



R20 Regulation

Subject code: 3P5CE

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech V Semester Regular Examinations, January 2023

INSTRUMENTATION AND CONTROL SYSTEMS

† (Mechanical Engineering)

Maximum Marks: 70

Date: 20.01.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 What do you understand by the term "measurement"?
- 2 Distinguish between Accuracy and Precision
- 3 What is transducer?
- 4 What are manometers? How are these classified?
- 5 What is a turbine flow meter?
- 6 What is the Capacitative method.
- 7 Define the terms "strain" and "strain gauge".
- 8 Define Dew point meter.
- 9 What is control system?
- 10 List the applications of measurement systems.

Part-B

Answer All the following questions.

(10MX 5=50Marks)

- 11 (a) Explain Calibration and sensitivity.
(b) Explain with a block diagram about the generalized measurement system with an example.
[5+5]

OR

- 12 (a) State and explain various types of errors in measurement.
(b) What do you mean by characteristics of measuring instrument? [5+5]
- 13 (a) Explain the construction and working principle of LVDT with a neat diagram
(b) What is Piezoelectric transducer? List the advantages and disadvantages of piezoelectric transducers. [5+5]

OR

- 14 (a) Describe the construction and working principle of Bourdon tube pressure gauge with a neat sketch.
(b) State the advantages, disadvantages and applications of bimetallic thermometers. [5+5]

- 15 (a) With a sketch explain the working principle of ultrasonic flow meter.
(b) How the levels of measurements are classified and explain any one. [5+5]

OR

- 16 (a) Explain the working of a mechanical tachometer with a neat sketch.
(b) Explain the principle and working of a vibrometer. [5+5]
- 17 (a) What are requirements of a strain gauge? How are electrical strain gauges classified?
(b) Give the classification of resistance strain gauges. State the factors on which gauge factor depends. [5+5]

OR

- 18 (a) What parameters can be measured with a sling psychrometer. Also explain its working procedure.
(b) Discuss in detail the working of various types of dynamometers used for force measurement. [5+5]
- 19 (a) What is closed loop control system? Explain the various elements of it with a block diagram.
(b) What is servomechanism? Describe the features of a servomechanism? [5+5]

OR

- 20 (a) What are the elements of an open-loop control system? Explain briefly one example of open-loop control system.
(b) State the advantages and disadvantages of open-loop control system and closed-loop control system. [5+5]