

Scheme – I
Sample Question Paper

Program Name : Plastic Engineering Program
Program Code : PS
Semester : Fourth
Course Title : Elastomer Technology
Marks : 70

22455

Time: 3 Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) A) Attempt any FIVE of the following. **10 Marks**

- (a) Define rubber and Elastomer.
- (b) State any two important properties of nitrile rubber.
- (c) State the four uses of Silicon Rubber.
- (d) State the function of Filler and Plasticizers.
- (e) Define Vulcanization.
- (f) Write the examples of Peroxide vulcanization agent.
- (g) State the Significance of resilience test.

Q.2) Attempt any THREE of the following. **12 Marks**

- (a) Describe the Classification of rubbers.
- (b) Describe Preparation of Styrene Butadiene rubber.
- (c) Draw neat sketch of two roll mill and describe it's working.
- (d) Suggest the calendaring process for double side coatings.

Q.3) Attempt any THREE of the following. **12 Marks**

- (a) Describe latex technology in detail.
- (b) Suggest the rubbery material for following product.
i) O ring ii) Tyre Tube iii) gasket iv) Pressure Pad
- (c) Compare Rubber with thermoplastic elastomer with respect to its properties and characteristics.
- (d) A raw SBR rubber has to be compounded with additives for further processing.
 - i. Suggest the step and the relevant compounding equipment is to be used.
 - ii. Sketch the compounding equipment you suggest.
 - iii. Explain the working mechanism of compounding equipment that you suggested.

Q.4) Attempt any THREE of the following. 12 Marks

- (a) Explain working principle of a compression moulding with sketches.
- (b) If you want to use the rubber material in shoe sole then suggest the suitable testing method with working and sketch for it, so that proper material can be selected.
- (c) State the stages in vulcanization of rubber.
- (d) Suggest the rubbery material for preparation of O ring and state its manufacturing and properties.
- (e) If you want to produce good tackiness in rubber product then suggest proper additives and describe it.

Q.5) Attempt any TWO of the following. 12 Marks

- (a) Describe the working of Four Roll L type calendar with neat sketch.
- (b) Suggest the test method for following rubber products with justification.
 - i. Pressure Pad for Bridges.
 - ii. Tyre.
 - iii. Pressure cooker ring.
 - iv. Oil ring.
- (c) Explain working principle of resilience test with neat sketch.

Q.6) Attempt any TWO of the following. 12 Marks

- (a) Describe the functions performed by the following in a extrusion of rubber:
 - i. Steam
 - ii. Screw
 - iii. Reduction gear box
 - iv. Die
- (b) Explain the need of vulcanization with detailed justification.
- (c) Explain constructional features and working of a ram extrusion for rubber with a sketch.

Scheme – I
Sample Test Paper - I

Program Name : Plastic Engineering Program
Program Code : PS
Semester : Fourth
Course Title : Elastomer Technology
Marks : 20

22455

Time: 1 Hour

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FOUR of the following.

08 Marks

- a) Explain the difference between rubber and elastomer.
- b) Define Scorch.
- c) Differentiate two roll mill and banbury mixer. (Minimum 04 points)
- d) Sketch shore D hardness tester.
- e) State the importance of vulcanization in rubber.

Q.2) Attempt any THREE of the following.

12 Marks

- a) Explain the function of Plasticizer and antioxidants.
- b) Explain hot feed extrusion of rubber and state its significance.
- c) State the criteria for sequence of addition of additives in rubber.
- d) Describe vulcanization by using autoclave.

Scheme – I
Sample Test Paper - II

Program Name : Plastic Engineering Program
Program Code : PS
Semester : Fourth
Course Title : Elastomer Technology
Marks : 20

22455

Time: 1 Hour

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FOUR of the following.

08 Marks

- a) State the sources of Natural Rubber
- b) State any four applications of NBR rubber.
- c) Define the term thermoplastic elastomer.
- d) State the function of coagulant in latex technology.
- e) State significance of flex test of rubber.

Q.2) Attempt any THREE of the following.

12 Marks

- a) State functions of:
 - i. Skimming
 - ii. Fractioning
- b) Explain working of ram type extruder with sketch.
- c) Explain working of four roll Z type calendar with a sketch.
- d) State the compound recipe for rubber hose.