

Reg. No. :

Code No. : 30287 E Sub. Code : SMCH 62

(CBCS) DEGREE EXAMINATION, APRIL 2022

Sixth 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.

How many number of -OH group is present in glucose?

- (a) 4 (b) 5
(c) 6 (d) 7

Hydrolysis of sucrose gives ———

- (a) glucose (b) fructose
(c) glucose + fructose (d) starch

————— is a cyclic monoterpene.

- (a) Limonene (b) α -terpineol
(c) Menthol (d) All the above

Which of the following is a piperidine alkaloid?

- (a) nicotine (b) quinine
(c) pyridine (d) piperine

How many NMR signals will get for mesitylene?

- (a) 1 (b) 2
(c) 3 (d) 4

————— is a chromophoric group.

- (a) $-\text{NH}_2$ (b) $-\text{NR}_2$
(c) $\text{C}=\text{O}$ (d) $-\text{OH}$

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

- (a) Write the classification of carbohydrates.

Or

- (b) What is epimerisation? Explain.

3. Which of the following is least acidic?

- (a) Phenol
(b) O-nitrophenol
(c) 2,4-dinitrophenol
(d) 2,4,6-trinitrophenol

4. Which of the following molecule will undergo cannizzaro reaction?

- (a) formaldehyde (b) benzaldehyde
(c) p-anisaldehyde (d) all the above

5. Which of the following rearrangement involves the migration of a group to electron deficient oxygen?

- (a) Beckmann rearrangement
(b) Dakin reaction
(c) Curtius rearrangement
(d) Benzil – benzilic acid rearrangement

6. The rearrangement of an acylazide to isocyanate is called ———

- (a) Beckmann Rearrangement
(b) Curtius rearrangement
(c) Schmidt rearrangement
(d) Lossen rearrangement

Page 2 Code No. : 30287 E

12. (a) Explain the acidic character of phenol.

Or

- (b) What is Knoevenagel reaction? Give its mechanism.

13. (a) What is Dakin reaction? Explain.

Or

- (b) State and Explain the mechanism of Curtius rearrangement.

14. (a) What is isoprene rule? Explain.

Or

- (b) Write the synthesis of nicotine.

15. (a) Discuss the application of IR spectra in functional group detection.

Or

- (b) Draw and explain the NMR spectrum of benzyl alcohol.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Give the structure and reactions of glucose.

Or

- (b) Write the interconversions of aldoses and ketoses.

17. (a) Write the preparation and uses of Vanillin and Coumarin.

Or

- (b) How will you prepare the following compounds?

- (i) quinol. (2)
 (ii) mandelic acid. (3)
 (iii) cinnamic acid. (3)

18. (a) Write the mechanism of any two rearrangements involves the migration of a group to electron electro deficient carbonatom.

Or

- (b) Explain the following :

- (i) Fries rearrangement. (4)
 (ii) Beckmann rearrangement. (4)

Page 5 Code No. : 30287 E

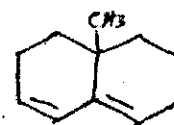
19. (a) Describe the structural elucidation of camphor.

Or

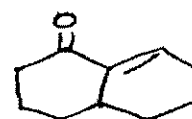
- (b) Explain general methods for the determination of structure of alkaloids.

20. (a) Calculate the λ_{\max} for the following compounds.

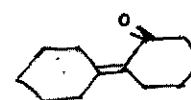
(i)



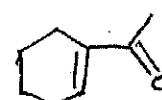
(ii)



(iii)



(iv)



Or

- (b) (i) How will you distinguish cis and trans isomers using UV spectroscopy? (4)
 (ii) Explain the NMR spectrum of acetone. (4)

Page 6 Code No. : 30287 E