Registration no: | | | | | | | | | | |

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B.Tech.
PEEI5403

8th Semester Regular / Back Examination 2016-17
INDUSTRIAL INSTRUMENTATION
BRANCH(S): CSE, ELECTRICAL, IT, ITE
Time: 3 Hours
Max Marks: 70
Q.CODE: Z402

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

Q1 **Answer the following questions:** **(2 x 10)**

a) Define "Absolute Humidity" and "Relative Humidity".
b) Define Reliability. How reliability related to MTTF?
c) Differentiate between Gas analyzers and Liquid analyzers?
d) What are "Shrinkage" and "Swelling" phenomena in a boiler?
e) How is hazardous location determined? Classify different zones on this basis.
f) Draw a typical block diagram of voltage telemetry system.
g) What are the two disadvantages of single focusing mass spectrometer? How can you overcome this?
h) Give examples of two optical sources and optical detectors.
i) Explain the term NEMA and IP. What specifications do make in relation to hazards and safety?
j) What is intrinsic safety?

Q2 **a)** List various sensors/instruments used for the measurement of pressure, temperature, flow, level and vibration in power plant. **(5)**

b) Describe a sodium analyzer and its harmful effect in power plant equipment. **(5)**

Q3 **a)** Explain generation of X-ray and their characteristics. Also define four distinct classes of x-ray. **(5)**

b) Discuss various statistical methods of error analysis. Write the statistical formula and discuss their significance. **(5)**

Q4 **a)** Draw the balanced scheme of a zener barrier protection system and explain its operation. **(5)**

b) What are analysis, evaluation, and construction as suggested by NFPA? **(5)**

Q5 **a)** Draw and explain a typical Frequency Division Multiplexing System. **(5)**

b) Explain PAM, PDM, PPM and PCM with example. **(5)**

Q6 **a)** Explain the operation of a typical wireless I/O system with neat diagram. **(5)**

b) What are the commonly known topologies of wireless I/O system? Illustrate and Explain. **(5)**

Q7 Why temperature control in a reactor is very important? Draw the control diagram for temperature control in a reactor using cascade arrangement and explain it. **(10)**

Q8 **Write short answer on any TWO:** **(5 x 2)**

a) Gas Chromatography

b) Frequency Telemetring

c) Intrinsic Safety

d) Bath-tub Curve