* R N - 6 2 8 9 / 1 0 0 *

RN-6289

B. E. II (Sem. III) (T.P. / T.T.) Examination

May / June – 2010

Polymer Chemistry (Old Scheme)

Time : 3 Hours] [Total Marks : 100

Instruction :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 2 (Sem. 3) (T.P./T.T.)**

Name of the Subject :

☛ **Polymer Chemistry (Old Scheme)**

☛ Subject Code No. : **6 2 8 9** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Answers to the **two** sections must be written in **separate** answer books.

(3) Figures to the **right** indicate full marks.

(4) Tie **two** sections **separately**.

SECTION I

Q.1 **a)** Answer the following **objective** questions. **(10)**

i) What are phenolics?

ii) State one draw back of Kevlar fibres.

iii) Poly acrylamide is soluble in water.-True or false, if false suggest suitable solvent.

iv) Poly m-phenylene iso phthalamide is nothing but ----------.

v) What is action of caustic boil on polyester?

vi) Fully aliphatic polyesters have very limited applications.-True or False.

vii) Give an example of amino acid based raw material of nylon.

viii) Natural rubber is obtained from ---------- of rubber tree.

ix) The process by which a network of cross links is introduced in rubber is called as----------.

x) ---------- is repeat unit of starch.

b) Describe elaborately the techno-chemical aspects of polyacrylamide. **(10)**

Q.2 **a)** Describe various methods of disposal of polymers. **(10)**

b) Give a brief account on the chemistry of PMMA. **(05)**

OR

Q.2 Describe in detail the manufacturing, properties and applications of urea formaldehyde and melamine formaldehyde resins. **(15)**

Q.3 Write short notes on **any three** of the following **(15)**

a) Silicone Elastomers

b) Butyl Rubber

c) Foaming

d) HDPE

SECTION II

Q.4 a) Answer the following **objective** questions: **(10)**

i) Polymer chloride finds extensive use in certain formulations called _____ and _____ .

ii) _____is known as Teflon'.

iii) When two repeat units are distributed alternately through the chain the polymer is called _____ Copolymer.

iv) Natural rubber is a highly _____and _____ material.

v) Polyvinyl acetate is _____ with an alkali to give polyvinyl alcohol.

vi) The _____ groups present in a polymer may be converted to _____ groups by reduction.

vii) The _____ process was dissevered by Goodyear in 1839.

b) Explain Emulsion polymerization in detail. **(05)**

c) Explain about X- Ray diffraction method for testing of polymers. **(05)**

Q.5 a) Derive the following equation and draw suitable diagram **(10)**

$$\overline{MW} = \frac{1}{\left(\frac{kc}{R\theta}\right) C, \theta \to 0}$$

b) Explain Addition & substitution reaction in detail. **(05)**

OR

Q.5 a) What is Mark – Hauwink equation? Explain Viscometric method with diagram. **(10)**

b) What do you understand by IR spectroscopic method? **(05)**

Q.6 Write short notes on **any four** of the following. **(15)**

a) Bulk polymerisation

b) Hydrogenation reaction.

c) Cyclization reaction.

d) Cross linking reaction.

e) Acidolysis reaction

g) Number Average Molecular Weight.