT CHEMISTRY(TELUGU)

### CARBONYL COMPOUNDS

#### Self Evaluation A Choose The Correct Answer

1. The chain isomer of 2-methyl propanal is

A. 2-butanone

B. butanal

C. 2-methyl propanol

D. but-3-ene-2-ol

**Answer:**



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2. Schiff's reagent gives pink colour with

A. acetone

B. acetaldehyde

C. ethyl alcohol

D. methyl acetate

**Answer:**



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3. Isopropyl alcohol vapours with air over silver catalyst at 520 K give

A. tert.butyl alcohol

B. acetaldehyde

C. acetone

D. 2-propanol

**Answer:**



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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

**Answer:**



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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

**Answer:**



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6. Formaldehyde polymerises to give

- A. paraldehyde
- B. paraformaldehyde
- C. formalin
- D. formic acid

**Answer:**



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**7. Tollen's reagent is**

- A. ammoniacal cuprous chloride
- B. ammoniacal cuprous oxide

C. ammoniacal silver nitrate

D. ammoniacal silver chloride

**Answer:**

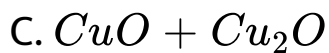


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8. When acetaldehyde is heated with Fehling solution, a red precipitate is formed. Which of the following is that ?

A.  $Cu_2O$

B.  $CuO$



**Answer:**



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9. The compound that does not undergo Cannizzaro reaction is

A. formaldehyde

B. benzaldehyde

C. acetaldehyde



D. trimethyl acetaldehyde

**Answer:**



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**10.** The formation of cyanohydrin from a ketone is an example of

- A. electrophilic addition
- B. nucleophilic addition
- C. nucleophilic substitution
- D. electrophilic substitution

**Answer:**



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11. Hydrogenation of benzoyl chloride in the presence of Pd and  $BaSO_4$  gives

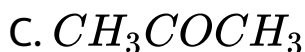
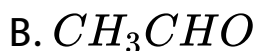
- A. phenol
- B. benzoic acid
- C. benzyl alcohol
- D. benzaldehyde

**Answer:**



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12. From which of the following, tertiary butyl alcohol is obtained by the action of methyl magnesium iodide ?

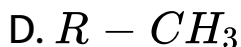
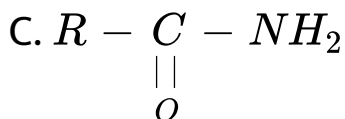
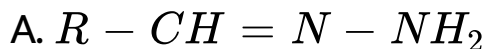


**Answer:**



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13. During reduction of aldehydes with hydrazine and  $C_2H_5O\text{Na}$  the product formed is



**Answer:**



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14. Aldol is

- A. 2-hydroxy butanol
- B. 3-hydroxy butanol
- C. 3-hydroxy butanal
- D. 2-hydroxy butanal

**Answer:**



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15. In the reduction of acetaldehyde using  $LiAlH_4$   
the hydride ion acts as

- A. electrophile
- B. nucleophile
- C. both (a) and (b)
- D. a free radical

**Answer:**



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**16.** Which of the following statement is wrong ?

- A. 2-pentanone and 3-pentanone are position isomers

B. aqueous solution of formaldehyde is known as formalin

C. aldehydes and ketones undergo nucleophilic substitution

D. aldehydes act as reducing agents

**Answer:**



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17. Cyanohydrin of which compound on hydrolysis will give lactic acid?

A.  $HCHO$

B.  $CH_3CHO$

C.  $(CH_3)_2CO$

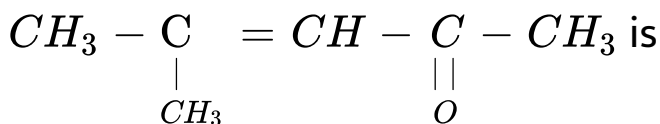
D.  $C_6H_5CH_2CHO$

**Answer:**



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**18.** The IUPAC name of



A. 4-methylpent-3-en-2-one



B. 2-methylpent-3-en-2-one

C. 3-methyl pent-2-en-1-one

D. None of these

**Answer:**

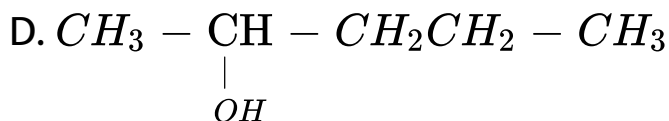
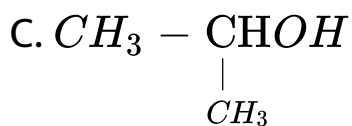


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**19.** Which of the following does not give iodoform test ?

