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QUESTION BANK (DESCRIPTIVE)

Subject with Code :AIS (16EE7505) **Course & Branch**: M.Tech - CS

Year & Sem: M.Tech I-Sem (CS) **Regulation:** R16

UNIT –I

PASSIVE ELECTRICAL TRANSDUCERS

1. (a) Explain about working of resistive magnetic flux transducer 5M
   (b) With neat circuit, explain an inductive thickness transducer 5M
2. (a) Explain the principle and working of Hot-wire resistance transducer 5M.
   (b) Draw the sketch and explain working of Capacitive displacement Transducer 5M
3. (a) Explain the working principle of Resistive Transducer 5M
   (b) Explain how a capacitive transducer can be used to monitor the thickness of an insulating sheet in motion, without making contact. 5M
4. (a) Explain the working of a inductive displacement transducer 5M
   (b) Describe the necessary equations and explain the functions of resistive magnetic flux transducer 5M
5. (a)Explain the errors in temperature measurement by resistance thermometers and how they can be minimized 5M
   (b) Explain how a hot wire resistor can be used for measurement of fluid level with neat sketches 5M
6. (a) With a neat diagram briefly explain the working of resistance thermometers 5M
   (b) Explain the working principle of Resistive strain Transducer 5M
7. (a) Draw a neat figure and give the working of a resistive optical radiation transducer 5M
   (b) Draw the sketch and explain working of Capacitive thickness Transducer 5M
8. Write a short note on 10M
   (i) Resistive Displacement Transducers
   (ii) Resistive strain Transducers
9. Explain the working and types of an inductive transducers. 10M
10. Explain the working and types of capacitive transducers. 10M

UNIT –II

ACTIVE ELECTRICAL TRANSDUCERS

1. (a) Describe the properties of material used piezo electric transducer. 5M
   (b) Draw the sketch and explain the operation of magnetostrictive acceleration transducer 5M
2. (a) Explain the operation of the photovoltaic transducer and draw its characteristics 5M
   (b) Explain the construction and working of ionization displacement transducer 5M
3. (a) Explain the principle and operation of piezo electric acceleration transducer 5M
   (b) Explain the principle of operation ionization type vacuum gauge. 5M
4. (a) What do you mean by piezo electric effect and list few piezo electric materials. 5M
   (b) Describe the working of a tachometer 5M
5. (a) Explain the mechanism of electromechanical transducer 5M
   (b) With a neat sketch explain the function of a photo emissive transducer 5M
6. (a) Describe the constructional features of magnetostrictive transducer and obtain relation between input and output 5M
   (b) Explain how acceleration can be measured by using magnetostrictive phenomenon. 5M
7. (a) Describe the phenomenon of piezoelectric torque transducer 5M
   (b) Give the features of electromagnetic flow meter 5M
8. (a) List the advantages of digital tachometer and explain its working 5M
   (b) What is Hall effect? Show how a proximity meter can made using a Hall element 5M
9. Explain about the Electromechanical Transducer. 10M
10. With neat diagram explain working of digital displacement transducer? 10M

UNIT –III

FEEDBCK TRANSDUCER SYSTEMS

1. (a) Explain the operation of Self balancing servo operated potentiometer
   (b) Explain the working principle of pneumatic load cell
2. (a) Explain the working and principle of Servo operated manometer
   (b)With the help of block diagram explain various components of non- contact position measurement.
3. Explain working of feedback pneumatic load cell?

4. With neat block diagram explain working of feedback accelerometer system?
5. (a) Give the need for feedback in a transducer and explain the features of self -balancing bridge.
   (b) Write the special features of inverse transducer
6. (a) Explain the process of feedback in temperature balance system.
   (b) Discuss the features of Non - contact position measurement.
7. Explain about accelerometer system.
8. Explain the operation of an electromagnetic flow meter. How the measurement can be made automatic?
9. Write a note on (i) Inverse transducer (ii)Temperature balance system
10. Describe the constructional features of self- operated manometer. Justify the suitability for use with any liquid in manometer.

UNIT –IV

SIGNALS AND THEIR REPRESENTAION & DATA ACQUISITION SYSTEMS

1. (a) Distinguish between the periodic signal and aperiodic signal and give example for each 5M
   (b) Describe the frequency modulation systems. What is the significance of Bassel function in FM. 5M
2. (a) Draw the circuit and explain the working of single channel data acquisition system. 5M
   (b) With the help of a block diagram, explain the operation of dual slope integration. 5M
3. Define laplace and fourier transforms and indicate the conditions under which each is applicable 10M
4. Define Laplace and Fourier transforms and indicate the conditions under which each is applicable 10M
5. Briefly explain the single channel and multi channel DAS 10M
6. Briefly explain the digital multiplexers with relevant diagrams 10M
7. Explain the technique of pulse time modulation and pulse code modulation and their Relative merits 10M
8. (a) Explain the process of pulse modulation 5M

(b) State the properties of Fourier Transform 5M

9. (a) Explain with a neat sketch successive approximation ADC 5M

(b) Explain the special feature of digital multiplexer. 5M

10.Differentiate between the following

(a) Analog and Digital multiplexers 5M

(b) Single and multi channel data acquisition systems. 5M

UNIT –V

DATA TRANSMISSION AND TELEMETRY & DATA DISPLAY AND RECORDING SYSTEMS

1. (a) Explain about time division multiplexing telemetry 5M

(b) What are the important characteristics of a telemetry system? 5M

2. Explain about frequency modulation recording and digital recording technique 10M

3. With neat diagram explain about frequency division multiplexing 10M

4. (a) What is land line telemetry 5M

(b) Write characteristics of telemetry systems 5M

5. (a) What are the advantages and applications of telemetry 5M

(b) classify telemetry system 5M

6. (a) What is data loggers 5M

(b) Draw block diagram of data logger and explain it's working 5M

7. (a) Compare FDM and TDM 5M

(b) Explain the method of direct recording 5M

8. (a) With a neat figure explain the function of time division multiplexing 5M

(b) Explain about the floppy discs. 5M

9. Write a short note on following

(a) Direct recording 5M

(b) Magnetic tape recorders 5M

10. Explain :

(a) Analog recorders 5M

(b) Frequency modulation recording. 5M