

17653

**21718**

**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) 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.
  - (8) Use of steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

**1. Answer the following (any TEN) :**

**20**

- (a) Differentiate between rubber and plastic.
- (b) Write chemical name and structure of natural rubber.
- (c) Write structure of SBR. List the type of SBR.
- (d) State the properties of viton rubber.
- (e) Write application of polyacrylic rubber
- (f) Enlist diene monomer used in EPDM.
- (g) Differentiate between Mastication and Vulcanisation.

- (h) Give the classification of accelerator.
- (i) Define plasticity and viscosity of rubber.
- (j) Define the skimming in case of calendering of rubber.
- (k) Define latex. Write constituent of latex.
- (l) Suggest the suitable rubber for
  - (a) O-ring
  - (b) Gloves
  - (c) Carpet
  - (d) Rubber gasket
- (m) Define concept of ply with respect to tyre and list the type of ply used in vehicle tyre.
- (n) Write the properties necessary for vehicle tyre and rubber used for it.

**2. Answer the following (any FOUR) :**

**16**

- (a) List the sources of rubber. How rubber are classified ? Distinguish between natural and synthetic rubber.
- (b) How nature rubber are classified on basic of different grade ? Explain with example.
- (c) Define reclaim rubber. Write its properties and application.
- (d) Write the properties and application of nature rubber.
- (e) Distinguish between thermoplastic rubber and thermosett rubber.
- (f) Explain the construction of tyre by building drum.

**3. Answer the following (any FOUR) :****16**

- (a) Explain manufacturing of SBR rubber and write its properties.
- (b) Describe the manufacturing of neoprene rubber and write its application.
- (c) Write the properties and application of EPDM rubber.
- (d) State the properties and application of poly-butadiene rubber.
- (e) Name the raw material used to manufacture fluorocarbon rubber. Write its application.
- (f) Write properties & application of silicon rubber.

**4. Answer the following (any FOUR) :****16**

- (a) Describe the concept of vulcanisation with example.
- (b) Compare sulphur vulcanisation and non sulphur vulcanisation.
- (c) List the factors affecting vulcanisation & explain any two in brief.
- (d) Write the function of accelerator in vulcanisation. Name any two accelerators used in natural rubber.
- (e) State the stages of vulcanization of rubber.
- (f) Write properties and application of polyurethane rubber.

**5. Answer the following (any FOUR) :****16**

- (a) Define rubber extrusion. How rubber extrusion is classified and what are the advantages of hot feed extrusion?
- (b) Explain with neat sketch any one calendaring process used for natural rubber.

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- (c) What do you mean by roll crown and roll bending ?
- (d) Distinguish between extrusion and calendaring process used for rubber.
- (e) Discuss the solubility and tack concept of rubber.
- (f) Write the properties and application of NBR rubber.

**6. Answer the following (any FOUR) :**

**16**

- (a) Explain with neat sketch manufacturing of rubber gloves.
  - (b) How surgical foam are classified ? Write the properties of surgical foam and it's applications.
  - (c) Write the compounding recipe of rubber carpet & state function of each component in it.
  - (d) Differentiate between radial ply & cross ply in tyres.
  - (e) List the different material used in tyre construction and write it's function.
  - (f) Draw neat sketch and explain standard diagonal ply in tyres.
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