RAN-2103000206030068

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B.Sc. (Sem. VI) Examination April - 2023

Physics - Elective Course - I

Measurement and Instrumentation - II

[Total Marks: 50

સૂચના : / Instructions

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

Name of the Examination:

☛ **B.Sc. (Sem. VI)**

Name of the Subject :

☛ **Physics - Elective Course - I Measurement and Instrumentation - II**

Subject Code No.: **2103000206030068**

Seat No.:

Student's Signature

(2) Draw neat diagram wherever necessary.

(3) Symbols used in the paper have their usual meaning.

(4) Figures to the right indicate full marks of the question.

Q-I. Answer the following questions in brief: [10]

(1) Write the full form of RTD.

(2) Draw the symbol of photovoltaicell and semiconducter photodiode.

(3) Write the full form of AFM and MFM.

(4) Give the voltage equation of Hall-effect.

(5) Write the applications of thermistors.

(6) What is the villari effect ?

(7) The switching time of LED of order of .

(8) Digital instrument have input impedance of the order of .

(9) Mention any two application of solar cell.

(10) Why are the tungsten lamp not prefered as a source in spectrophotometer

Q-2. (a) Attempt any one of the following in detail: **[7]**

(1) Explain resistance thermometer in detail.

(2) What are synchros ? Explain it in details.

(b) Attempt any one of the following **[3]**

(1) A platinum thermometer has a resistance of 200Ω at 25°C so

(a) Find its resistance at 80°C if the platinum has a temperature co-efficient of resistance 0.00392/°C.

(b) If the thermometer has a resistance of 400Ω. Calculate the temperature.

(2) Write the disadvantages of LVDT.

Q-3 (a) Attempt any one of the following in detail: **[7]**

(1) Explain piezo-electric transducer in details.

(2) Explain Hall-effect transducer.

(b) Attempt any one of the following **[3]**

(1) A piezo-electric crystal having dimension of 5 mm × 5 mm × 1.5 mm and a voltage sensitivity of 0.055V-m/N is used for force measurement. Calculate the force if the voltage developed is 100V.

(2) Mention application of Hall-effect transducer.

Q-4. (a) Attempt any one of the following in detail: **[7]**

(1) Explain Bistable multivibrator in details.

(2) What are the LCDs? Explain LCD in details.

(b) Attempt any one of the following **[3]**

(1) Explain in short the source of a radiation in spectrophotometer.

(2) Mention the advantages of LED's

Q-5 (a) Attempt any one of the following in detail: **[7]**

(1) Explain the working of LED used in segmental and dot matrix displays.

(2) Write the absorption type probe analyzer with necessary schematic diagram

(b) Attempt any one of the following **[3]**

(1) Mention the uses LVDT

(2) Mention the advantages of analog instruments.

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