

Code No: 55023

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, February/March - 2016

ELECTRONICS MEASUREMENTS AND INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) Define the term voltmeter sensitivity and loading effect and write the means to avoid the loading effect in practice using the circuit arrangement.
- b) Evaluate the lowest full scale voltage that could be displayed with $50\mu\text{A}$ meter movement with an internal resistance of $100\ \Omega$ and calculate the sensitivity of this meter. How can we construct a lower full scale voltage while measuring a.c. voltages? [8+7]
- 2.a) Discuss the working principle of Pulse and Square wave generator with its modes operation.
- b) An input pulse V_i of 5ns duration is applied to the basic sweep circuit using R and C at the instant V_o reaches 4.76V . What is the voltage across the capacitor after $50\mu\text{s}$ if the saturated transistor presents a resistance of $0.2\ \text{kohms}$ to the circuit? [9+6]
3. Explain the block diagram of a Basic Spectrum Analyzer with its working principle and discuss about the functional elements and applications in detail. [15]
- 4.a) Describe about Anderson Bridge Circuit and derive the expression for the unknown elements.
- b) In the case of a Schering Bridge, arm AC has $R=4.7\text{k}\ \Omega$. Arm CD has unknown elements. Arm BD has $C=0.1\text{MF}$, Arm AB= $4.7\text{K}\ \Omega$ is shunt with 1MF . Determine Values of components in the arm CD. [9+6]
- 5.a) Draw the block diagram of a basic horizontal deflection section and explain each block.
- b) Describe briefly about various probes used in CROs. [8+7]
- 6.a) Explain the operation of a digital storage oscilloscope with its block diagram.
- b) Discuss in detail how the frequency is measured using a frequency counter. [9+6]
- 7.a) Explain the Principle and working of Strain gauges.
- b) Distinguish different modes of operation of piezoelectric crystals in brief. [7+8]
- 8.a) Discuss about elastic Transducers and explain how they are used to measure pressure.
- b) Write a note on factors that decide the configuration and sub system of Data Acquisition Systems. [8+7]