Code No: EC1545　　　　　　　　　　　　　　　　　　　　　　**GEC-R14**

IV B. Tech I Semester Supplementary Examinations, February 2018
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 Hours　　　　　　　　　　　　　　　　　　　　　　**Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.
　　　　Answer any **FOUR** questions from **Part-B**. All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. Define the term sensitivity of meter movement. Calculate the sensitivity of a basic movement for a full scale deflection of 200μA.

2. a)　In which of the following voltmeter noise will be reduced (　　)

　　　i) Ramp type　　　　　　　　　　ii) Dual slope integrating

　　　iii) Successive approximation　　　iv) Servo balance

　b)　What is the resolution of 3-1/2 digit voltmeter on 10V range?

3. a)　The wein bridge is suitable for …………….. range of frequencies.

　b)　What is the significance of random noise generator?

4. Compare DC and AC bridges.

5. a)　What is the purpose of delay line in vertical deflection section?

　b)　Specify various phosphor material used to coat the internal screen of CRT.

6. a)　Define a transducer.

　b)　What is thermocouple and thermopile?

PART-B

4 × 12 = 48M

1. a)　Define the term error in measurement. Brief out different types of static errors　　　(6M)

　b)　A 1mA meter movement having an internal resistance of 100 Ω is used to convert into a multi-range ammeter having the range (0-10) mA, (0-20)mA and (0-50)mA. Determine the value of the shunt resistances required.　　　(6M)

2. a)　Construct the block diagram of Integrating type DVM and explain its operation.　　　(6M)

　b)　An integrator contains a 100KΩ and 1μF capacitor. If the voltage applied to the integrator input is 1.2V,what voltage will be present at the output of the integrator after 1.4 sec. (6M)

3. a)　Draw the block diagram of arbitrary wave form generator and explain function of each block.　　　(7M)

　b)　State the uses of any five front panel controls of signal generator.　　　(5M)

4. a) A bridge is balanced at a frequency of 1KHz and has the following arms.

    Arm AB –0.2µF pure capacitor

    Arm BC – 500Ω pure resistance

    Arm DC – unknown

    Arm DA – 600Ω in parallel with 0.1 µF

    Derive the balance condition and find the unknown arm considered as a series circuit. Also draw the bridge circuit. (8M)

    b) List different applications of spectrum analyzer. (4M)

5. a) Draw the structure of conventional cathode ray tube and outline the functions of internal parts. (6M)

    b) Draw the block diagram of dual beam CRO and explain the working principle. (6M)

6. a) Discuss the advantages and disadvantages of semiconductor strain gauges. (4M)

    b) Demonstrate the data acquisition system with a neat sketch. (8M)

*****