



Name :

Roll No. :

Invigilator's Signature :

**CS / M.Tech(EIE) / SEM-1 / EIEM-104(D-3) / 2009-10
2009**

MEDICAL INSTRUMENTATION

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer any *five* questions.

5 \times 14 = 70

1. Draw the diagram of heart. Mark the SA Node, AV Node and Bundle of His. Also write down the functions of SA Node, AV Node and Bundle of His. 5 + 3 + 6
2. What is Ultrasonic Imaging ? Describe A-scan and B-scan. 4 + 5 + 5
3. What is gauge factor of strain gauge ? Draw the temperature compensation circuit of strain gauge circuit using quarter bridge, half bridge and full bridge configurations. 2 + 12
4. What is MEMS ? What are its advantages ? Why is silicon preferred for the construction of MEMS ? Describe bulk micro-machining process. What are the applications of MEMS in biomedical field ? 4 + 3 + 3 + 4

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5. Describe echo-encephalograph and echo-ophthalmoscope with proper diagram. 7 + 7

6. Describe echo-cardiograph with proper diagram. Compare it with ECG. 10 + 4

7. Write short notes on any *two* of the following : 2 × 7

a) Ultrasonic Blood Flowmeter

b) Magnetic Blood Flowmeter

c) LVDT

d) Thermal Imaging.

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