

22490

22223

3 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 synthetic rubber. Give two examples.
 - b) State any four properties of Neoprene rubber.
 - c) List any four applications of EPDM rubber.
 - d) Define thermoplastic elastomer.
 - e) Name any two rubber compounding equipment.
 - f) Define vulcanization.
 - g) State the types of vulcanization system.

P.T.O.

- 2. Attempt any FOUR of the following:** **12**
- a) Define tapping, list sources of natural rubber.
 - b) State any four important properties and applications of butyl rubber.
 - c) State the molecular requirement of rubbery material.
 - d) Describe manufacturing of Nitrile rubber.
 - e) Describe different stages in raw rubber manufacturing.
- 3. Attempt any FOUR of the following:** **12**
- a) Describe in detail mastication process of rubber.
 - b) With neat sketch describe vulcanization process in autoclave.
 - c) Suggest the rubber and write compound recipe for rubber gasket.
 - d) Explain any three additives with function and example.
 - e) With neat sketch describe rubber transfer moulding process.
- 4. Attempt any THREE of the following:** **12**
- a) Elaborate the latex process
 - i) Preservation
 - ii) Coagulation
 - b) Explain the mechanism of sulphur vulcanization process.
 - c) Explain working of four roll L type calender in detail with neat sketch.
 - d) Explain Abrasion resistance test and state its significance.
 - e) State the important characteristics and applications of silicon rubber.

- 5. Attempt any THREE of the following:** **12**
- a) Suggest the rubber for following applications.
 - i) Engine gasket
 - ii) Water hoses
 - iii) Truck tyre
 - iv) Oil seal
 - b) State the applications and properties of SBR rubber.
 - c) Elaborate PS based block copolymer and state its applications.
 - d) Suggest the rubber and write compound recipe for rubber tube.
 - e) State the need and role of antioxidant and antiozant in rubber compounding.
- 6. Attempt any TWO of the following:** **12**
- a) With neat sketch describe rubber injection moulding process. State its advantages and limitations.
 - b) State the significance and explain compression set test for rubber.
 - c) Describe the test equipment and explain the test method to determine hardness of rubber.
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