No. of Printed Pages : 6

MCH–017

M. SC. (CHEMISTRY)/

M. SC. (ANALYTICAL CHEMISTRY)

(MSCCHEM/MSCANCHEM)

Term-End Examination

June, 2025

MCH-017 : ORGANIC CHEMISTRY –II

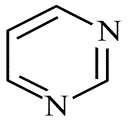
Time : 2 Hours *Maximum Marks : 50*

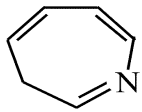
Note : *There are two Parts. Answer questions from each Part according to the instructions given for them.*

Part—A

Note : *Answer any* ***one*** *of the following questions.*

1. (a) Give the names of the following compounds according to Hantzsch-Widman nomenclature : 2

(i) 

(ii) 

(b) Write the structures of the following compounds : 3

(i) Benzo [C] thiophene

(ii) Azacyclobutane

(iii) Oxacyclohexa–2, 5-diene

Or

2. Which position of indole is preferred for electrophilic substitution : C – 2 or C – 3 ? Explain. 5

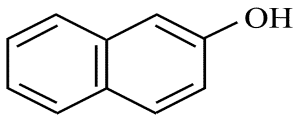
Note : *Answer any* ***five*** *of the following questions.*

3. Write the mechanism of synthesis of thiirane using thiocyanate and an oxirane. Which other two reagents can be used in this reaction ? 4

4. Write the product formed when oxetane reacts with the following reagents : 4×1=4

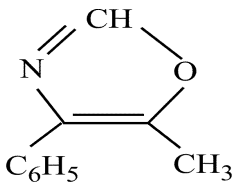
   (i) CH_3NH_2

   (ii) $C_6H_5CH_2OH$

   (iii) 

   (iv) CO_2

5. Discuss the synthesis of the following oxazole starting from suitable isocyanide and suitable acid chloride : 4



6. Give the product of the reaction of benzotriazole with the following reagents :

4×1=4

(i) Conc. HNO_3/H_2SO_4

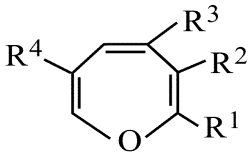
(ii) NaOCl, CH_3COOH, H_2SO_4, room temp.

(iii) C_6H_5NCO

(iv) Trifluoromethane sulphonic anhydride in dry DCM and dry pyridine

7. Discuss Bischler-Napieralski synthesis of isoquinolines giving the sequence of reactions involved. 4

8. How can you obtain the following substituted oxepine using Diel's-Alder reaction ? 4



Par—B

Note : *Answer any* ***one*** *of the following questions.*

9. Write the disconnections involved for the synthesis of paracetamol. Also write its scheme of synthesis. 5

Or

10. Discuss briefly the factors which control the regioselectivity of enolates. 5

Note : *Answer any* ***five*** *of the following questions.*

11. Explain the sequence of reactions taking place in Sonogashira coupling. 4

12. (a) What is Wilkinson's catalyst ? Write its structure and give its use. 2

    (b) Give the Bayer process of preparation of sodium borohydride. Which products are formed when aldehydes and ketones are reduced using sodium borohydride ? 2

13. How is selenium dioxide prepared ? Which type of organic compounds can be oxidised using selenium dioxide ? 4

14. Discuss the mechanism of Henry and Nef reactions. Name the Umpolung reagent in these reactions. 4

15. Discuss the role of phase transfer catalysts in oxidation reactions with the help of a suitable example. 4

16. By taking a suitable example, explain the Chiron approach of asymmetric synthesis. 4

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