Code No: 154BC

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, August/September - 2022
INSTRUMENTATION AND CONTROL SYSTEMS
(Mechanical Engineering)

Time: 3 Hours **Max.Marks:75**

Answer any five questions
All questions carry equal marks

1.a) Distinguish between piezo electric, inductive, capacitance type transducers .
b) Briefly explain the static and dynamic performance characteristics. [8+7]

2.a) Explain how displacement can be measured with the help of an inductive and capacitive transducer.
b) What are the sources of error? Explain the methods of elimination error. [8+7]

3.a) Explain how pressure is measured using dead weight pressure gauges.
b) Platinum RTD has resistance at $0\ ^0$ C is 100Ω. If the temperature co-efficient of Platinum is 3 $3.91 \times 10^{-3}\ /^0$ C, then find its resistance at 100^0 C. [8+7]

4.a) Explain the construction and working of McLeod pressure gauge used for low pressure measurement.
b) Explain how measurement of temperature is done using
i) Thermal expansion.
ii) Electrical resistance. [8+7]

5.a) With help of a neat diagram explain the working of turbine flow meter.
b) Name the different mechanical tachometers. Sketch and explain the working of centrifugal tachometer. [8+7]

6.a) With the help of a neat diagram, explain the construction, working and special features of Laser Doppler anemometer.
b) Explain the working of noncontact type tachometer. What are the applications of this instrument? [8+7]

7.a) Briefly discuss about torque measuring methods using strain sensors.
b) What are the hygroscopic materials? Explain the working of any one of the absorption hygrometers? [8+7]

8.a) Distinguish the temperature, speed and position control systems with suitable examples.
b) Explain the applications of control systems with respect to governing of speed. [8+7]

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