Code No: **RT42042** **R13** **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, July/August - 2017

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What are the indications of precision? Explain [3]
   b) What is Digital Fourier analyzer? Explain [3]
   c) Draw the vertical amplifier of CRO and what are its functions [4]
   d) What are the applications and limitations of Wheatstone bridge [4]
   e) How do you select a transducer? Explain [4]
   f) What are the objectives of a DAS [4]

PART–B *(3x16 = 48 Marks)*

2. a) Discuss in detail about the range extension of differential voltmeters [8]
   b) A 200 Ω basic movement is to be used as an ohmmeter requiring full scale deflection of 1 mA and internal battery voltage of 5 V. A half scale deflection marking of 2 k is desired. Calculate
      i. The values of R_1 and R_2
      ii. Maximum value of R to compensate for a 3% drop in battery voltage [8]

3. a) Draw the block diagram of a spectrum analyzer and explain its working. [8]
   b) Draw and explain the working principle of harmonic distortion analyzer. [8]

4. a) What are active probes used with CRO? Draw the circuit of a FET probe and explain [8]
   b) Draw the circuit diagram of a simple compensated attenuator and explain its working [8]

5. a) Illustrate the method of measurement of unknown inductance by Maxwell's bridge [8]
   b) A sheet of 4.5 mm thick Bakelite is tested at 50 Hz between 12 cm in diameter. The Schering bridge uses a standard air capacitor C_2 of 105 pF capacitor, a non-reactive, R_4 of 1000/∏ in parallel with a variable capacitor and is obtained with C_4 = 0.5 µF and R_3 = 260 Ω. Calculate the capacitance, PF and relative permittivity of the sheet [8]

6. a) Draw the construction diagram and explain the working of LVDT [8]
   b) What is a thermistor? Explain. Write about its advantages and disadvantages [8]

7. Write short notes on the following
   a) Measurement of force
   b) Multi channel DAS [16]