End Semester Examination, 2022

Semester - IV

Physics

PAPER - SEC-2T

Full Marks : 25

Time : 1.30 Hours

Group - A

1. ***Answer any five questions :***   ***5x2=10***

a) Define the term-Loading effect.   2

b) Write down the applications of low frequency generator.   2

c) How can you measure current using digital multimeter.   2

d) What are the advatages of a digital meter over an analog meter ?   2

e) Draw the block diagram of CRO.   2

f) When signals of different frequencies are applied to the Vertical input terminals of CRO, the following patterns are obtained. If the frequency of the applied voltage to the Y-plates in each case is 2KHZ, determine the unknown frequency.   2

(i)   (ii)

g) Why is focussing anode called electrostatic lens ? 2

h) What is deflection sensitivity of CRT ? What is its unit ? 1+1

Group - B

Answer any three questions : **3x5=15**

2. Derive the expression for deflection sensitivity of a CRT using electrostatic deflection. 5

3. Discuss how the Q-of a large capacitor can be measured with Q-meter ? 5

4. a) A sinusoidal voltage is displayed on the screen of CRT. Its vertical amplifier sensitivity at 4 v/cm and time base selector switch is set at a sweep speed 60 $\mu s/cm$. The measured peak to peak amplitude is 6.5 cm and its 5 complete cycles are accomodated over 9cm of horizontal axis. Calculate the rms value and frequency of the input voltage.

   b) The voltage applied to the horizontal and vertical plates of a CRO are sinusoidal given respectively by $V_u = V_x$ Coswt and $V_v = V_y$ Sinwt

   Prove that the electron beam will trace an ellipse on the screen. 3+2

5. What are the advantages of electronic voltmeter over an ordinary moving coil type voltmeter ? Write down the working principle of a solid-state electronic d.c Voltmeter.

6. Draw the block diagram of function generator. Write down the working principle of it. 2+3

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