A. aceto phenone

B. benzophenone



**Answer:**



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**20.** The compound which does not reduce Fehling solution is

A. formaldehyde

B. acetaldehyde

C. benzaldehyde

D. propionaldehyde

**Answer:**



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21.  $CH_3COCH_3 \xrightarrow{\text{Conc. } H_2SO_4}$  The product is

A. mesitylene

B. mesityl oxide

C. phorone

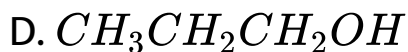
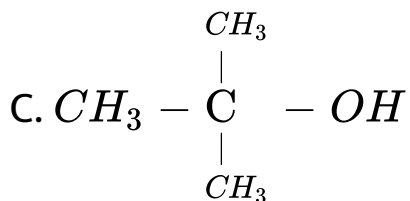
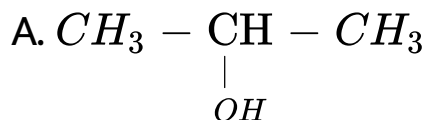
D. paraldehyde

**Answer:**



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**22.** Which compound on strong oxidation gives propionic acid ?



**Answer:**



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**23.** The compound used in the preparation of the tranquilizer, sulphonal is

- A. acetone
- B. acetophenone
- C. isopropyl alcohol
- D. glycol

**Answer:**



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24. Calcium acetate + calcium benzoate  $\xrightarrow{\text{distillation}}$   
gives

A. benzophenone

B. benzaldehyde

C. acetophenone

D. phenyl benzoate

**Answer:**



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25. Bakelite is a product of reaction between

A. formaldehyde and NaOH

B. phenol and methanal

C. aniline and NaOH

D. phenol and chloroform

**Answer:**



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**Self Evaluation B Answer In One Or Two Sentences**

1. Give the structural formulae of

(a) mesitylene (b) phorone and (c) mesityl oxide



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2. What is Rosenmund's reduction ? What is the purpose of adding  $BaSO_4$  in it ?



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3. Name one reagent used to distinguish acetaldehyde and acetone.



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4. Give four examples of carbonyl compounds ?



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5. Does formaldehyde undergo aldol condensation ?

Justify your answer.



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6. What type of aldehydes undergo Cannizzaro reaction ?



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7. What happens when calcium acetate is dry distilled ?



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8. Ethanal is more reactive towards nucleophilic addition reaction than propanone. Why ?



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9. How is acetophenone prepared by Friedel-Crafts method ?



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10. Write a note on haloform reaction.



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11. How will you convert acetophenone to phenacyl bromide ?



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12. Though benzophenone gives all reactions of carbonyl compounds, it does not form addition product with  $NaHSO_3$  - give reasons.



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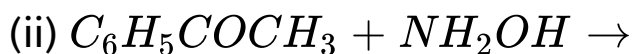
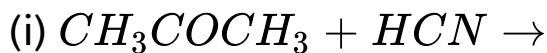
13. Arrange the following in increasing order of reactivity towards nucleophilic addition.

$HCHO$ ,  $CH_3CHO$  and  $CH_3COCH_3$



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14. Predict the formulae of the products in the following reactions.



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15. Formaldehyde and benzaldehyde give Cannizzaro reaction but acetaldehyde does not - Account for this



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**16.** Give two tests for aldehydes.



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**17.** Mention the industrial uses of formaldehyde.



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**18.** How will you distinguish between formaldehyde and acetaldehyde.



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## Self Evaluation C Answer Not Exceeding Sixty Words

1. How does formaldehyde react with (i)  $NH_3$ , (ii)  $CH_3MgI$  followed by hydrolysis and (iii)  $NaOH$ .



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2. Illustrate the reducing property of acetaldehyde with examples.



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3. Discuss aldol condensation.



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**4.** How are the following conversions carried out ?

- (i) benzaldehyde from Toluene, (ii) acetophenone from benzene, and  
(iii) benzoin from benzaldehyde.



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**5.** Explain the similarity in chemical properties of acetaldehyde and acetone. Write any three tests that are useful to differentiate acetaldehyde from acetone.





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6. Write a note on (i) Perkins reaction, and (ii) Knoevenagal reaction.



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7. How will you distinguish between formaldehyde and acetaldehyde.



