

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER • 2014****Subject Code: 152601****Date: 11-06-2014****Subject Name: Vulcanization****Time: 10:30 am - 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.

- Q. 1 (a)i** Write down the drawbacks of unvulcanized rubber. **04**
- ii** Define the given terms:(i)Cure Rate (ii) Marching Curve **03**
(iii)Reverting Curve
- (b)** Discuss in detail about the various allotropic forms of sulphur. **07**
- Q. 2 (a)** Discuss the continuous method to assess the state of cure. **07**
- (b)i** Write a short note on vulcanization of thick wall articles. **05**
- ii** Give the difference between optimum cure and peak cure. **02**
- OR**
- Q. 2 (b)** Discuss in detail about the chemistry of sulphur vulcanization. **07**
- Q. 3 (a)i** Which points are kept in mind during the compounding of rubber cured by peroxide? **04**
- ii** When dicumyl peroxide is used as a vulcanizing agent for Natural Rubber, the crosslinking efficiency is 1.0. What does it mean? Also write about its effect on Butyl Rubber. **03**
- Q. 3 (b)** Discuss in detail about sulphenamide accelerators. **07**
- OR**
- Q. 3 (a)i** With suitable example, explain the peroxide cure of saturated elastomer. **04**
- ii** What do you mean by co-agent? Write about the role of co-agent with suitable example. **03**
- Q. 3 (b)** Discuss in detail about the thiazole accelerators. **07**
- Q. 4 (a)i** Explain an importance of accelerator in sulphur vulcanization. **05**
- ii** Write down the effect of crosslink type and structure on the swelling resistance of vulcanizate. **02**
- Q. 4 (b)** Discuss the limitations of vulcanization temperature. **07**
- OR**
- Q. 4 (a)i** Which guideline is to be followed during compounding of accelerated sulphur vulcanization? **05**
- ii** Write down the effect of crosslink type and structure on the hardness of rubber vulcanizate. **02**
- Q. 4 (b)** Discuss in detail about the fluidized bed vulcanization. **07**
- Q. 5 (a)i** Differentiate hot air vulcanization and steam vulcanization. **05**
- ii** Write a note on lead curing. **02**
- Q. 5 (b)** Discuss in detail about the microwave vulcanization technique. **07**
- OR**
- Q. 5 (a)i** Write a short note on rotocure. **05**
- ii** What do you mean by peachy process? **02**
- Q. 5 (b)** Discuss in detail about the liquid curing method. **07**
