PAPER ID-421340

Subject Code: KOE044

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM IV) THEORY EXAMINATION 2021-22
SENSOR AND INSTRUMENTATION

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2x10 = 20

Qno.	Questions	CO
(a)	Define instrumentation?	1
(b)	Define stress and strain?	1
(c)	Explain see back effect.	2
(d)	Draw characteristic of Thermocouple.	2
(e)	Define sensitivity and resolution of ADC.	3
(f)	Explain application of counters.	3
(g)	Explain one application of formula node in Lab View.	4
(h)	Discuss clusters and arrays?	4
(i)	Define the term smart sensors.	5
(j)	What do you mean by the term self-calibration?	5

SECTION B

2. Attempt any *three* of the following: 10x3 = 30

Qno	Questions	CO
(a)	Explain measurement of force using strain gauge.	1
(b)	Explain level type ultrasonic sensor.	2
(c)	Explain data types in virtual instrumentation.	3
(d)	Design 3-bit asynchronous counter.	4
(e)	Explain the characteristics of smart sensors.	5

SECTION C

3. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	With neat diagram explain potentiometric resistance transducers. List advantages and disadvantages.	1
(b)	Explain working of Optical Encoder and write one application of optical encoder.	1

4. Attempt any *one* part of the following: 10x1 = 10

Qno.	Questions	CO
(a)	What are temperature sensors. Explain temperature sensors using Thermistor.	2
(b)	Explain working of Ultrasonic flow sensor and write one application .	2

5. Attempt any *one* part of the following: 10x1 = 10

Qno.	Questions	CO
(a)	Write an example of case and sequence structure in graphical programming.	3
(b)	Define virtual instrumentation. Draw the architecture of virtual instrumentation system.	3

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6. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Explain 555 timer with neat circuit diagram. Write one application of timer circuits.	4
(b)	Explain working of binary weighted resistor type digital to analog converter.	4

7. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Draw the architecture of intelligent sensors.	5
(b)	Discuss the application of smart sensors as a automatic robot control.	5