Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2018

AU3EL07/FT3EL06/ME3EL01

Measurement & Instrumentation

Programme: B.Tech. Branch/Specialisation: AU/FT/ME

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Liquid in Glass Thermometer is an example of ------- order measuring instrument **1**
(a) Zero (b) First (c) Second (d) None of these

ii. Gauge factor 'G' of Strain gauge is defined by **1**
(a) 1 + 2ν (b) 1 - 2ν (c) 1+ ν (d) None of these

iii. Which of the following is a displacement measuring instrument **1**
(a) Potentiometer (b) LVDT
(c) RVDT (d) All of these

iv. Which of the following is a Torque measuring instrument **1**
(a) Dynamometer (b) LVDT
(c) Thermometer (d) None of these

v. Fluid used commonly in Thermometer at home is **1**
(a) Mercury (b) Alcohol (c) Petrol (d) None of these

vi. Instrument used for low pressure measurement **1**
(a) Manometer (b) Bourden's gauge
(c) Mc Leod Gauge (d) None of these

vii. Slip Gauges are used for **1**
(a) Linear Measurements
(b) Angular Measurements
(c) Surface Finish measurements
(d) None of these

viii. CMM is **1**
(a) Coordinate Measuring machine
(b) Component measuring machine
(c) Common Measuring Machine
(d) None of these

ix. Transducers is **1**
(a) Device that converts Energy from one form into other
(b) A display device
(c) A sensor
(d) None of these

x. Data acquisition is **1**
(a) Measurement phenomenon
(b) Display Device
(c) Sensor
(d) None of these

Q.2 i. Define accuracy and Precision of measuring instruments. **2**
ii. What are various types of Fits? List them. **3**
iii. Discuss various types of errors in measurement. **5**
OR iv. Derive the formula for Gauge factor of Strain Gauges. **5**

Q.3 i. What are the applications of Vibration measurements? **2**
ii. Describe working of LVDT with sketch. **8**
OR iii. Describe working of Prony Brake Dynamometer with suitable diagram. **8**

Q.4 i. How temperature measuring instruments are classified? **3**
ii. Describe the working of Liquid in glass thermometer. **7**
OR iii. Describe working of Venturimeter. **7**

Q.5 i. Discuss Linear and Angular measuring instruments. **4**
ii. Discuss surface roughness measurement methods. **6**
OR iii. What is CMM? Discuss constructional details of Pillar type CMM. **6**

Q.6 Write a short note on any two:
i. Classification of Transducers. **5**
ii. Data Acquisition Systems. **5**
iii. Analog and Digital Instruments. **5**

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