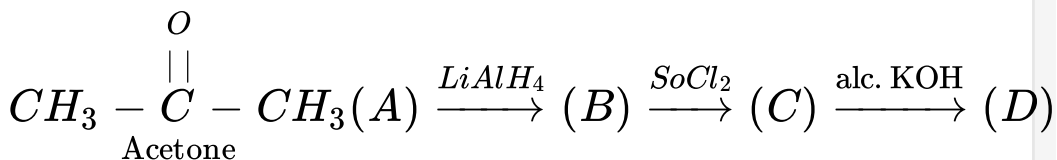
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8. Write the differences between acetophenone and benzophenone.



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9. Identify (B), (C) and (D)



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10. How will you synthesise acetaldehyde from formaldehyde?



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11. Which test is useful to distinguish between 2-pentanone and 3-pentanone?



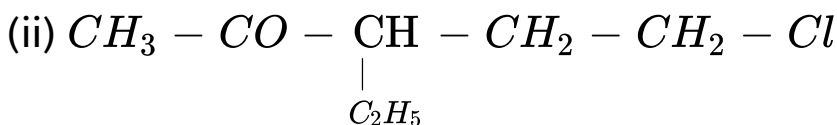
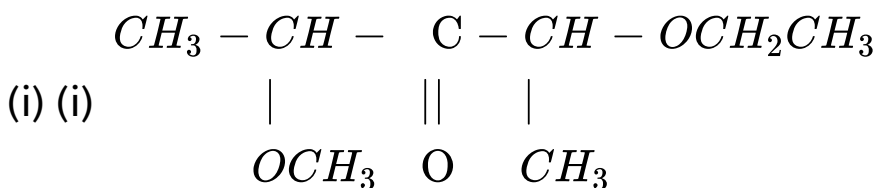
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12. How will you synthesise acetone from acetaldehyde ?



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13. Give the IUPAC names of



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14. An organic compound,  $C_2H_4O$  gives a red precipitate when warmed with Fehling's solution. It also undergoes aldol condensation in presence of alkali.

(i) Write IUPAC name of the compound.

(ii) What is the hybridization of carbon atoms in the

compound ?

(iii) Write equation for the reaction.



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**15.** Write the structural formula of the main product formed when , (i) The compound obtained by hydration of ethyne is treated with dilute alkali. (ii) Methanal reacts with ammonia.



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16. How will you synthesise 2-butanone from ethyl alcohol ?

Clue : Steps are (i)  $SOCl_2$  (ii)  $Mg$ /ether (iii)  $CH_3CHO$ , (iv)  $H_2O/H^+$  and (v)  $Na_2Cr_2O_7/H_2SO_4$ .



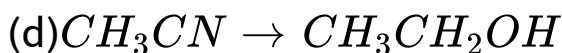
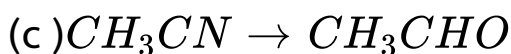
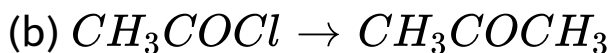
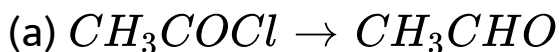
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17. What happens when the following alcohol vapours are passed over heated copper ? (a) n-butyl alcohol, (b) isobutyl alcohol, (c) 2-butanol and (d) 2-methyl-2-propanol.



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**18.** How can the following conversions be effected ?



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**19.** Which compounds on Clemmenson reduction give (a) 2-methyl propane, (b) ethyl benzene, (c) propane and (d) diphenyl methane.



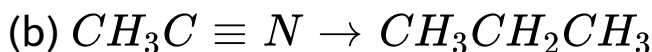
20. What happens when the following compounds are treated with dilute  $NaOH$  solution in cold ?

(a) propanal, (b)  $(CH_3)_3C - CHO$ , (c) mixture of  $(CH_3)_3CCHO$  and acetone.

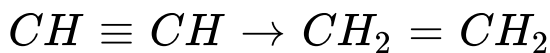
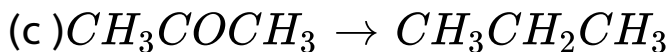


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21. Identify the atoms that has undergone change in hybridisation in the following reactions.

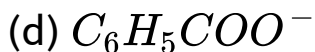
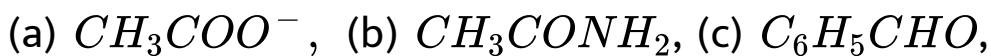






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22. Draw resonance structures for the following :



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23. Which of the following pairs is more resonance stabilised ?

(a)  $C_6H_5CHO$  and  $C_6H_{13}CHO$

(b)  $CH_3COCH_3$  and  $CH_3COC_6H_5$ ,

(c) p-hydroxy benzaldehyde and m-hydroxy benzaldehyde,

(d)

$C_6H_5CH_2OH$  and  $CH_3 - C_6H_4 - OH$  (para)



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