

Code No: R09221003

R09

Set No. 2

II B.Tech II Semester Examinations, April/May 2012

TRANSDUCERS AND APPLICATIONS

Electronics And Instrumentation Engineering

Time: 3 hours

Max Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

1. What are the advantages of Radio Telemetry system? Describe any one Radio Telemetry system. [15]
2. Explain about Piezo electric effect and describe how force measurement can be done using this type of transducers. [15]
3. Draw the Hay's bridge circuit and derive the expressions for the unknown element. [15]
4. With the help of sketches and waveforms, explain about the different types of errors that occur in frequency and period measurements. [15]
5. Draw the circuit diagram for electronic DC voltmeter and explain its working. [15]
6. With the help of a sketch explain the principle and working of Ion selective type pH meter. [15]
7. Give the construction features of bounded construction type Piezo electric accelerometers and explain the principle of working. [15]
8. (a) Explain the principle and working of LVDT.
(b) An LVDT produces an output voltage of 2.8 V for a displacement of 0.5 mm. Calculate the sensitivity of LVDT. [10+5]

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Set No. 4

II B.Tech II Semester Examinations, April/May 2012

TRANSDUCERS AND APPLICATIONS

Electronics And Instrumentation Engineering

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

1. Explain the principle and working of High Frequency wave analyser. [15]
2. Explain the principle of Humidity measurement. Describe any transducer in detail to measure Humidity. [15]
3. What is $3\frac{1}{2}$ digit display? Explain the principle and working of counter ramp type DVM. [15]
4. (a) Explain about different principles of measurement of force and torque.
(b) Give the characteristics of force measuring transducers. [8+7]
5. What are the materials used for Piezo electric transducers? Explain about Piezo electric effect. Explain the principle of measurement of displacement by Piezo electric transducers. [15]
6. Compare wheatstone bridge and kelvin's bridge circuits in all respects. [15]
7. What are the different types of cable/Land-line telemetry? Explain about each of them. [15]
8. Explain the principle and working of Gyroscopic angular displacement transducer, with the help of a neat sketch. [15]

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Set No. 1

II B.Tech II Semester Examinations, April/May 2012

TRANSDUCERS AND APPLICATIONS

Electronics And Instrumentation Engineering

Time: 3 hours

Max Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

1. Explain the principle of Humidity measurement. Describe the working of any instrument for humidity measurement. [15]
2. Explain the principle and working of electro magnetic methods for measuring velocity and acceleration. [15]
3. What are the characteristic features and constructional details of bonded strain gauges? Explain how force measurement is done. [15]
4. Draw the circuits for:
 - (a) Average reading.
 - (b) Peak Reading.
 - (c) Peak-to-Peak reading voltmeters and explain their working. [15]
5. Why Hay bridge circuit is used for coils with $Q > 10$? Explain. Draw the circuit and derive the expressions for unknown elements at balance. Draw the phasor diagram at balance, giving explanation. [15]
6. Explain about Sensitivity, Resolution and Noise in potentiometric transducers. [15]
7. Draw the block schematic of a high frequency wave analyser and explain its operation. [15]
8. Draw the sketch and explain the principle and working of synchro position repeaters. [15]

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Set No. 3

II B.Tech II Semester Examinations, April/May 2012

TRANSDUCERS AND APPLICATIONS

Electronics And Instrumentation Engineering

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. Draw the wheatstone bridge circuit and derive the expressions for the unknown elements at balance. What are the limitations of this circuit. [15]
2. Explain about different types of transducers used for velocity measurements. [15]
3. What are the advantages and limitations of Land-Line Telemetry systems? Describe any one Land-Line Telemetry system. [15]
4. Explain the principle and working of LVDT load cells. [15]
5. A $4\frac{1}{2}$ DVM is based on the principle of successive approximations type A/D conversion. Explain about its display and principle of working. [15]
6. (a) Derive the relationship between the Poisson's ratio and gauge factor of a strain gauge wire.
(b) A thin circular wire of soft iron has a gauge factor of 4.0. Determine Poisson's ratio. [10+5]
7. (a) What is cross over frequency pertaining to frequency measurement? Explain.
(b) Draw the block schematic of a frequency counter and explain its working. [7+8]
8. (a) Explain the working of ultrasonic densitometer.
(b) Explain how scrapel removal is done in the measurement of density of slurry and sludges. [7+8]
