Code No: 138FY **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, July - 2021
ELECTRONIC MEASURING INSTRUMENTS
(Common to EEE, CSE)

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

Answer any Five Questions
All Questions Carry Equal Marks
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1.a) With the help of neat diagram explain the working of true RMS reading voltmeter?
b) A step input of 5 A is applied to an ammeter. The pointer swings to a voltage of 5.18 A and finally comes to rest at 5.02 A.
i) Determine the overshoot of the reading in ampere and in the percentage of final reading.
ii) Determine the percentage error in the instrument. [9+6]

2.a) Define Accuracy, Precision, Resolution and Limiting error.
b) Design a range switch for an ammeter, with an internal resistance r_m = 100Ω and a full scale deflection of Im=1mA. The meter is to measure in the ranges of 10mA, 100mA and 500mA. [8+7]

3.a) What are the main requirements of sine wave signal generator in instrumentation? Explain.
b) Explain with suitable block diagram how an AF square generator works. [8+7]

4.a) Discuss about RF Signal Generators.
b) Write a short note on Arbitrary Waveform Generator. [7+8]

5.a) State the standard specification of a sample CRO.
b) Explain the operation of a sampling oscilloscope with a neat block schematic diagram. What is its advantage over the conventional oscilloscope? [7+8]

6.a) How much voltage is required across two deflection plates separated by 1cm to deflect an electron beam, if the effective length at the deflection plate is 2cm and the acceleration potential is 5000V.
b) Derive the equation for the electrostatic deflection for CRO. [7+8]

7. Discuss about principle of operation of galvanometric recorder with the help of suitable diagram. State an advantages and disadvantages of it. [15]

8.a) Draw the diagram of strain gauge and explain the principle of measurement.
b) Draw the various kinds of thermometers and explain the principle of operation. [7+8]

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