



AJEENKYA

D Y PATIL UNIVERSITY

End Term Examination (December 2019)

School: School of Engineering

Program: B.Tech Biomedical Engineering

Course: Biomedical Sensors and Measurements

Course Code: BME207

Semester: III

Max Marks: 40

Duration (mins): 90

PART-A

(Write Very Short / One Line Answer)

Note: Answer ALL questions. Each question carries 1 mark.

[10]

1. Write the application of LVDT in biomedical field.
2. What is PMMC?
3. Define limiting error.
4. What is Potentiometry?
5. Draw the Block Diagram of general Instrumentation system.
6. Give applications of Biosensors.
7. What is Hall Effect Sensor?
8. What is the difference between Active and Passive transducers?
9. What are the uses of capacitive transducer?
10. Enlist name of AC bridges.

PART-B

(Short Answer Questions – Not More Than 150 Words)

Note: Answer any FOUR questions. Each question carries 5 marks. [20]

11. Explain following terms: 1) Accuracy 2) Precision 3) Linearity 4) Sensitivity 5) Resolution 6) Hysteresis 7) Active and Passive Transducer.
12. Explain working principle of LVDT and Discuss Designing of LVDT.

13. Describe electrodes used for pO₂ Measurement.
14. Enlist Thermo-resistive Transducer. Explain basic Construction and Working of 2-wire and 3-wire RTD in detail.
15. Describe the ammeter-voltmeter method of measurement of resistance.
16. Derive the equation for balance in case of Maxwell's inductance capacitance bridge. Also discuss its advantages and disadvantages.

PART-C

(Long/Case Study/Essay Type Answer Questions)

Note: Answer any ONE question. Each question carries 10 marks. [10]

17. In the measurement of resistance, R, by the ammeter and voltmeter method, the resistance of ammeter is 0.01 Ω and that of voltmeter, 2000 Ω . In case of method 2 the current is measured is 2 A and voltage is 180 V. find the percentage error in calculating resistance R as a quotient of the readings and true value of R. also find the reading of the voltmeter in case of method 1 if the current indicated by the ammeter is 2 A.
18. What are the basic blocks of a Generalized Instrumentation System? Draw the various blocks and explain their functions.