RAN-2103000205030065

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T. Y. B. Sc. (Physics) (Sem. - V) Examination March - 2023

Elective : Paper - III

Measurement and Instrumentation - I (New Course)

[Total Marks: 50

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **T. Y. B. Sc. (Physics) (Sem. - V)**

Name of the Subject :

☛ **Elective : Paper - III Measurement and Instrumentation - I (New Course)**

Subject Code No.: **2103000205030065**

Seat No.:

Student's Signature

(2) Draw neat diagrams wherever necessary.
(3) Symbols used in the paper have their usual meaning.
(4) Figures to the right indicate full marks of the question.
(5) Scientific calculator may be used.

Q. 1. Answer the following questions in brief : (10)

(1) Give other two name of A photoconductive cell.

(2) Mention the optical sources.

(3) Mention the different components of electromagnetic spectrum.

(4) write the full form of VTVM.

(5) Mention the Applications of CRO.

(6) Mention the source of emission electrons in CRT.

(7) An aquadauge is used in CRO to collect _____.

(8) Sensitvity of a transducer is define as _____.

(9) write function of transducer.

(10) In case of fine resolution to increase and high resistance are required we use.

Q. 2. (a) Attempt any one of the following in details: **(07)**

(1) Give the full form of LASER mention the types of laser & write the properties of laser.

(2) Explain the terms related to photometry.

(b) Attempt any one of the following: **(03)**

(1) Explain the photovoltaic cell.

(2) The illumination level of a field on account of sunlight when the sun is 45° above the horizon is 60000 lux. How much illumination would be produced by sunlight under identical conditions, when sun reaches an altitude of 60°.

Q. 3. (a) Attempt any one of the following in details: **(07)**

(1) Mention the full form of VTVM write the merits & demerits of VTVM.

(2) What is differential amplifier using FET device draw the circuit diagram of DA & explain it.

(b) Attempt any one of the following: **(03)**

(1) The electronic voltmeter has R_s = 1000 kΩ , r_d = 100 kΩ & g_m = .0057mho. A PMMC ammeter with an internal resistance of 50Ω is used as the detector. If the input voltage is IV, find the approximate value of current through the meter.

(2) Discuss the Advantages of Electronic voltmeter.

Q. 4. (a) Attempt any one of the following in details: **(07)**

(1) Describe the different parts of a CRT explain in short.

(2) Explain the different types of Graticules used in CRO. Describe their advantages & disadvantages.

(b) Attempt any one of the following: **(03)**

(1) Calculate the maximum velocity of the beam of electrons in a CRT having a cathode anode voltage of 800V. Assume that the electrons to leave the cathode with zero velocity.
Charge of electron = 1.6×10^{-19}C & mass of electron = 9.1×10^{-31}kg.

(2) Describe the following any to two.
(a) sources of synchronization.
(b) Blanking circuit.
(c) Z-axis modulation.
(d) Astigmatism control

Q. 5. (a) Attempt any one of the following in details: **(07)**

(1) What is the transducer classefy the transducers on different basis, explain one of them.

(2) explain the terms related Transducers.

(a) Input characteristics.

(b) transfer characteristics.

(c) Output characteristics.

(b) Attempt any one of the following: **(03)**

(1) explain the resistive transducers.

(2) explain potentiometers in detail.

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