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Total Number of Pages : 02

B.Tech
PCE5J001

5th Semester Regular/Back Examination 2019-20

PROCESS INSTRUMENTATION

BRANCH : CHEM

Max Marks : 100

Time : 3 Hours

Q.CODE : HRB385

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- a) Differentiate between accuracy and precision with suitable example.
- b) Define static error and dynamic error of a measuring instrument.
- c) What is sensitivity of an instrument?
- d) What is Reynolds number and on what factors does it depend?
- e) What is Seebeck effect?
- f) What is Beer's Law?
- g) Write down any four instruments used for composition measurement.
- h) Explain the difference between span and range.
- i) Write down the application of thermocouple.
- j) What is true value of an instrument?

Part-II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) With a neat labeled diagram explain briefly about orifice meter.
- b) Describe with a neat sketch, the construction and working of a Rota meter.
- c) What are the different types of direct methods of liquid level measurement? Explain with neat sketch any one of them.
- d) What is the most common low level industrial level indicator? How does it work?
- e) Discuss the construction and working principle of thermocouple type pyrometer.
- f) What is a thermistor? Explain, with neat sketch the construction and working of a thermistor.
- g) What are the different types of diaphragm pressure transducer? Explain with a neat sketch any one of them.
- h) What are the different steps to be followed during the calibration of a pressure transmitter?
- i) Explain the measurement of absolute pressure using Mcleod Gauge and their useful range.
- j) Discuss the principle, construction and operation of Thermocouple.
- k) Draw a neat sketch of a Bourdon tube to discuss its construction and working principle.
- l) What are the different types of manometers? Explain the working of any one of them with a neat sketch.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3** Name different types of expansion thermometers. Explain, with a neat sketch the construction and working of any two of them. **(16)**
- Q4** Discuss the construction and working principle of any two liquid level indicators used in industries by electrical method. **(16)**
- Q5** Describe with a neat sketch the construction and working principle of positive displacement flow meter and variable area meter. **(16)**
- Q6** What are the different types of diaphragm pressure transducer? Explain any two with a neat sketch. **(16)**