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# RR-0824

## Third Year B. Sc. Examination

**March / April – 2010**

## Industrial Chemistry : Paper - VII

*(Petroleum & Polymers) (Vocational)*

Time : **3** Hours] [Total Marks : **70**

**Instructions :**

(1)

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

Name of the Examination :

☛ T. Y. B. Sc.

Name of the Subject :

☛ Industrial Chemistry - 7

☛ Subject Code No. : 0 8 2 4 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

(2) All sub-questions of question no. **1** are **compulsory**.

(3) Give reactions, flow diagrams and neat sketches wherever necessary.

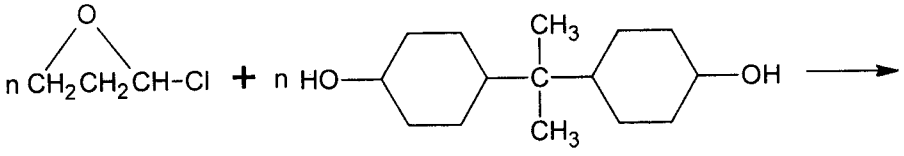
(4) Figures to the right indicate full marks of the question.

**1** Answer the following questions in short and to the point : **15**

(a) Give the important application of cellulose nitrate.

(b) What is Graft Copolymer? Give suitable examples.

(c) Complete the following reaction.




(d) How will you prepare cumene?

(e) Define the terms Inhibitors with suitable examples.

(f) Why the volume of an amorphous plastic decreases with decreases in temperature?

(g) Give only reaction equation of epichlorohydrin synthesis from propylene.

(h) What are thermosetting plastic?

(i) Give the monomers of Nylon 6,10.

(j) How will you prepare Toluene from Benzene?

(k) Give the structure formula of SBR.

(l) Give the uses of styrene.

(m) What is difference between Gulta-Parcha and Natural rubber?

(n) How ABS is superior to common polystyrene products?

(o) Define the term reduced viscosity.

2 (a) Discuss the manufacture of Acrylonitrile giving suitable flow diagram. 4

**OR**

(a) Explain the manufacture and uses of Glycerin. 4

(b) Give the industrial synthesis of vinyl acetate from ethylene. 4

**OR**

(b) With the help of neat flow diagram explain the manufacture of Methanol. 4

(c) Give the preparation and uses of Isobutane. 3

3 (a) What is meant by ionic polymerization? Discuss about cationic polymerization giving suitable examples. 4

**OR**

(a) Give the concept of cross linking polymerisation. 4

(b) Classify the polymer according to structure of main chain. 4

**OR**

(b) Give the types of polymerization. Explain addition polymerization with suitable examples. 4

(c) Define the following and give atleast two examples of each : 3

Block copolymer, Polymeric grafts and polydispersity.

| | | | |
|---|---|---|---|
| 4 | (a) | What is the glass-transition temperature of a polymer? What are the factors that influence the glass transition temperature? | 4 |
| | | **OR** | |
| | (a) | State the Mark-Hauwink equation and discuss its application for the determination of molecular weight of a polymer. | 4 |
| | (b) | Explain the concept of weight average and number average molecular mass of polymer. | 4 |
| | | **OR** | |
| | (b) | Write a detailed note on method of molecular mass determination of polymer. | 4 |
| | (c) | Define inherent viscosity and limiting viscosity. | 3 |
| 5 | (a) | Give the reaction of formation of Urea-formaldehyde resins. Give its important properties and applications. | 4 |
| | | **OR** | |
| | (a) | With the help of neat flow diagram explain the manufacture process of Novolac. | 4 |
| | (b) | Describe the properties, manufacture and uses of melamine formaldehyde resin. | 4 |
| | | **OR** | |
| | (b) | Give the properties and applications of thermosetting resins. | 4 |
| | (c) | Write a note on polyurethanes. | 3 |
| 6 | (a) | Give the properties and application of polystyrene. | 4 |
| | | **OR** | |
| | (a) | Give the preparation, properties and application of ABS. | 4 |
| | (b) | Write a short note on Nylon-6,6. | 4 |
| | | **OR** | |
| | (b) | Discuss the manufacture process of polypropylene. | 4 |
| | (c) | Write a note on polycarbonates. | 3 |