Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: AE304
Course Name: INDUSTRIAL INSTRUMENTATION

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.

Marks

1 a) Describe the 3-wire and 4 -wire method of RTD measurement and compare its performance during measurement   (7)

   b) With neat diagram explain pneumatic pyrometers   (8)

2 a) How linearization of thermistor output is done using analogue circuit? Sketch a scheme and explain the operation of the same. List the applications of thermistors.   (8)

   b) Explain with neat sketch the construction and working of a Mc-Leod gauge.   (7)

3 a) Explain the working of ionization type pressure gauges. List the advantages and disadvantages of ionization gauges.   (8)

   b) How flapper nozzle system is adapted in differential pressure measurement   (7)

PART B
Answer any two full questions, each carries 15 marks.

4 a) Explain any two types of positive displacement liquid flow meters   (10)

   b) Explain the function of provers in flow meters   (5)

5 a) Explain capillary type viscometer used in laboratory   (7)

   b) Describe thermal conductivity type density measurement.   (8)

6 a) Compare Newtonian and Non-Newtonian fluids   (3)

   b) Give a note on efflux cup viscometers   (4)

   c) Explain the working of Rotameter and show mathematically how the scale reading is linear with flow.   (8)

PART C
Answer any two full questions, each carries 20 marks.

7 a) Explain the principle of angular momentum type flow meters and explain impeller-turbine type mass flow meter   (10)

   b) Give note on

     (i) V-cone flow meters (ii) ultrasonic Doppler flow meter   (10)

8 a) With neat sketch explain hot wire anemometer can be used for flow measurement?   (10)

   b) Distinguish between displacer and float type level gauges   (3)

c) Give a note on level switches (7)

9 a) Write the principle of operation of capacitive type level sensors. Can the capacitive type method of level gauging be used in conducting type liquids as well? If yes how this is done. (10)

b) With neat sketch explain radar level gauging scheme (10)

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