

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2958

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Unique Paper Code : 2173522011

Name of the Paper : Chemistry of Polymers, Dyes and Natural Products

Name of the Course : **B.Sc. (Prog.)**

Semester : IV / VI

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Four** question in all.
3. Question No. **1** is compulsory.

1. Attempt **any five** of the followings:

- (a) What is vulcanization of rubber? Why is it important?
- (b) What is azo dye? Give one example.
- (c) What are edible dyes? Give suitable examples.
- (d) What are polymer additives? Name any two types and state their functions.
- (e) Define copolymer. What are graft and block copolymers? Give examples.
- (f) What is Hoffmann exhaustive methylation? (5x3)

2. (a) Differentiate between chain growth polymer and step growth polymer with examples.

- (b) What is Ziegler–Natta polymerization? Explain its importance in polymer chemistry.
- (c) Describe addition polymerization and condensation polymerization with examples. (5,5,5)

3. (a) What are alkaloids? Give their classification and general properties.

- (b) Write a short note on thermoplastic and thermosetting polymers.
- (c) What is Citral a and Citral b? Explain the complete structure elucidation of Citral. (5,5,5)

P.T.O.

4. (a) What is polymerization? Give the mechanism of free radical polymerization of polyvinyl chloride.

(b) What is average molecular weight? Discuss any one method for determination of number average molecular weight.

(c) Calculate weight average molecular mass of polymer and molar mass of repeating unit and if number average molecular weight of polymer is 50,000 g/mole, D_p is 1500 and PDI is 1.5.

(5,5,5)

5. (a) What are synthetic food colours ? Give one example. Discuss the effect of synthetic food colours on human health.

(b) Write the synthesis and applications of methyl orange.

(c) Describe the structure elucidation and synthesis of nicotine. (5,5,5)

6. Write short note on **any three** of the followings :

(a) Silicone polymers

(b) Emde's Method

(c) Mordant and vat Dyes

(d) Ziegler-Natta polymerisation of alkenes (5,5,5)