Q.P. Code – 42535

Fifth Semester B.Sc. Degree Examination, October/November 2019

(CBCS Scheme)

Chemistry

Paper V (5.1) — ORGANIC CHEMISTRY

Time : 3 Hours] *[Max. Marks : 90*

Instructions to Candidates :

1) *The question paper has Two Parts, Part A and Part B*

2) *Both the Parts should be answered*

3) *Equations and structures are to be given wherever necessary.*

PART – A

Answer any **TEN** of the following questions. Each question carries **2** marks : **(10 × 2 = 20)**

1. What are enantiomers? Illustrate with an example.
2. Write the E and Z configurations of 2-bromo – 2-butene.
3. What are reducing and non-reducing sugars?
4. What is isoprene rule? Explain with an example.
5. Give a chemical evidence to show the presence of pyridine ring in nicotine.
6. What are vat dyes? Give an example.
7. What are antipyretics? Give two examples.
8. Give the reaction of benzene sulphonic acid with
   (a) PCl_5
   (b) NaOH.
9. What are pesticides? Give two examples.
10. Mention the ingredients and uses of Lipstic.

11. What is finger print region of IR spectrum?

12. How many PMR signals are expected from

    (a) toluene

    (b) ethylalcohol.

PART – B

Answer any **SEVEN** of the following questions. Each question carries **10** marks : **(7 × 10 = 70)**

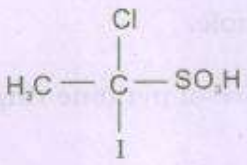
13. (a) What is resolution? Describe the chemical – method of resolution of the racemic mixture.

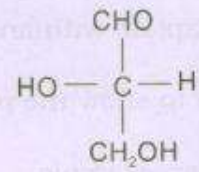
    (b) State the necessary conditions for Biphenyl derivatives to show optical activity. Write the structure of one optically active Biphenyl derivative.

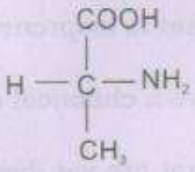
    (c) Write the structures of erythro and threo isomeric pairs of tartaric acid. Which pair represents mesomers and which pair represents enantiomers? **(4 + 3 + 3)**

14. (a) Write the structures of geometric isomers of a compound with molecular formula $C_4H_4O_4$. Describe the action of heat on this compound.

    (b) Assign the (R) or (S) configuration for the following compounds :

    (i) 

    (ii) 

    (iii) 

    (c) Explain geometrical isomerism of allene derivatives. **(4 + 3 + 3)**

15. (a) What is racemisation? Give the mechanism of racemisation of lactic acid.

    (b) Write a short note on Killiani-Fischer synthesis.

    (c) Write the Haworth structure of

    (i) Sucrose and

    (ii) Lactose. **(4 + 3 + 3)**

16. (a) Discuss the structural elucidation of citral.

(b) What are the general characteristics of alkaloids?

(c) Give two medicinal uses of each of the following :

(i) quinine

(ii) piperine

(iii) nicotine. **(4 + 3 + 3)**

17. (a) How is nicotine synthesised?

(b) Write the structure of Camphor and give any two uses.

(c) Give the synthesis of Zingiberene from methylheptenone. **(4 + 3 + 3)**

18. (a) Outline the synthesis of Congored.

(b) What is Saccharin? How is it synthesised? Mention its uses.

(c) Write the structure and uses of Bombykol. **(4 + 3 + 3)**

19. (a) Give the synthesis of Sulphanilamide and mention its uses.

(b) What are cosmetics? Mention their harmful effects.

(c) Explain the terms with an example

(i) pheromones

(ii) antioxidants. **(4 + 3 + 3)**

20. (a) Explain the terms :

(i) Auxochrome and

(ii) Mutarotation with suitable example.

(b) Name an antibiotic drug you have studied and write its structure and mention its uses.

(c) Describe the classification of dyes based on the method of application to fabric. **(4 + 3 + 3)**

21. (a) Explain the terms :

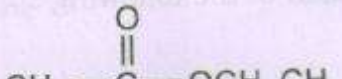
(i) Chemical shift

(ii) Spin-Spin splitting.

(b) Give any three applications of NMR spectroscopy.

(c) Write the number of signals possible in the proton NMR spectra of the following and give their multiplicity :

(i) Phenol

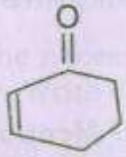
(ii) 

(4 + 3 + 3)

22. (a) What are the different types of modes of vibrations associated with bonds in a molecule? Write the classification in each type of vibration.

(b) Calculate the λ_{max} of

(i) $CH_3 - CH = CH - CH = CH - CH = CH - CH_3$

(ii)  and (iii) 

(c) Explain the terms :

(i) Nuclear shielding and

(ii) Bathochromic shift.

(4 + 3 + 3)