

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)