Code No: **R41026** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar - 2015

INSTRUMENTATION

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) Define the following static characteristics
i) Resolution ii) Precision iii) Repeatability iv)Linearity [8]
b) Describe Gross errors in measuring instruments. [7]

2 a) Explain the mathematical representation of standard test signals. [8]
b) Distinguish between periodic and aperiodic signals. [7]

3 a) What is a transducer? Explain classification of transducers. [7]
b) Describe the principle and operation of capacitive transducer for angular displacement measurement. [8]

4 a) Explain with a neat schematic the operation of digital frequency meter. [8]
b) Explain how accuracy of dual slope integration type DVM is independent of R and C values of integrator. [7]

5 a) Draw the block schematic of a transient recoder and explain its operation. [8]
b) Explain the time base generator of a CRO, with a neat diagram. [7]

6 a) Draw the block diagram of Spectrum Analyzer and Explain its operation. [8]
b) Discuss the applications of Spectrum Analyzers. [7]

7 a) Explain the operation of any one of the torque measuring transducers. [8]
b) What is an accelerometer? List different types of accelerometers. [7]

8 Write short notes on the following.
a) Electromagnetic flow meter. [8]
b) Ionization vaccum gauge. [7]

Code No: **R41026** **R10** **Set No. 2**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar - 2015

INSTRUMENTATION

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) Define the following dynamic characteristics
i) Fidelity ii) Measuring lag iii) Speed of response iv) dynamic error [8]
b) Describe Systematic errors in measuring instruments. [7]

2 a) Distinguish between periodic signals and non-periodic signals. [8]

b) Distinguish between Amplitude modulation and Frequency modulation. [7]

3 a) What are the parameters to be considered in selecting a transducer for a particular application? [8]
b) Describe the principle of working of thermocouples. [7]

4 a) Draw the block diagram of successive approximation type DVM and explain its operation. [8]
b) Briefly explain the specifications of digital voltmeters. [7]

5 a) Draw the block diagram of vertical amplifier used in CRO and explain its operation. [8]
b) Explain how lissajous figures can be used in frequency measurement. [7]

6 a) Explain with a neat schematic the principle of operation of fundamental suppression type total harmonic distortion analyzer. [8]
b) Define harmonic distortion and total harmonic distortion. [7]

7 a) With a neat schematic describe the operation of DC tachometer generator. [8]

b) Explain the advantages and disadvantages of moving magnet type linear velocity transducer. [7]

8 Write short notes on the following.

a) Bimetallic thermometer. [8]

b) Ultrasonic flow meter. [7]

Code No: **R41026** **R10** **Set No. 3**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar - 2015

INSTRUMENTATION

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) Define the following static characteristics
i) Accuracy ii) precision iii) Linearity iv) Resolution [8]
b) Describe statistical analysis of Random errors. [7]

2 a) Explain the Sampling process. [8]
b) Distinguish between phase and frequency modulation. [7]

3 a) Describe the construction and working of LVDT with a neat schematic. [8]
b) Explain the advantages of electrical transducers. [7]

4 a) With a neat block diagram explain the working of dual slope integration type digital voltmeter. [8]
b) What are the advantages of digital voltmeter over analog voltmeter? [7]

5 a) Draw the block schematic of a CRO and explain its operation. [8]
b) Explain how lissajous figures can be used in phase measurement. [7]

6 a) Explain with a neat block diagram the working of harmonic distortion analyzer. [8]
b) Explain the operation of vector impedance meter with a neat diagram. [7]

7 a) Describe the operation of moving coil type linear velocity transducer. [8]
b) Distinguish between AC tachometer generator and DC tachometer generator. [7]

8 Write short notes on the following.
a) Turbine flow meter. [7]
b) Measurement of liquid level by using inductive method. [8]

Code No: **R41026** **R10** **Set No. 4**

IV B.Tech I Semester Supplementary Examinations, Feb/Mar - 2015

INSTRUMENTATION

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) Define the following static characteristics
i) Accuracy ii) Sensitivity iii) Repeatability iv) Resolution [8]
b) Describe gross errors in measuring instruments. [7]

2 a) Describe the process of obtaining PCM signal. [8]
b) Briefly explain different pulse modulation schemes. [7]

3 a) Distinguish between active transducers and passive transducers. [7]
b) Explain the constructional features of synchro-transmitter. [8]

4 a) Explain with a neat schematic the operation of ramp type digital voltmeter. [8]
b) Describe the specifications of digital voltmeters. [7]

5 a) Draw the block schematic of a sampling oscilloscope and explain its operation. [8]
b) Explain the need for the delay line in CRO. [7]

6 a) Explain with a neat schematic the operation of frequency selective wave analyzer. [8]
b) Distinguish between spectrum analyzer and wave analyzer. [7]

7 a) Describe the operation of piezo-electric accelerometer with a neat sketch. [8]
b) Explain force measurement using load cells. [7]

8 Write short notes on the following.
a) Measurement of liquid level by using resistive method. [8]
b) Hotwire Anemometer. [7]