17448

11819

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) Abbreviation used convey usual meaning.

(6) Assume suitable data, if necessary.

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

Marks

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

(i) Classify the polymers based on their origin. Give an example of each.

(ii) Draw the structure of Ziegler-Natta catalyst.

(iii) Write any four applications of HDPE.

(iv) Write any four applications of LDPE.

(v) Write full form of ABS and PTFE.

(vi) Define thermosets. List any two thermosets.

(vii) Enlist any four additives required for compounding of polymers.

(viii) Give the classification of fillers.

Marks

b) **Answer any <u>TWO</u> of the following:** **8**

(i) Write four properties and applications of PAN.

(ii) Compare PET and PBT based on their properties.

(iii) State manufacturing principle of bismaleimide. Write its four properties.

2. Answer any <u>FOUR</u> of the following: **16**

a) Compare suspension and bulk polymerization technique. (minimum four points of comparison)

b) Explain the principle of manufacturing of PVC by cracking process.

c) Represent the structure of cellulose. Write its any four natural sources.

d) Enumerate four properties and applications of polyphenylene oxide.

e) Define unsaturated polyester. State their four applications.

f) Explain with a diagram the tumbler mixer used in compounding.

3. Answer any <u>FOUR</u> of the following: **16**

a) Write any four properties and applications of polypropylene.

b) Represent the structure of polymethyl methacrylate. Write its four properties.

c) Explain the principle of manufacturing of PBT. Write reaction involved in it.

d) Compare nylon 6 and nylon 66 based on their properties.

e) Draw and explain the structure of epoxy.

f) State the functions and selection criteria of flame retardants.

Marks

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

a) Explain the manufacturing of polystyrene by suspension polymerisation technique.

b) Represent the structure of polyvinyl acetate.
State its manufacturing principle.

c) Enumerate any four properties and applications of polyacetals.

d) Write the reactions involved in preparation of urea formaldehyde resin.

e) Enlist any four properties and applications of PPS.

f) Explain with a diagram high speed mixer used in compounding.

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

a) Write any four properties and applications of high impact polystyrene.

b) Enlist any four properties and applications of polyvinyl acetate.

c) How is cellulose acetate manufactured? Write reaction involved and catalyst used in it.

d) What is the trade name of PTFE? State its any four properties and applications.

e) Enlist four properties and applications of phenol formaldehyde resin.

f) (i) State selection criteria of lubricants.

(ii) Enlist its functions.

Marks

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

a) How is HDPE manufactured? State its any four properties.

b) What are the raw materials used for PET manufacturing. Write reaction involved in its manufacturing.

c) State the principle of manufacturing of CAB. Write its four properties.

d) How is polycarbonate prepared? Write reaction involved in it.

e) Enumerate any four properties and applications of ethylene vinyl acetate.

f) Explain with a diagram continuous mixer used for compounding.

———