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

Paper ID : 130417 Roll No. | | | | | | | | | |

B.TECH.

Theory Examination (Semester-IV) 2015-16

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

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

Section-A

Q1. Attempt all parts. All carry equal marks. Write answer of each part in short. (2×10=20)

a. Define random error and Gross error with suitable example.

b. Define accuracy and precision with suitable example.

c. What do you mean by Dissipation factor? Explain.

d. What is Quality factor and its importance in measurement.

j. How Emitter-Follower structure reduces Voltmeter loading effect?

Section-B

Q2. Attempt any five questions from this section.

(10×5=50)

(a) Define systematic errors in details. A batch of resistors each has a nominal resistance of 330 Ω are to be tested and classified as ±5% and ±10% components are specified at 25°C, and their temperature coefficient is -300 ppm/°C. Calculate the maximum and minimum resistance for these components at 100°C and Calculate the maximum and minimum absolute resistance for each case.

(e) Explain construction and working of X-Y recorder.

(f) Write short note on DSO. Compare it with Sampling Oscilloscope.

(g) Explain the construction and working of Q-meter.

(h) How dielectric loss and unknown capacitance are measured by Schering Bridge?

Section-C

Note: Attempt any two questions from this section.

(15×2=30)

Q3. Explain the following in detail with their diagram:

i. Attenuator Probe

ii. 1:1 Probe

Q4. Explain construction and working of Galvanometer. A PMMC instrument with FSD of 100 μA and a coil resistance of 2kΩ is to be converted into a voltmeter. Determine the required multiplier resistance if the voltmeter is to measure 35V at full scale. Also calculate the applied voltage when the instrument indicates 0.8, 0.5, and 0.2 of FSD with neat circuit diagram.

Q5. Explain the working procedure of following:

i. Plotter

ii. Sampling Oscilloscope