

17653

21819

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (7) Abbreviations used, convey usual meaning.

Marks

1. Answer any FIVE :

5 × 4 = 20

- (a) Explain limitations of natural rubber.
- (b) Classify accelerator for rubber, giving example.
- (c) Which rubber can you suggest for seals and o-o rings ? Justify your answer.
- (d) Explain Durometer test for finding hardness of rubber.
- (e) On what does characteristics of silicone rubber depend ? State its applications.
- (f) Write structure of following rubbers :
 - (i) Butyl rubber
 - (ii) NBR
 - (iii) Neoprene rubber
 - (iv) EPDM
- (g) State commercial applications of EPDM.

- 2. Answer any TWO :** **2 × 8 = 16**
- (a) (i) Define vulcanization. **2**
- (ii) Explain with reactions 'Chemistry' of vulcanisation of rubber with sulphur. **6**
- (b) Write a typical recipe for
- (i) Surgical foam
- (ii) Rubber gloves.
- State functions of ingredients used.
- (c) (i) Write chemical name of neoprene.
- (ii) Explain properties and applications of neoprene rubber.
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- 3. Answer any TWO :** **2 × 8 = 16**
- (a) (i) Explain procedure to check viscosity of rubber.
- (ii) Describe ram extrusion of rubber.
- (b) (i) Describe mastication process.
- (ii) Explain typical applications of polyacrylate rubber.
- (c) (i) Explain with examples functions of accelerators.
- (ii) Explain compound recipe of a gasket.
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- 4. Answer any TWO :** **2 × 8 = 16**
- (a) (i) Write concept of green tyre.
- (ii) Explain tyre components.
- (b) Describe the terms :
- (i) Skimming
- (ii) Topping
- (c) (i) State any four properties and applications of polybutadiene rubber.
- (ii) Write ratio of monomers in SBR. State its applications.

5. Answer any TWO :**2 × 8 = 16**

- (a) (i) Explain any three advantages and applications of reclaimed rubber.
- (ii) Compare thermoplastics and thermosetting elastomers. Give an example of each.
- (b) (i) Define natural rubber. State sources of natural rubber.
- (ii) Explain applications of natural rubber.
- (c) (i) Explain hot feed and cold feed method of processing of rubber.
- (ii) State characteristics of TCR.

6. Answer any FOUR :**4 × 4 = 16**

- (a) Explain the construction of standard diagonal tyres.
 - (b) Describe calendering of rubber.
 - (c) Classify PU elastomer as thermoset/thermoplastics. State its characteristics.
 - (d) Describe construction of a tyre, with a labelled diagram of cross-section of a tyre.
 - (e) Explain any four important characteristics and four important applications of viton rubber.
 - (f) Describe tyre building.
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