Time: 2 HOURS **Marks 60**

NOTE:
Question No 01 is compulsory.
Attempt any THREE questions from the remaining five questions.
Each question carries 15 marks.
Figure to the right indicates full marks.

Q. 1. Answer any Three.

i. Define the terms standardization and calibration of measuring instruments. (05 Marks)
ii. Distinguish between gross error, systematic error and random error. (05 Marks)
iii. Explain the calibration of wattmeter using potentiometer. (05 Marks)
iv. Compare the digital over analog meters. (05 Marks)
v. Enlist the IoT-based measuring instruments. (05 Marks)

Q. 2 A] Explain about the Electro-dynamometer type Power factor meter. (08 Marks)
Q. 2 B] Derive the expression for measurement of low resistance using Kelvin's double bridge. (07 Marks)
Q. 3 A] Describe the measurement of unknown capacitance using Schering bridge. (08 Marks)
Q. 3 B] Explain the Linear Variable Differential Transformer (LVDT) for the measurement of displacement. (07 Marks)
Q. 4 A] Briefly explain the Thermocouple and Resistance Temperature Detector (RTD). (08 Marks)
Q. 4 B] Describe the Digital Tachometer for the measurement of speed. (07 Marks)

Q. 5 A] Describe the ramp type Digital Voltmeter (DVM). (08 Marks)
Q. 5 B] Draw and explain the block diagram of a Data Acquisition System (DAS). (07 Marks)

Q. 6. Write short notes on any Three

A] Piezo-electric sensor (05 Marks)
B] Harmonic analysers (05 Marks)
C] Current sensor (ACS712), (05 Marks)
D] Potential Transformer (05 Marks)

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