

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021**

**Subject Code:3172616**

**Date:17/12/2021**

**Subject Name:Silicone Rubber Technology**

**Time:10:30 AM TO 01:00 PM**

**Total Marks: 70**

**Instructions:**

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

**Q.1 (a)** Mention the type of Silica used in compounding of Silicon rubber. Write about problem and remedy associated during mixing. **(03)**

**(b)** Give reaction mechanism for Peroxide vulcanization of Silicon rubber and explain it. **(04)**

**(c)** Describe mixing of Heat vulcanizable solid Silicon rubber in Two-roll Mixing mill with schematic diagram. **(07)**

**Q.2 (a)** Draw the schematic representation for preparation of Silicone water-based Elastomer. **(03)**

**(b)** Write about Particle Coalescence and film formation for water-based Silicone Elastomer. **(04)**

**(c)** Describe in detail about compression molding of Solid Silicon rubber. **(07)**

**OR**

**(c)** Draw the schematic diagram for molding sequence for Injection molding of Silicon rubber. **(07)**

**Q.3 (a)** List the basic classification of Silicone Elastomer as per functional group. **(03)**

**(b)** Write about chemistry and applications of Two pack-RTV silicon rubber. **(04)**

**(c)** Describe in detail about various problems occurred during Silicon rubber extrusion with their causes and remedies. **(07)**

**OR**

**Q.3 (a)** What are soft spots? Why it occurs during Silicon rubber processing? **(03)**

**(b)** Write about One pack-RTV silicon rubber with its basic characteristics and applications. **(04)**

**(c)** Mention two specialized Vulcanisation System for Silicon rubber Extrusions. Explain both in detail. **(07)**

**Q.4 (a)** Give the Nomenclature of Organo silicone Compounds. **(03)**

**(b)** Write the definition of silicones according to their general structural principles. **(04)**

**(c)** Discuss in detail about the Direct synthesis process. **(07)**

**OR**

**Q.4 (a)** Write the disadvantages of Direct synthesis process. **(03)**

**(b)** Draw the structural units of Polyorganosiloxanes. **(04)**

**(c)** Explain the in detail about the influence of catalytically active metals on silanes. **(07)**

- Q.5** (a) Give the general properties of silicone rubber. (03)  
(b) Write the Syntheses by the Reaction of Hydrocarbons with Silanes. (04)  
(c) Discuss in detail about Grignard Syntheses. (07)

**OR**

- Q.5** (a) Give the different applications of silicone rubber. (03)  
(b) Write the addition of the Si—H bond to unsaturated hydrocarbons. (04)  
(c) Explain the syntheses with organic compounds of the alkali metals. (07)

\*\*\*\*\*