

S.E. (BioMed) / Sem IV / Choice Based

(3 Hrs.)

[Total Marks:80]

- N.B (1) Question No. 1 is Compulsory.  
 (2) Attempt any four questions out of remaining six.  
 (3) Figures on the right indicate full marks.  
 (4) Assume data wherever necessary.  
 (5) Draw diagrams / sketches wherever necessary.  
 (6) Use legible handwriting. Use blue / black ink only.

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|---|---|----|
| 1 | (a) Differentiate between primary and secondary transducer  | 05 |
|   | (b) Explain with a neat diagram elastic pressure sensor   | 05 |
|   | (c) Define half-cell potential and Over potential. Classify over potential  | 05 |
|   | (d) Explain the working of a capacitive sensor.   | 05 |
| 2 | (a) Explain in detail true RMS voltmeter  | 08 |
|   | (b) Explain with a neat block diagram working of a CRO  | 12 |
| 3 | (a) Explain the construction and working of L.V.D.T. Explain the need of phase sensitive demodulator with the help of necessary diagrams. | 12 |
|   | (b) Define Gauge factor. Derive the expression of a gauge factor.   | 08 |
| 4 | (a) Define biosensor. Explain any one type with a neat diagram  | 08 |
|   | (b) Draw and explain equivalent circuit model for electrode-electrolyte interface   | 08 |
|   | (c) Explain with neat diagram laws governing working of a thermocouple  | 04 |
| 5 | (a) Giving suitable example explain zero order, first order and second order system   | 10 |
|   | (b) Giving suitable example explain any four static characteristics   | 10 |
| 6 | Write short notes on (any four)   | 20 |
|   | (a) PO <sub>2</sub> electrode   |    |
|   | (b) Photoconductive Cell  |    |
|   | (c) Internal Electrodes   |    |
|   | (d) FET voltmeter   |    |
|   | (e) IC based temperature sensor   |    |