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Total number of printed pages – 2

B. Tech  
PEEI 5403

**Eighth Semester Regular Examination – 2015**

**INDUSTRIAL INSTRUMENTATION**

**BRANCH(S) : CSE, IT**

**QUESTION CODE : J 385**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.  
The figures in the right-hand margin indicate marks.*



1. Answer the following questions : 2×10
- (a) Discuss installation error and equipment error.
  - (b) What are the different failures occur during the life time of an instrument ?
  - (c) Write down different techniques of feeding sample gas in thermal conductivity gas analysis.
  - (d) What is Globar ?
  - (e) What are the standard ranges of pressure and current in pneumatic and electrical means of telemetry respectively ?
  - (f) What are the different channels used in telemetry ?
  - (g) Draw typical block diagram of a position telemetry system.
  - (h) What is hydrazine ? Why is it used in water cycle in a power plant ?
  - (i) Write the main objective of power plant instrumentation system.
  - (j) What is a Zener barrier ?
2. (a) What is curve fitting ? Explain briefly the techniques used in curve fitting. 5

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- (b) Explain operation of oxygen analyzer (i) without using hot wire (ii) with using hot wire. 5
3. (a) List different infrared radiation sources and infrared detectors. Draw the scheme of a double beam dispersive type IR absorption spectrometer and explain its operation. 5
- (b) Explain briefly any three methods for moisture measurement. 5
4. (a) Explain PAM, PDM, PPM and PCM with example. 5
- (b) Explain the operation of a typical wireless I/O system ? Illustrate and explain. 5
5. (a) Explain modulation technique used for digital data in telemetry system. 5
- (b) Explain Receiver and Transmitter of Frequency Hopping Spread Spectrum. 5
6. (a) Describe the operation with block diagram of the power plant cycle. 5
- (b) Describe the function of an economizer and super heater. 5
7. (a) What are the important variables that need to be measured in power plant cycle ? List various sensors/instruments used for the measurement of these variables. 5
- (b) What are the different methods of protection regarding actual safety, cost and maintenance ? Explain and compare the methods. 5
8. Write Short Notes (**Any Two**): 5 × 2
- (a) Bath-tub Curve.
- (b) Gas chromatography.
- (c) Modem.
- (d) Flue gas analysis.745

