



Note: Answer Only six Questions

04 JUN 2017

Q1.) In the test equipment measurement, ten reading were obtained by using the voltmeter.

Reading value (V)	10	10	9.8	10.2	10.1	10.2	10.1	10.0	9.9	10
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1-Arithmetic mean. 2- Standard Deviation. 3-Probable error. [10 marks]

Q2.) What the differences between series and shunt ohmmeter? [10 marks]

Q3.) Prove that this expression has the basic dimension of capacitance, and write its basic S.I units.

$[(R_1) / (F R_2 R_3)]$  where F is the frequency [10 marks]

Q4.) True or false (choose only five)

- 1- The voltage of the Weston saturated cell at 20 °C is (1.10868V).
  - 2- The angular deflection of PMMC is proportional nonlinearly with applied current.
  - 3- Potentiometer will read from right to left.
  - 4- The basic complete variation of a.c signal before repeated itself is represent one period.
  - 5- Span is algebraic difference of the upper and lower limits of the range.
  - 6- Dynamometer: is suitable for the measurement of direct and alternating current, voltage and power.
- [10 marks]

Q5.) A (3 KHz) balance a.c bridge has in arm **AB** admittance of (300  $\Omega$ ) resistance and ( $2 \times 10^{-3}$  mho) capacitive suspatance, arm **BC** has a resistance of (372.5  $\Omega$ ) in series with capacitive reactance of (75.5  $\Omega$ ), arm **CD** has unknown coil of (70  $\Omega$ ) internal resistance and series unknown inductance, and arm **DA** has a resistance of (250  $\Omega$ ) in parallel with (10 mH) inductance. Determine the value of a unknown inductance in arm CD. [10 marks]

Q6.) CRT deflecting plates are (60 mm) longs and (0.5 cm) a parts; their center is (40 cm) away from the screen. The vertical deflection amplifier has gain of (80). If an input signal is applied, it will produce (7 cm) deflection on the screen with a time of (20 nsec). Determine: 1) Accelerating voltage. 2) Vertical field intensity. 3) Angular deflection. 4) Input signal. 5) Change in deflection factor if input signal becomes (0.8 V).

Note:  $e=1.6 \times 10^{-19} C$   $m_e=9.1 \times 10^{-31} Kg$  [10 marks]

Q7.) What are the force summing members generally used in the displacement transducers. [10 marks]