Code No: 125AM **R15**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART – A

(25 Marks)

1.a) What are the basic elements of a generalized measurement system? [2]
b) What are the sources of errors in D.C voltage measurement? [3]
c) Write applications of spectrum analyzer. [2]
d) Give the functions of an attenuator in a signal generator. [3]
e) What are the two modes of operation in dual trace oscilloscope? [2]
f) What are Lissajous figures? On what factor shape of the figures depends? [3]
g) What is mean by digital temperature sensing system? [2]
h) Give the applications, advantages of Thermocouples. [3]
i) Write the two conditions to be satisfied to make an a.c bridge balance. [2]
j) Write about pressure sensors. [3]

PART - B

(50 Marks)

2.a) A voltmeter having a sensitivity of 15 kΩ/V reads 80V in its 100 V scale when connected across an unknown resistance Rx. The current through the resistor is 1.8 mA. Determine the % error due to loading effect.
b) Explain working of True RMS voltmeter. [5+5]

OR

3.a) Discuss the different types of errors found in a measurement.
b) Describe the working of series type ohmmeter. [5+5]

4.a) Draw the block diagram of fundamental suppressions harmonic distortion analyzer and explain its principle of operation.
b) Describe the operation of power analyzer. [5+5]

OR

5.a) Explain the sweep frequency generator.
b) Differentiate wave analyzer and harmonic distortion analyzer. [5+5]

6.a) How to measure time, period and frequency using oscilloscope?
b) Write about different types of CRO probes. [5+5]

OR

7.a) Discuss the working of the Dual beam oscilloscope.
b) Illustrate with neat sketch about horizontal amplifier. [5+5]

8.a) Illustrate and explain the working of LVDT.
b) Describe the hotwire anemometer and explain. [5+5]

OR

9.a) Explain the principle of working of synchros.
b) Describe the magneto strictive transducers. [5+5]

10.a) A Maxwell bridge is used to measure an inductive impedance. The bridge constants at balance are C1 = 0.01 μF, R1 = 470 KΩ, R2 = 5.1 KΩ and R3 = 100 Ω. Find the series equivalent of the unknown impedance.
b) Discuss the measurement of Moisture. [5+5]

OR

11.a) Describe any one bridge circuit for the measurement of inductance.
b) Explain a method of measurement of liquid level. [5+5]

---ooOoo---