Registration No : | | | | | | | | | | |

Total Number of Pages : 02

B.Tech
REI4G001

4th Semester Regular/Back Examination: 2022-23
SUBJECT : SENSORS AND TRANSDUCERS
BRANCH(S): AEIE,EIE
Time : 3 Hour
Max Marks : 100
Q.Code : M626

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part-I

Q1 **Answer the following questions :** **(2 x 10)**

a) Write different types of the measurement system.
b) What is the working principle of temperature transducer?
c) List out the features of piezo-electric transducer.
d) How accurately can you measure pressure using a standard sensor?
e) What is the significance of thermocouple?
f) What is parallax error?
g) What is dynamic error in a measurement system? Explain it with example.
h) What is the need of instrumentation amplifier?
i) Define the utilities of an op-amp in an instrumentation system.
j) What are the deflection bridges?

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 × 8)**

a) Define step response of a first order system operating under various damping conditions.
b) Write in details the static and dynamic characteristics of a system.
c) Explain the LVDT in detail.
d) How strain gauge operates in industry?
e) Explain signal conditioning elements.
f) Briefly explain the A.C. carrier system.
g) Discuss phase sensitive demodulators.
h) Explain cold junction compensation.
i) What are elastic sensing elements?
j) Define electromagnetic sensing element with an example.
k) Explain why open-loop op-amp configurations are not used in linear applications.
l) Explain slew rate. Why is it important?

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3	**a)**	Draw block diagram for modern generalized measurement system useful for industry and explain its components.	**(8)**
	b)	Describe the dynamic characteristic of measurement system.	**(8)**
Q4	**a)**	Write different techniques of capacitive transducers.	**(8)**
	b)	Classify transducers in detail.	**(8)**
Q5	**a)**	Explain different kinds of feedback useful in a non inverting op-amp.	**(8)**
	b)	Explain resistive and reactive bridges.	**(8)**
Q6	**a)**	Differentiate between RTD and thermocouple.	**(8)**
	b)	Describe IC temperature system in detail.	**(8)**