

Reg. No. 

--	--	--	--	--	--	--	--	--	--

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
**(AUTONOMOUS)**  
**M.Tech I Year II Semester (R16) Regular Examinations May/June 2017**  
**(Thermal Engineering)**  
**THERMAL MEASUREMENTS AND PROCESS CONTROLS**

Time: 3 hours

Max. Marks:60

(Answer all Five Units 5 X 12 =60 Marks)

**UNIT-I**

- 1 a. Explain briefly the various errors associated with instruments in measuring systems and explain the concept of uncertainty analysis. 6M
- b. What is a transducer? Mention any two mechanical and electrical transducers with corresponding sensing elements 6M

**OR**

- 2 What is meant by piezoelectric transducers and explain working and advantages disadvantages of piezoelectric transducer? 12M

**UNIT-II**

- 3 a. Enumerate the desirable characteristics of manometric liquids. Name some of the manometric liquids. 6M
- b. Explain with a neat sketch the constructional features and basic working principle of McLeod gauge used for the measurement of low pressure. 6M

**OR**

- 4 What are the advantages and disadvantages of "Diaphragm elements"? 12M

**UNIT-III**

- 5 a. What is flow nozzles and explain advantages and disadvantages. 6M
- b. Explain Pitot tube and write the advantages and disadvantages 6M

**OR**

- 6 Derive a relation for mass flow rate for variable head meters for compressible fluids. 12M

**UNIT-IV**

- 7 Give the fundamental law governing the measurement of temperature and explain in detail the measurement of temperature by mercury in glass thermometer with a neat sketch. A thin plate is initially at a uniform temperature of 200. 12M
- 8 a. State the advantages and disadvantages of thermocouples. 6M
- b. Explain briefly the working of radiation pyrometer. 6M

**UNIT-V**

- 9 a. Explain the force balance method and differential pressure method. 6M  
b. What are the various methods of measurements of density and specific gravity? 6M

**OR**

- 10 With the help of neat sketch explain magneto hydrodynamic generator 12M

**\*\*\* END \*\*\***