

School of Engineering**B.TECH Electrical Engineering
Semester End Examination - Jun 2024****Duration : 180 Minutes
Max Marks : 100****Sem IV - G2UB405C - Electrical Measurement and Instrumentation**General Instructions*Answer to the specific question asked**Draw neat, labelled diagrams wherever necessary**Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Recall the Linearity. K1(2)
- 2) Explain the importance of sampling rate in an oscilloscope. K2(4)
- 3) Illustrate the the concept of potential transformer K2(6)
- 4) The inductance of a moving iron instrument is given by $L = (10 + 5\theta - \theta^2)\mu H$ where θ is the deflection in radian from zero position. The spring constant is $12 * 10^{-6} Nm/rad$. Estimate the deflection for a current of 5 A. K3(9)
- 5) A moving coil voltmeter has a uniform scale with 100 division the full scale reading is 200 V and 1/10 of a scale division can be estimated with a fair degree of certainty. Determine the resolution of the instrument in volt. Also define resolution. K3(9)
- 6) Explain with the help of a functional block diagram, the principle of operation of sampling oscilloscope. K5(10)
- 7) Analyse the working of a dual trace CRO with the help of the proper block diagram. K4(12)
- 8) Explain the working of potential transformer (PT) with the help of equivalent circuit diagram, also discuss the use of PT for voltage and power measurement with the help of necessary circuit diagram. What is the % voltage error of a potential transformer with a system voltage 6600 V and turn ratio 50, if the measured secondary voltage is 130 V K5(15)
- 9) Detemine with the help of necessary diagram the construction and working of DSO. K5(15)
- 10) Explain the working of current transformer (CT) with the help of equivalent circuit diagram, also discuss the use of PT for voltage and power measurement with the help of necessary circuit diagram. Evaluate the % voltage error of a potential transformer with a system voltage 6600 V and turn ratio 50, if the measured secondary voltage is 130 V K6(18)