

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(S), OCTOBER 2019**

**Course Code: AE482**

**Course Name: INDUSTRIAL INSTRUMENTATION**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks.*

Marks

- |   |    |  |      |
|---|----|--|------|
| 1 | a) | With a neat sketch, explain the basic principle of fluidic sensors                 | (5)  |
|   | b) | With neat diagram explain the methods used for low pressure measurement.           | (10) |
| 2 | a) | Write a short note about Pneumatic transmitters.                                   | (7)  |
|   | b) | Explain the basic principle of ultrasonic thermometers with suitable block diagram | (8)  |
| 3 | a) | With a neat sketch explain the constructional details of RTD                       | (10) |
|   | b) | Explain the principle and operation of U-tube manometer                            | (5)  |

**PART B**

*Answer any two full questions, each carries 15 marks.*

- |   |    |  |      |
|---|----|--|------|
| 4 | a) | Explain any one method of restriction type fluid velocity measurement?                   | (5)  |
|   | b) | With neat sketch explain any two industrial viscometers                                  | (10) |
| 5 | a) | With neat figures explain the different density meters used for gas density measurement. | (10) |
|   | b) | Explain any one method of inline recalibration without interruption of the process flow. | (5)  |
| 6 | a) | Discuss, in detail the variable flow meters.   | (10) |
|   | b) | Define Newtonian and Non-Newtonian fluid.  | (5)  |

**PART C**

*Answer any two full questions, each carries 20 marks.*

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|---|----|---|------|
| 7 | a) | Explain the construction and working principle of transit time and Doppler ultrasonic flowmeters.   | (10) |
|   | b) | Explain different types of displacer type liquid level measurement?   | (10) |
| 8 | a) | Explain the working principle behind the Vortex shedding flow meter?  | (5)  |
|   | b) | Explain the working of gyroscopic mass flowmeters.  | (5)  |
|   | c) | Explain different types of float type liquid level measurement.   | (10) |
| 9 | a) | Explain the resistive and capacitive method of liquid level measurement?  | (10) |
|   | b) | When do you recommend hot wire anemometer for flow measurement?<br>How its speed of response is increased? Can you suggest any method of bidirectional flow measurement using this technique. | (10) |

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