ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : JANUARY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech	**Semester:**	V
Paper Title :	Sensors and Transducers	**Paper Code:**	EEE43103
Maximum Marks :	**40**	**Time duration:**	3 Hrs
Total No of questions:	**8**	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)	**1.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **2.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **3.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. **a)** What are the disadvantages of capacitive sensor?
b) What is the major disadvantage of linear variable differential transducer?
c) Which physical quantity can be measured with a thermistor?
d) What do we measure with LVDT?
e) Why the heater wire of a thermocouple instrument is made of thin wire?

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. Describe the function of the piezoelectric transducer. (5)

3. State working principle of Thermocouple. Mention name along with their temperature range and composition of two commonly used thermo-couple. (3+2)

4. With a neat diagram explain the working principle of radiation pyrometer. (5)

5. A capacitive transducer uses two quartz diaphragms of area 750 mm^2 separated by a distance of 3.5 mm. A pressure of 900kN/m^2 when applied to the top diaphragm produces a deflection of 0.6 mm. The capacitance is 370 pF when no pressure is applied to the diaphragms. Find the value of capacitance after the application of a pressure of 900kN/m^2. (5)

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. a) Describe the basic principle of a Hall Device. Show how it can be used for a magnetic field sensor.
b) Define the Gauge factor. What is the gauge factor of strain gauge? (3+2+3+2)

7. What type of radiation can be detected by the Geiger counter? Describe the working principle of the Geiger counter with a neat diagram. What are the gases in these tubes and the pressure range at which they operate? (3+5+2)

8. Write short notes on: (i) Thermistor (ii) Photo Voltaic cell (5+5)
