

B.E. Instrumentation Engineering (MODEL CURRICULUM) Semester-VII
IN701M - Instrumentation System Design

P. Pages : 1

Time : Three Hours



GUG/W/22/14256

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.

1. a) Justify need of lead wire compensation in signal conditioning for RTD. 8
b) Describe in details the design consideration for thermocouple. 8

OR

2. a) List static and dynamic characteristics of instruments and explain in detail. 8
b) Elaborate the various criteria for selection of Temperature transducers. 8

3. a) Discuss the flow measurement using venturi meter. 8
b) Write a short note on SMART Transmitter. 8

OR

4. a) Illustrate the concept of zero and span adjustment in transmitter. 8
b) Discuss selection criteria for flow Transducers. 8

5. a) With the help of suitable diagram, explain the pressure measurement using Bourdon tube. 8
b) Illustrate the concept of I/P and P/I converter. 8

OR

6. a) Draw and explain level measurement using capacitive probe. Draw the block diagram for signal conditioning circuit required for it and also explain block. 8
b) List and explain factors affecting sensitivity of pressure measurement. 8

7. a) What is the need of actuator? Explain pneumatic actuator with neat diagram. 8
b) Elaborate the concept of cavitation and flashing. Explain the remedies to reduce the cavitation. 8

OR

8. a) Explain the following terms w.r.t. control valve in detail. 8
i) Rangeability ii) Turndown iii) Valve capacity iv) Throttling valve
b) Write a short note on control valve characteristics. 8

9. a) Explain in brief reliability concepts and causes of failure. 8
b) Write a note on following. 8
i) Alarm annunciator ii) Data Acquisition system.

OR

10. a) Write a note on following terms, w.r.t. Reliability. 8
i) MTTF ii) MTBF, iii) MTTR iv) Quality and Reliability
b) Draw and explain PCB design techniques. 8
