

2103000205030065
EXAMINATION OCTOBER 2024
BACHELOR OF SCIENCE (FIFTH SEMESTER)
MEASUREMENTS AND INSTRUMENTATION-I - 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 (FIFTH SEMESTER)**
 - b. Name of the Subject: **MEASUREMENTS AND INSTRUMENTATION-I – LEVEL 3**
 - c. Subject Code No: **2103000205030065**
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. Scientific calculator may be used

Seat No:

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Student's Signature

Q.1 Answer the following questions in brief:

10

- (1) Define point source.
- (2) Write full form of LASER.
- (3) What is dynode?
- (4) In CRT mention the electron gun assembly component.
- (5) Write the function of transducer.
- (6) Numbers of thermocouples are connected in series is called _____
- (7) Mention the advantages of VTVM.
- (8) Form factor K_f is ratio of which two quantities.
- (9) Which type of material used in wire wound potentiometer?
- (10) $S = dq/dq$ is called _____

Q.2 (a) Attempt any one of the following in detail:

7

- (1) What is photometry explain any three terms related to photometry.
- (2) Define radiometry discuss with its related terms.

- (b) Attempt any one of the following** **3**
- (1) Determine the threshold wave length in case of cesium surface for its wave function is 1.8 eV $h = 6.63 \times 10^{-34} \text{ js}$, $C = .299 \times 10^9 \text{ m/s}$ $e = 1.6 \times 10^{19} \text{ c}$.
 - (2) Explain photomultiplier tube in detail
- Q.3 (a) Attempt any one of the following in detail:** **7**
- (1) Explain the differential amplifier using FET in details
 - (2) Explain chopper amplifier type voltmeter using photodiode.
- (b) Attempt any one of the following** **3**
- (1) In case of sawtooth voltage analysis if E_{rms} is $60 \sqrt{3} \text{ V}$ & E_{av} is 90 V find Theform factor.
 - (2) Write the advantages and disadvantages of VTVM.
- Q.4 (a) Attempt any one of the following in detail:** **7**
- (1) Write the full form of CRO and derive formula of $D = L \cdot l \cdot E_d / 2d \cdot E_a$
 - (2) Draw the diagram of CRT and Explain about electron gun assembly.
- (b) Attempt any one of the following** **3**
- (1) Mention the applications of CRO.
 - (2) A electrically deflected CRT has a final anode voltage of 2000 V and Parallel deflecting plate is 1.5 cm long and 5 mm apart, if the screen is 50 cm from the center of deflecting plates find
 - (i) The deflection sensitivity of the tube.
 - (ii) The deflection factor of tube
- Q.5 (a) Attempt any one of the following in detail:** **7**
- (1) Explain about wire wound potentiometer and non-wire wound potentiometer.
 - (2) Explain the terms related to transducer
 - (I) Input characteristics
 - (II) Transfer characteristics
 - (III) Output characteristics
- (b) Attempt any one of the following** **3**
- (1) Explain Resistive transducer.
 - (2) Write advantages of electronics transducers.
