17448

21314

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

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

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

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

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

Marks

1. a) **Attempt any <u>SIX</u> of the following:** **12**

i) Define 'Polymer' and give any two examples of polymer.

ii) What is PVC? Comment on its heat stability.

iii) Define engineering plastics. Name any two engineering plastics.

iv) What is Polyvinyl alcohol? State any two properties of it.

v) Enlist four different compounding equipments.

vi) State any four applications of polyurethane.

vii) What is PS? State any two applications of it.

viii) What is cellulose? Write its sources.

Marks

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

i) Write function and selection criteria of blowing agents. Name any two blowing agents.

ii) Write properties and applications of phenol-formaldehyde.

iii) Write constituents, properties and applications of styrene-acrylonitrile.

iv) Write the steps involved in manufacturing of expanded polystyrene and write its properties.

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

a) Write properties and uses of polypropylene.

b) In relation to polyethylene terephthalate.

i) Name raw materials required in its manufacture.

ii) Mention temperature conditions set in its manufacturing process.

iii) Name by product if liberated

c) Compare internal mixer and batch mixer used for compounding.

d) What is polyamide? Compare Nylon-6 and Nylon-66.

e) Which raw materials are required in the manufacture of unsaturated polyester? Name the liberated by product formed during its manufacture.

f) Write the properties and application of LLDPE.

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

a) Differentiate between LDPE and HDPE.

b) Represent structure of polyacrylonitrile. State its properties and uses.

c) Write properties and uses of cellulose acetate.

Marks

d) State functions of plasticizers and light stabilizers. Write any two examples of each.

e) Draw a neat labelled diagram of Banbury mixed and give functions of it.

f) Draw a structure of polyacetal and write its properties and uses.

g) Compare the properties of polystyrene, high impact polystyrene. Expand polystyrene.

4. Attempt any <u>FOUR</u> of the following: **16**

a) Compare polystyrene and polypropylene.

b) Write properties and uses of PVC.

c) What is PTFE? Write its properties and uses.

d) Write properties and uses of epoxy.

e) Write manufacturing and properties of PEEK.

f) What is Polycarbonate? Where it is used?

5. Attempt any <u>FOUR</u> of the following: **16**

a) What is HIPS? Write its properties and uses.

b) Represent structure of poly (methyl methacrylate) and write its properties and uses.

c) Represent the structure of cellulose nitrate and write use of PBT.

d) Write manufacturing method of polyphenylene oxide and write its properties.

e) What is MF? Write its properties and uses.

f) Represent the structure of polyimide and write its properties and uses.

g) Compare properties of PET and PBT.

Marks

6. Attempt any <u>FOUR</u> of the following: 16

a) Write principle of manufacturing, two properties and two applications of cellulose acetate butyrate.

b) What is Bismelamide? Give any two properties and two application of it.

c) What is Polyvinylacetal? Write principle of manufacture, two properties and two applications of it.

d) Write selection criteria and examples of impact modifiers and extenders.

e) Write the role and examples of flame retardants and lubricants.

f) Explain the suspension polymerisation techniques for manufacturing polystyrene in brief.