22490

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer 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 <u>FIVE</u> of the following: **10**

a) Define Rubber.

b) Define synthetic rubber.

c) List any four synthetic rubber.

d) List any two important applications of butyl rubber.

e) Name any two examples of filters added in rubber compounding.

f) Name any two vulcanizing agents.

g) State the need of vulcanization in rubber.

Marks

2. Attempt any FOUR of the following: **12**

a) Differentiate between rubber and elastomer with at least three points.

b) List the different sources of natural rubber. Explain any three important applications of natural rubber.

c) Differentiate between natural rubber and synthetic rubber with at least three points.

d) Explain any three important properties and any three applications of EPM rubber.

e) Describe the concept of TPE with suitable example.

3. Attempt any FOUR of the following: **12**

a) Describe the process of mastication with and without peptizes.

b) Explain the role of following in compounding and give eg. of each.

i) Antioxidant

ii) Antiozonant

iii) Pigment.

c) Explain the compound recipe for manufacturing of O-ring.

d) Describe vulcanization of rubber with peroxide.

e) State any three advantage and any three limitations with sulphur vulcanization.

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

a) Describe manufacturing of SBR. State its chemical structure.

b) Describe vulcanization in Autoclave with neat diagram.

c) Describe double side cooling process with Z-type calendar configuration. Draw a neat labelled diagram.

d) Describe abrasion resistance test with taber abraser.

e) Select the name of natural rubber tree from which ribbed smoked sheet is manufactured. Describe step wise ribbed smoked sheet manufacturing process.

Marks

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

a) Suggest the rubber used for manufacturing oil seal. Describe its manufacturing process with its chemical structure.

b) Draw the chemical structure of rubber having siloxane at its back bone chain. State its any four important properties and any four important application.

c) Suggest the rubber which is having excellent weathering resistance properties. State its any four important applications.

d) Draw and explain compounding process with two roll mill.

e) Draw and explain compounding process with banbury mines.

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

a) Illustrate vulcanization process of rubber with compression moulding. Draw a neat labelled diagram.

b) Describe type 'B' compression set test with neat diagram. State its significance.

c) Describe De Malta flex test method with neat diagram. State its process to inspect the sample often flex test.

———