

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME SEMESTER II EXAMINATION – SUMMER 2017**

**Subject Code:** 2721108**Date:** 25/05/2017**Subject Name:** Experimental Techniques and Instrumentations in Automobile Engineering**Time:** 02:30 PM to 05:00 PM**Total Marks:** 70**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Differentiate these terms with example: (i) Precision and Accuracy (iii) Readability and Reproducibility **07**  
(b) Describe in details about Calibration of Pressure and Temperature Transducers. **07**

- Q.2** (a) Discuss the Secondary type of measurement in brief with suitable examples. **07**  
(b) Define: (1) Threshold, (2) Dead Zone, (3) Drift, (4) Static and dynamic error, (5) Reproducibility, (6) Hysteresis and (7) Sensitivity. **07**

**OR**

- (b) Give the advantages and disadvantages of electronics, electrical and mechanical instruments. **07**

- Q.3** (a) Write a brief note on I.S Code for Engine testing. **07**  
(b) What are 'Desired', 'Modified' and 'Interfering' inputs for an instrumentation system? Give examples for each of these. Draw a block diagram for showing their influence on the output. **07**

**OR**

- Q.3** (a) What is gauge factor? Derive an expression for gauge factor of a resistance strain gauge. **07**  
(b) Write a short note with a block diagram of general purpose cathode ray oscilloscope and explaining about the functions of Horizontal and Vertical positioning control. **07**

- Q.4** (a) Discuss about data acquisition systems for automobile engineering. **07**  
(b) Write a short note on (i) Active and Passive transducers (ii) Analog and Digital transducers **07**

**OR**

- Q.4** (a) Write a brief note on oil pressure warning system with neat diagram, **07**  
(b) Discuss in details instruments and wiring system for dash board amenities. **07**

- Q.5** (a) Discuss about devices to measure coolant flow for the engine with neat sketch. **07**  
(b) Why crash test and Morse test are carried out? Explain it. **07**

**OR**

- Q.5** (a) Write a short note on foil type bonded strain gauge used for measurement of pressure. **07**  
(b) Discuss about Printers and displays. **07**

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