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W-712

B. Tech. EXAMINATION, Dec. 2017

(Seventh Semester)

(Weekend) (Re-appear Only)

(EE)

EE(W)-455

INTELLIGENT INSTRUMENTATION FOR ENGINEERING

Time : 3 *Hours*] [*Maximum Marks :* 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions.

1. (a) Explain the components and features of Intelligent Instrumentation System. **10**

(b) Draw the block diagram of Intelligent Instrumentation system and describe the function of each block. **10**

2. (a) What is instrumentation amplifier ? Discuss common mode rejection ratio. **10**

(b) Describe various components of signal transmission. **10**

3. (a) Explain in detail signal linearization techniques. **10**

(b) Explain how the amplification and attenuation is done using OP-AMP. Derive the relevant expression. **10**

4. (a) Draw and explain sample and hold circuit. **10**

(b) Explain PLL and its importance for signal transmission. **10**

5. (a) Explain the design and functioning of current to voltage conversion. **10**

(b) Describe the sensing process. How sensor can be classified ? **10**

6. (a) Describe in detail about general architecture of smart sensor. **10**

(b) What do you understand by compensation ? Explain different techniques of compensation. Also explain how the drift and delay time in sensors can be compensated ? **10**

7. (a) Write short notes on the following :

(i) Response time

(ii) Drift

(iii) Noise and interference. **10**

(b) Describe the decoding of computer addresses. **10**

8. (a) Explain the various methods for ADC. Explain any *one* of them in detail. **10**

(b) Explain in detail differences between thick film sensors and thin film sensors. **10**