

22490

24225

03 Hours / 70 Marks

Seat No.

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- 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.

**Marks**

1. Attempt any FIVE of the following:

10

- a) Define Elastomer.
- b) Name any two preservatives used in Latex.
- c) State any two advantages of Synthetic Rubber.
- d) State the role and examples of Antioxidants.
- e) Define compounding. Name compounding equipment.
- f) Define vulcanization.
- g) State the types of vulcanization.

P.T.O.

- 2. Attempt any FOUR of the following: 12**
- a) State molecular requirement for polymer to act as a Elastomer.
  - b) Describe various steps in Latex processing.
  - c) Define Latex. State sources of Natural Rubber.
  - d) Explain in brief manufacturing of Nitrile Butadiene Rubber. (NBR)
  - e) State any four properties and applications of Styrene Butadiene Rubber.
- 3. Attempt any FOUR of the following: 12**
- a) State function and Example of additives with respect to rubber compounding:
    - i) Filler
    - ii) Plasticizer
  - b) With neat sketch explain working of Two Roll Mill.
  - c) Select the rubber and state the compound recipe for conveyor belt.
  - d) Explain mechanism of sulphur vulcanization.
  - e) State the need and effect of vulcanization process.
- 4. Attempt any THREE of the following: 12**
- a) Explain polyurethane based block copolymer.
  - b) Describe Autoclave vulcanization process with respect to suitable product.
  - c) Describe three roll calendering process with neat sketch.
  - d) Distinguish between hot feed and cold feed extrusion process.
  - e) Describe Tapping process.

**5. Attempt any THREE of the following: 12**

- a) Suggest the rubber for following products:
  - i) Shoe sole
  - ii) Radiator Hose
  - iii) Suspension Bush
  - iv) Tractor Type
- b) State application of following rubber.
  - i) Silicone Rubber
  - ii) Butyl Rubber
- c) State the need and advantages of TPE.
- d) Describe construction and working of banbury mixer with suitable sketch.
- e) State the need and principle of Mastication Process.

**6. Attempt any TWO of the following: 12**

- a) Describe rubber injection Moulding Process. Name any two products produced and state processing parameters used for Rubber Processing.
  - b) Explain the tart procedure for Abrasion resistance test and state its significance.
  - c) Describe RAM Extrusion Process. Name any four Extruded Products.
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