Printed Pages:02 **Sub Code:KCE056**

Paper Id: 231653 **Roll No.** | | | | | | | | | | |

B.TECH.
(SEM V)THEORY EXAMINATION 2022-23
SENSOR AND INSTRUMENTATION TECHNOLOGIES FOR CIVIL ENGINEERING APPLICATIOM

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

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

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

(a) What is measurement and instrumentation?
(b) Write the three types of measuring instruments?
(c) Why sensors are required?
(d) How do you mount ultrasonic sensor?
(e) Why is data reduction needed?
(f) What is the example of data reduction algorithm?
(g) What is the use of frequency domain?
(h) What is frequency domain sampling?
(i) What is the purpose of signal processing?
(j) Write the limitations of digital processing.

SECTION B

2. Attempt any *three* of the following: **10 x 1= 10**

(a) What are the applications of sensor in civil Engineering ? Describe
(b) Describe the present scope of instrumentation in Civil Engineering application.
(c) What do you understand by the use of sensor in remote sensing and how it is work in field of civil engineering?
(d) Explain the need for frequency domain analysis.
(e) Write the basic concept in frequency domain signal processing.

SECTION C

3. Attempt any *one* part of the following: **10 x 1= 10**

(a) What are the most common sensors? How many types of sensors are there in the world? Describe any one.
(b) Describe smoke sensor? What are the uses of smoke sensor in field of civil engineering?

4. Attempt any *one* part of the following: **10 x 1= 10**

(a) What is the smallest change which a sensor can detect termed? What is the output of smart sensor?
(b) What is the purpose of instrumentation system? What is the importance of instrumentation in civil engineering?

5. Attempt any *one* part of the following: **10 x 1= 10**

(a) Predict the response of sensors to various input . Explain
(b) Differentiate between types of sensors and their modes of operation and measurement.

6. Attempt any *one* part of the following: 10 x 1= 10

(a) Give the examples of statistical information to calculate the Average value (mean).

(b) How much each measurement deviates from the mean (standard deviation).

7. Attempt any *one* part of the following: 10 x 1= 10

(a) What are frequency domains in Fourier transformation? What does the FFT analysis of a signal?

(b) How do you find the frequency resolution? How can frequency resolution be improved?