

2103000206030068
EXAMINATION FEBRUARY-MARCH 2024
BACHELOR OF SCIENCE (SIXTH SEMESTER)
PHYSICS (ELECTIVE PAPER - III)
MEASUREMENTS AND INSTRUMENTATION-II-LEVEL 3

[Time: As Per Schedule]

[Max. Marks: 50]

Instructions:

1. Fill up strictly the following details on your answer book

- a. Name of the Examination : **BACHELOR OF SCIENCE (SIXTH SEMESTER)**
- b. Name of the Subject : **PHYSICS (ELECTIVE PAPER - III)**
MEASUREMENTS AND INSTRUMENTATION-II
- c. Subject Code No : **2103000206030068**

2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.
5. Symbols used in the paper have their usual meaning.

Seat No:

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Student's Signature

Q.1 Answer the following questions in short:

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- i. What is G in variable inductance transducer?
- ii. Write the full form of LVDT.
- iii. State the advantages of LVDT.
- iv. Mention the applications of Hall-effect.
- v. Which are the material used to prepare piezo-electric crystal?
- vi. What are electronics counters and scalers?
- vii. What are LCDs? Which are their different types?
- viii. Why are filters used in a spectro photometer?
- ix. What are chemical sensors?
- x. What is nanoscience?

Q.2 (A) Attempt any one of the following.

7

- (i) Explain a resistance thermometer in details
- (ii) Explain resolvers in details.

(B) Attempt any one of the following. **3**

- (i) Mention the uses of LVDT
- (ii) Discuss RTD and thermistor characteristics.

Q.3 (A) Attempt any one of the following. **7**

- (i) Explain capacitive transducer and discuss it.
- (ii) What is magneto-resistor? Explain magneto-elastic and magnetostrictive transducer.

(B) Attempt any one of the following. **3**

- (i) Mention the uses of Hall-effect transducers.
- (ii) A piezo-electric crystal having dimension $5\text{mm} \times 5\text{mm} \times 1.5\text{mm}$ and a voltage sensitivity of 0.055V-m/N is used for force measurement, Calculate the force If the voltage developed is 100 V .

Q.4 (A) Attempt any one of the following. **7**

- (i) Explain probe analyzer in details.
- (ii) Explain a bistable multivibrator in detail, drawing necessary diagram.

(B) Attempt any one of the following. **3**

- (i) Write the advantages and disadvantages of LCDs
- (ii) Compare the merits of a digital instrument with an analog instrument.

Q.5 (A) Attempt any one of the following. **7**

- (i) Discuss a spectrophotometer in details.
- (ii) Discuss the absorption type probe analyzer with necessary schematic diagram.

(B) Attempt any one of the following. **3**

- (i) State and explain the Beer's law of absorbance.
- (ii) State four important points about a nanoscience.
