

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII EXAMINATION – SUMMER 2016****Subject Code:182604****Date:05/05/2016****Subject Name:Automation & Control in Rubber Industries****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. Write the answer to the points.

- Q. 1 (a)** Discuss the procedure for analyzing any process and applying instrumentation diagram to it. **07**
- Q. 1 (b)** Answer the following
- i** Write down an importance of instrumentation diagram. Give any three symbols used in instrumentation diagram of rubber processing. **05**
 - ii** Give classification of instrument according to its function. **02**
- Q. 2 (a)** Discuss the problems with microcomputer in data acquisition and analysis. **07**
- Q. 2 (b)** Answer the following
- i** Write a short note on raw material specification. **05**
 - ii** What do you mean by subjective inspection? **02**
- OR**
- Q. 2 (b)** Answer the following
- i** Write a short note on product specification **05**
 - ii** Which general considerations are made for quality control in rubber industry? **02**
- Q. 3 (a)** Discuss in detail about the components of product variation with respect to calendering operation. **07**
- Q. 3 (b)** Answer the following
- i** How the barrel temperature measurement is carried out during the extrusion process? **04**
 - ii** What are the advantages of on calendar measurement? **03**
- OR**
- Q. 3 (a)** List the different types of transducers used for thickness measurement in calendering. Write on any two. **07**
- Q. 3 (b)** Answer the following
- i** Mention the locations of rubber extruder, where temperature measurement is carried out. Also write a note on resistive temperature sensors. **05**
 - ii** What are the disadvantages of on calender measurement? **02**

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- Q. 4 (a)** Discuss in detail about electrical pressure transducers. **07**
- Q. 4 (b)** Answer the following
- i** Write a short note on eddy current tachometer. **05**
 - ii** What do you mean by thermocouple lead wire? **02**
- OR**
- Q. 4 (a)** Discuss in detail about reductive pressure transducer. **07**
- Q. 4 (b)** Answer the following
- i** Write a short note on contactless tachometer. **05**
 - ii** What do you mean by thermal well? **02**
- Q. 5 (a)** Discuss the dynamic behavior of first order system with suitable example. **07**
- Q. 5 (b)** Answer the following
- i** Explain the term comparator. Which terms are used in control configurations? **04**
 - ii** Derive the transfer function for PI-controller. **03**
- OR**
- Q. 5 (a)** Discuss the dynamic behavior of pneumatic control valve. **07**
- Q. 5 (b)** Answer the following
- i** What do you mean by forcing function? Explain any two. **04**
 - ii** Derive the transfer function for PD-controller. **03**
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