

[This question paper contains 7 printed pages]

Your Roll No. : 01.01.2025 (M)

Sl. No. of Q. Paper : 1189 I

Unique Paper Code : 2173010009

Name of the Paper : DSE: Applied Organic Chemistry

Name of the Course : B.Sc. (Hons.)

Semester : V

Time : 3 Hours

Maximum Marks : 90

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt any **six** questions in **all**.
- (c) **All** questions are of **15** marks each.

1. (a) Fill in the blanks - 5
 - (i) Isoniazid is
 - (ii) Cholesterol, belongs to the class of
 - (iii) Ranitidine is an
 - (iv) Cortisone is a hormones.
 - (v) Ergosterol is used for preventing

P.T.O.



(b) Define analgesic drugs using suitable example and describe their mode of action. 5

(c) What is the medicinal use of Turmeric, write structure of the active ingredient of curcumin. 5

2. (a) Define "Ziegler Natta" catalysts ? Give the mechanism of polymerization of propene using the same. 5

(b) Give the name of the plant from which natural rubber is isolated ? Outline the process in brief for isolating the rubber from this plant. 5

(c) Give the name of the monomer(s) for the preparation of the following polymers : 5

(i) PVC

(ii) Buna-S

(iii) Cellulose

(iv) Nylon-66

(v) Neoprene

3. (a) α Naphthyl amine on heating with H_2SO_4 at $160^\circ C$ gives compound (A). Benzidine on diazotization produces compound (B). Coupling reaction of compound (A) and Compound (B) gives Compound (C), Compound (C) is a direct red dye and absorbs 498 nm in UV spectroscopy.

Write the complete sequence of reaction from (A) to (C) with all the reagents used in the reactions. 5

- (b) Give one synthesis of Indigo dye and explain it is fixed to the fabric? 5
- (c) Define a. Chromophore, b. Auxochrome with examples. 5

4. (a) What is Colour Index (CI) and why is it important in the classification of dyes pigments? 5

- (b) (i) If a dye is labeled with the generic name **CI Vat Blue 6**, what is its Application Type, Hue, and Identifying Number?

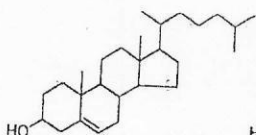
- (ii) Identify the colorant of the above dye and suggest its industrial applications.

5

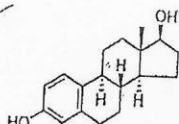
- (c) Discuss natural edible dyes, providing examples and explain the impact of synthetic food colors on health.

5

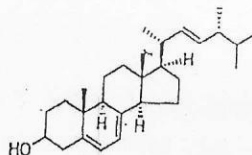
5. (a) Write the names and biological important of the following compounds : $2 \times 5 = 10$



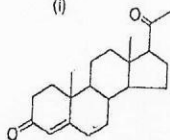
(i)



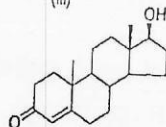
(ii)



(iii)



(iv)



(v)

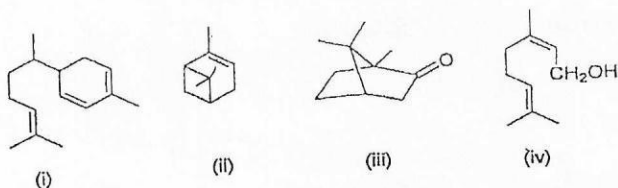
- (b) Outline the step involved in Emde's modification by taking isoquinoline as an example ?

5

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6. (a) An acyclic terpenoid (A), $C_{10}H_{16}O$, absorbs two moles of H_2 and with Ag_2O it oxidized to corresponding carboxylic acid (B) without loss of carbon. Hot alkaline $KMnO_4$ treatment followed by CrO_3 oxidation cleaves (A) into oxalic acid, acetone and 4-keto pentanoic acid. Name and deduce the structure (A) and (B). 5

- (b) What is Isoprene rule ? Indicated the isoprene units in the following structure : 5



- (c) What are terpenoids and how are they classified ? Discuss any one process for the isolation of essential oil. 5

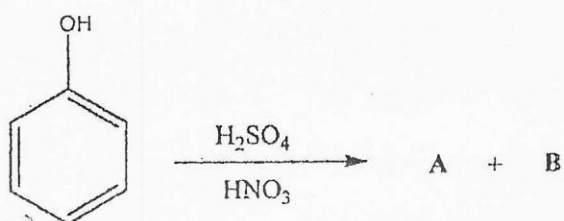
7. (a) Calculate the number and weight average molecular weights of polymer of sample containing 10 moles of molecular weight 10,000 of polymer A, 80 moles of molecular weight 50,000 of polymer B and 10 moles of molecular weight 1,00,000 of polymer C. 5

(b) Discuss the process of Vulcanization and draw the structure of vulcanized rubber. 5

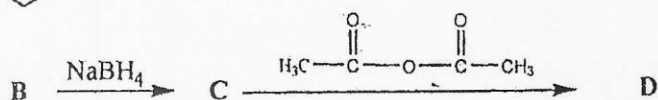
(c) What are syndiotactic, atactic and isotactic polymers? Explain using one example. 5

8. (a) Complete the reaction. Write the structures and names corresponding to A, B, C and D. Give pharmaceutical use of the resulting drug. 5

(i)



(ii)



(b) Match the following : 5

(i) Vitamin C (a) Antimalarials

(ii) Azadirachtin (b) Zantac

(iii) Ranitidine (c) Rheumatoid arthritis

- (iv) Ibuprofen (d) Limonoids
(v) Chloroquine (e) Scurvy
- (c) Discuss the significance of the ideal properties of antacids and the combination of antacids. 5
