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Reg. No. : .....

Code No. : 6884 **Sub. Code : PCHM 41**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Fourth Semester

Chemistry — Core

ORGANIC CHEMISTRY — IV

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Phenols on reaction with chloroform in the presence of sodium hydroxide solution give _____.

   (a) Hydroxyl anilide

   (b) Hydroxy benzaldehyde

   (c) Anisole

   (d) Hydroxyaniline

2. Ketone with peracids gives ————.

(a) primary alcohol (b) aldehyde

(c) carboxylic acid (d) esters

3. The cis isomer of 1,4 demthyl cycle hexane exists in two ———— conformations.

(a) e, a (b) a, e

(c) e e, a a (d) both (a) and (b)

4. Perhydrophenanthrene molecule contains ———— equivalent pairs of chiral centres.

(a) three (b) two

(c) four (d) none of the above

5. The synthetic equivalent of synthon $PhCH_2^+$ ————

(a) $PhCH_2Cl$ (b) $PhCH_3$

(c) $PhCH_2MgCl$ (d) $PhCH_2MgBr$

6. Ester is a protecting group for ————

(a) acids (b) carbonyl

(c) amines (d) aldehyde

7. Hydroboration of 1, 5 cyclooctadiene with borane methyl sulfide complex gives ————.

(a) DCC (b) 9-BBN

(c) DDQ (d) None of these

8. Adams catalyst is ————

(a) SmI_2 (b) PtO_2.

(c) RuO_2 (d) TiO_2

9. A greenish colour is developed when a solution of cholesterol in chloroform is treated with concentrated sulphuric acid and acetic anhydride ———— reaction.

(a) Libermann-Burchard

(b) Diels-Alder

(c) Salkowski

(d) Barbier-Wieland

10. Glycocholic acid and tauroacholic acid are ———.

(a) prostaglandins (b) bile acids

(c) oestrodiol (d) ergosterol

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss the mechanism of Bamford Stevens reaction.

Or

(b) Write the mechanism of Pschorr reaction and explain.

12. (a) Explain conformational free energy with suitable example.

Or

(b) Give an over view of conformational analysis of decaline.

13. (a) What is meant by functional group interconversion? Explain it with one example.

Or

(b) Give any two methods of protecting the OH group of an alcohol by ether formation. Explain how alcohol is liberated in each case.

14. (a) Explain the synthetic applications of Adam's catalyst.

Or

(b) What is Suzuki coupling? Explain its synthetic applications.

15. (a) Outline the synthesis of progesterone from cholesterol.

Or

(b) Discuss the conformational structure of coprostane.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss the mechanism of Darzen oxidation and Reimer Tiemann reaction.

Or

(b) Suggest the mechanism of Bayer Villger oxidation and Wittig reaction.

17. (a) Discuss conformational analysis of 1, 2-demethyl cyclohexane.

Or

(b) Discuss Curtin Hammett principle.

18. (a) Describe the retrosynthetic analysis of camphor and designed synthesis.

Or

(b) Discuss about the protection and deprotection for acid and aldehyde.

19. (a) Discuss the preparation and synthetic applications of trialkyl silyl halides.

Or

(b) Describe the synthetic applications of DDQ and 9-BBN in organic synthesis.

20. (a) Explain the position of hydroxyl group and double bond in cholesterol is determined.

Or

(b) Discuss in detail about prostaglandins.

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