Printed Pages: 02 **Sub Code: EEC403**

Paper Id: 131408 **Roll No.** | | | | | | | | | | |

B. Tech.
(SEM IV) THEORY EXAMINATION 2017-18
ELECTRONIC INSTRUMENTATION AND MEASUREMENTS

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a) What do you mean by an instrumentation system?
b) Explain the absolute error and Gross error.
c) Explain how a basic ammeter can be converted into a multi range ammeter?
d) What is the need of a time base generator in CRO?
e) Explain the criteria for achieving balance in a Wheatstone bridge?
f) Differentiate between plotter and recorder.
g) What do you mean by low resistance measurements,
h) Explain the AC bridge theory,
i) Explain Oscilloscope probes with an example.
j) Which part of CRT is known as electrostatic focusing system?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) Describe the principle of operation, advantages, disadvantages and application of PMMC.
b) Explain the basic principle of Digital voltmeter systems, draw a suitable block diagram and explain its function. Enlist the advantages and applications Digital voltmeter systems.
c) Sketch circuits to show how a.c voltmeters and amrneters should be calibrated using standard instruments. Explain.
d) Explain the working principle of a Digital Storage Oscilloscope (DSO). Give some advantages and applications of Digital Storage Oscilloscope.
e) Explain the working principle of digital multimeters and explain how a digital multimeter can be used as standard instrument.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Sketch the basic construction of a pen type galvanometer strip chart recorder. Briefly explain the instrument operation.

(b) Describe the various methods for Measurement Errors. Describe the difference between precision & resolution.

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Discuss the procedure for using the electronic voltmeter for ac measurements.

(b) Describe the working principle of digital frequency meter system. State some applications.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the working of Q-meter. What is the measuring procedure for high impedance measurement in Q-meter?

(b) Describe the principle of operation and differences between capacitance bridges & Inductance bridges.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Draw the basic block diagram of an oscilloscope and state the function of each block. Describe the Oscilloscope specifications and performance.

(b) What is the utility of delay line and trigger circuit in CRO. Explain the methods for the measurement of voltage, frequency and phase by CRO.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the working principle of a digital **X-Y** plotter. Explain with diagram how CRO can be used to check diodes, inductors and capacitors.

(b) Describe with the help of block diagram the operation of X-Y recorder. Also list the application of X-Y recorder.