17448

16172

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(8) Abbreviations used, convey usual meaning.

Marks

1. a) **Attempt any SIX of the following:** **12**

(i) Define polymer, Give its classification.

(ii) What do you mean by HDPE and LDPE?

(iii) Enlist the properties of phenol formaldehyde plastic.

(iv) Write the name of any two blowing agents. Where are they used?

(v) What is the function of extenders?

(vi) Write full form of ABS and PTFF.

(vii) Represent the structure of cellulose. Name the main unit.

(viii) Write properties of styrene acrylonitrile copolymer.

(ix) Enlist the sources of cellulose.

Marks

b) **Attempt any TWO of the following:** **8**

(i) Explain the principle of manufacturing of HDPE. Give its two applications.

(ii) State selection criteria and functions of flame retardants. Enlist two flame retardants.

(iii) Explain manufacturing principle of PET. Give its two applications.

2. Attempt any FOUR of the following: **16**

a) Explain use of Ziegler-Natta catalyst.

b) Enlist properties and applications of cellulose.

c) Compare PET and PBT on the basis of their properties.

d) Write properties and applications of ABS.

e) Explain manufacturing principle of styrene acrylonitrile. State typical composition of the copolymer.

f) State selection criteria and function of impact modifiers. Enlist two impart modifiers.

3. Attempt any FOUR of the following: **16**

a) Explain manufacturing principle of polystyrene by bulk polymerisation technique. Write its two properties.

b) Enlist properties and applications of cellulose nitrate.

c) Compare high density polyethylene and low density polyethylene on the basis of their properties.

d) Explain manufacturing principle of nylone-6. State its any two properties.

e) Enlist properties and applications of melamine formaldehyde resin.

f) Explain with a diagram the working of Banbury mixer.

Marks

4. Attempt any FOUR of the following: **16**

a) Write properties and applications of polypropylene.

b) Compare high input polystyrene and expanded polystyrene on the basis of their properties.

c) Write representative structure of polyacetals. State its applications.

d) Explain the precautions to be taken in manufacture of polyurethanes. Give its two applications.

e) What are bismilamide resins? Give its two properties and two applications.

f) Explain the role of fillers and colourants in compounding of plastic materials.

5. Attempt any FOUR of the following: **16**

a) Classify PBT as

(i) Condensation / addition polymer,

(ii) Thermoplastic / thermoset.

b) How is forward reactions favoured ? State use of inert gas purging heat and light-stability of PVC. Name the types of stabilisers used.

c) Enlist four properties of PMMA and polyacrilonitrile.

d) Explain the principle of manufacturing of polyphenyleneoxide. Give its two applications

e) Explain the procedure to prepare urea formaldehyde resin.

f) Describe method of flame test used for identification of plastic.

Marks

6. Attempt any FOUR of the following: **16**

a) Explain of suspension polymerization technique of styrene.

b) Explain manufacturing principle of polyacryloamide. Give its two applications.

c) Polyvinyl alcohol is available as cold water soluble grade and hot water soluble grade. Explain.

d) Explain the manufacturing principle of nylone-60. State commercial applications.

e) Explain two applications of unsaturated polyesters.

f) Explain with a diagram the working of a high speed mixer.