Code: 9A10501

B.Tech III Year I Semester (R09) Supplementary Examinations June 2017
SENSORS & SIGNAL CONDITIONING
(Common to E.Con.E & EIE)

Time: 3 hours   Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

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1   (a)   Explain the sensor performance characteristics with required equations.
      (b)   For the voltage divider circuit, find the transfer function, sensitivity, accuracy and bandwidth.

2   (a)   For the buffer amplifier circuit using op-amp find the power spectral density of the output noise as a function of the resistance of signal source Rs.
      (b)   Derive the offset and drift of op-amp based chopper amplifier.

3   Explain with neat diagram, the use of LVDT for pressure and acceleration measurement.

4   A resistance strain gauge with a gauge factor is fastened to a membrane, which is subjected to a strain of 10×10^{-6}. If the original resistance value of the gauge is 130Ω. Calculate the new resistance.

5   Explain the operation and applications of instrumentation amplifier.

6   Derive the expression for frequency response characteristics of piezo electric transducer.

7   Explain the construction and working of incremental position encoders. Show the use of pulse multiplication to increase the encoder resolution.

8   Explain with relevant diagrams, the operation and applications of photo voltaic sensors.

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