

17653

15162

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) Assume suitable data, if necessary.

(6) Abbreviations used convey usual meaning.

Marks

1. (A) Answer any **THREE** :

3 × 4 = 12

- (a) Give four examples of speciality rubber. Explain any one of them.
- (b) Write down applications of natural rubber.
- (c) Differentiate between diagonal ply and radial ply with a diagram.
- (d) State any four properties and applications of neoprene rubber.

(B) Answer any **ONE** :

1 × 6 = 6

- (a) Describe reclaimed rubber. State its two advantages and two applications.
- (b) Describe test equipment and write procedure for Mooney viscosity test.

2. Answer any **FOUR** :

4 × 4 = 16

- (a) Explain in general, thermoplastic and thermosetting elastomer.
- (b) Represent structural formula for following rubbers :
 - (i) NBR
 - (ii) Silicon
 - (iii) Fluorocarbon
 - (iv) EPDM

- (c) Define natural rubber, list down sources of natural rubber.
- (d) Describe mastication process. State role of pepteciser in this process.
- (e) Explain any one process for manufacturing styrene butadiene rubber.
- (f) State any four properties and four applications of 'Viton' rubber.

3. Answer any FOUR :**4 × 4 = 16**

- (a) Classify accelerators, giving examples.
- (b) Describe preparation of silicon rubber.
- (c) Explain effect of acrylonitrile content on the properties of NBR.
- (d) State precautions to be taken in manufacture of PU rubber. Write applications of Pu rubber.
- (e) Name and write structure of a diene monomer. State its physical state and method of polymerisation.

4. (A) Answer any THREE :**3 × 4 = 12**

- (a) Differentiate between sulphur and non-sulphur vulcanisation.
- (b) Describe polyacrylic rubber.
- (c) State the type of rubber for following application oil seal, roller, antivibrational, water hoses.
- (d) With a labelled diagram, explain calendering process.
- (e) List down any four properties and applications of polybutadiene rubber.

(B) Answer any ONE :**1 × 6 = 6**

- (a) Describe with a labelled diagram of cold feed extruder.
- (b) Describe tyre building process.

5. Answer any FOUR :**4 × 4 = 16**

- (a) Define vulcanisation. Describe role of sulphur in vulcanisation process.
- (b) Describe with reaction, peroxide vulcanisation process.
- (c) Elaborate the meaning of following terms :
 - (i) Skimming
 - (ii) Topping
- (d) Describe role of accelerators in vulcanisation process. State its advantages and limitation.
- (e) Write down compound recipe for O'ring. State function of the ingredients.
- (f) State the function of any four rubber compounding ingredients.

6. Answer any FOUR :**4 × 4 = 16**

- (a) Describe stages in raw rubber manufacturing.
 - (b) State the materials used in tyre. List down its types.
 - (c) Explain preparation method of latex gloves.
 - (d) Describe construction of radial ply tyre.
 - (e) List down tyre components. State their function.
-

