Reg. No.

Question Paper Code : **51461**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Sixth Semester

Electronics and Communication Engineering

EC 2351/EC 61/10144 EC 602 – MEASUREMENTS AND INSTRUMENTATION

(Regulations 2008/2010)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1.   Give the difference between accuracy and precision.

2.   Give the schematic of Maxwell Bridge.

3.   Compare and contrast analog and digital storage oscilloscopes.

4.   Distributed capacitance of a coil is measured by changing the capacitance of the tuning capacitor. The value of the tuning capacitor are C_1 and C_2 for the resonant frequencies f_1 and $2f_1$. What is the value of the distributed capacitance ?

5.   How do we generate a triangular waveform ?

6.   What is Intermodulation distortion ?

7.   What is a Virtual Instrumentation ?

8.   What are data loggers ?

9.   List out the drawbacks of reflectometer.

10.   Define the term transducer.

PART – B (5 × 16 = 80 marks)

11. (a) (i) Briefly explain the static and dynamic characteristics of a measurement system. **(8)**

        (ii) Discuss the errors involved in a measurement system. **(8)**

OR

   (b) (i) With a neat diagram explain the working of moving coil voltmeter. **(8)**

        (ii) Briefly explain the importance of calibration and standards in a measurement system. **(8)**

12. (a) (i) Draw the block diagram of the sampling oscilloscope. How does the sampling oscilloscope increase the apparent frequency response of an oscilloscope ? **(8)**

        (ii) How to measure large capacitors and small coils using Q-meters ? **(8)**

OR

   (b) (i) Explain the vector impedance meter with a neat block diagram. **(8)**

        (ii) How to measure the RF voltage and power using RF millivoltmeter ? **(8)**

13. (a) (i) Bring out the differences between a pulse and a square wave generator. Draw the block diagram of a typical general purpose pulse generator and explain its working. **(8)**

        (ii) A circuit having an effective capacitance of 160 pF is tuned to a frequency of 1.2 MHz. In this circuit the current falls to 70.7 % of its resonant value when the frequency of an emf of constant magnitude injected in series with the circuit deviates from the resonant frequency by 6 KHz. Calculate the Q factor and effective resistance by 6 KHz. **(8)**

OR

   (b) (i) With the help of a block schematic, explain the working of a digital LCR meter. Bring out its salient features and mention its advantages. **(8)**

        (ii) Discuss in detail about the fundamental suppression type distortion analyser for determining the harmonics present in a signal. **(8)**

14. (a) (i) Explain the working principle of computer controlled test systems. **(8)**

        (ii) Explain how to measure the time interval of signals using digital instruments. **(8)**

OR

   (b) (i) How automatic polarity indication, automatic ranging and automatic zeroing is achieved in automated digital instruments ? **(8)**

        (ii) Explain the working principle of digital multimeter. **(8)**

15. (a) With the neat diagram, explain the working of IEEE 488 bus, operations and characteristics.

OR

   (b) Draw and explain the block diagram of analog and digital data acquisition system. **(16)**

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