



MAR IVANIOS COLLEGE (AUTONOMOUS)  
THIRUVANANTHAPURAM

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2018

First Degree Programme under CBCSS

Core Course: Chemistry – VIII

AUCH642: Organic Chemistry – III

(Common for **Regular** – 2015 and **Reappearance** – 2014 Admn.)

Time: 3 Hours

Max. Marks: 80

SECTION – A

Answer **ALL** questions in a word or one or two sentences.

1. Give examples of any two biodegradable polymers.
2. Show the tautomeric forms of nitromethane.
3. What is bathochromic shift?
4. Draw the structure of aspirin.
5. What are syndets?
6. Furan reacts with  $\text{NH}_3$  in presence of alumina at  $400^\circ\text{C}$  to give \_\_\_\_\_.
7. What is the range of IR region?
8. How many signals are expected in the NMR spectrum of ethyl bromide?
9. Define isoprene rule.
10. What are mordant dyes? Give an example.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **EIGHT** questions, not exceeding a paragraph.

11. What is Ziegler-Natta catalyst? What is its use?
12. Give the synthesis of alizarin.
13. How is Buna-S synthesised? What are its uses?
14. Discuss the structure of diazomethane.
15. How is benzene sulphonyl chloride converted to dapsone ?
16. Suggest a method for converting aniline to nitrobenzene.
17. Calculate the  $\lambda_{\text{max}}$  in the UV spectrum of 2,4-hexadiene.

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18. What makes TMS an ideal standard in NMR?
19. What is Chichibabin reaction?
20. Discuss Skraup's synthesis of quinoline.
21. Draw the structure of Ibuprofen. What is its use?
22. List out the important bands in the IR spectrum of benzaldehyde.

(8 × 2 = 16 Marks)

### SECTION – C

*Short essay type : Answer any SIX questions.*

23. Outline the synthesis and applications of Nylon-6,6.
24. How is phenolphthalein synthesized? What makes it useful as an acid-base indicator?
25. What are sulpha drugs? Describe the synthesis of sulphathiazole.
26. What is Hoffmann elimination? What is its significance?
27. Compare the basicities of pyridine, pyrrole and piperidine. Explain.
28. Discuss the aromatic nature of pyridine. Explain the molecular orbital concept.
29. Discuss the orientation of electrophilic substitution in pyrrole.
30. Sketch the NMR spectrum of acetaldehyde and explain the peaks.
31. Explain the terms chromophores and auxochromes with an examples.

(6 × 4 = 24 Marks)

### SECTION – D

*Long essay type : Answer any TWO questions.*

32. (a) Discuss the theories of colour and constitution.  
(b) Outline the synthesis and applications of (i) Malachite green (ii) Indigo.
33. (a) Describe the reduction of nitrobenzene in acidic, basic and neutral medium.  
(b) What are the methods of separating a mixture of primary, secondary and tertiary amines?
34. (a) Discuss the twelve principles of green chemistry.  
(b) Outline Fischer's Indole synthesis.
35. (a) Outline the factors affecting the vibrational frequencies in an IR spectrum with examples.  
(b) Describe McLafferty rearrangement.

(2 × 15 = 30 Marks)