Printed Pages: 4 **EEC-403**

(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 131403	**Roll No.**

B. TECH.

Theory Examination (Semester-IV) 2015-16

ELECTRONIC MEASUREMENT AND INSTRUMENTATION

Time : 3 Hours ***Max. Marks : 100***

Note: Attempt questions from all sections as per instructions.

Section-A

1. Attempt all questions. All questions carry equal marks. (2×10=20)

(a) What do you mean by high current prob?

(b) Calculate the maximum percentage error in the difference of two measured voltage when $v_1 = 100 \pm 1\%$ and $v_2 = 80 \pm 5\%$.

(c) What do you mean by engineering notation?

(d) Three resistances have the following rating R_1=15Ω ±5%, R_2=33Ω±2%, R_3=75Ω ±5%. Determine the magnitude and limiting error in ohms if resistance is connected in series.

(e) What are 1:1 & 10:1 probes in oscilloscopes?

(f) What is mean by interpolation in oscilloscope system?

(g) What is mean by voltage sensitivity in measuring instrument?

(h) Define the systematic error, observational error with example.

(i) Define swamping resistance used in PMMC instrument.

(f) Define the term resolution.

Section-B

2. Attempt any five questions. All questions carry equal marks. (10×5=50)

(a) The bridge is balanced at 1000 Hz. It has following components

(i) Arm ab = 0.2micro farad capacitance

(ii) Arm bc = a pure resistor of 500 ohms.

(iii) Arm da- 300 ohms resistor R in parallel with unknown capacitor C=0.1 micro farad.

(iv) Find the constants of Arm cd- considering it as series circuit.

(b) What is voltmeter and ammeter method for measuring the resistance? Draw suitable diagram.

(c) Derive the balancing equation for Kelvin double bridge with proper circuit diagram.

(d) Explain the XY recorder with the help of Block diagram.

(e) Explain the Digital frequency meter system for forward counting using suitable diagram.

(f) The ten reading noted when measuring current are : 41.7, 42.0, 41.8, 42.0, 42.1, 41.9, 42.0, 41.9, 42.5, & 41.8 amp Find (i) Mean (ii) Standard Deviation (iii) Probable error of one reading (iv) Probable error of the mean (v) range

(g) Explain the difference amplifier voltmeter system with proper circuit diagram.

(h) Explain the following measurement standard :

(i) International standard

(ii) Secondary standard

(iii) Primary standard

(iv) Working standard

Section-C

Attempt any two questions. All questions carry equal marks. (15×2=30)

3. Draw and explain the different type of oscilloscopes .

4. Derive the equation for maxwell bridge and solve a mexwell inductance bridge using a standard capacitor C_3 = 0.1 micro farad and operate at a supply frequency of 100Hz. Balance is achived when R_1= 1.26 kohms, R_3 = 470 Ohms, and R_4 = 500 Ohms. Calcuate the inductance and resistance of the measured inductor, and determine its Q factor.

5. Write short note on following :-

(i) Strip chart recorders

(ii) PMMC Instrument