

Enrolment Number: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B. TECHMID-SEM EXAMINATIONS SUMMER-2022-23
sth SEMESTER

SUBJECT NAME (CODE): I&C (203109303)

BRANCH: MECHANICAL

DATE: 09/08/2022

TIME: 10:30 A.M. TO 12:00 P.M. TOTAL MARKS: 40

Sr.No. Marks
Q.1 (A) Compulsory Questions (MCQs) 05

1. In a measurement, what is the term used to specify the closeness of two or more measurements?

- a) Precision b) Accuracy c) Fidelity d) Threshold

2. Dipsticks are used for the _____.

- a) Pressure measurement b) Flow measurement
c) Displacement measurement d) Level measurement

3. Which of the following error is caused by poor calibration of the instrument?

- a) Random error b) Gross error c) Systematic error d) Precision error

4. Given input output characteristic of a typical system, name the region marked as 'a'.

Output

- a) Dead zone b) Range c) Drift region d) Threshold

5. Capacitance of a parallel plate capacitor is _____

- a) $C = A \epsilon d$ b) $C = \epsilon d$ c) $C = A \epsilon d$ d) $C = A$

(B) Fill in the Blanks.

05

1. Hot wire anemometer can be used to measure _____

2. In _____ system, float whose weight greater than liquid to be displaced is used.

3. Closeness of measured value to true value is _____

4. A transducer converting ground movement or velocity to voltage is known as _____

5. Transfer function of the system is defined as the ratio of Laplace output to Laplace input considering initial conditions

- Q.2 Attempt any four (Short Questions) 12
- (1) Explain various types of control systems.
 - (2) What are the basic blocks of a Generalized Instrumentation system?
 - (3) Explain open loop and closed loop system in details with at least one example.
 - (4) Classify the various types of instruments.
 - (5) A Pressure Gauge with a measurement range of 0-10 bar has a quoted inaccuracy of $\pm 1\%$ Of Full-Scale Reading. Find the "maximum % error and error if pressure gauge is measuring 1 bar.
- Q.3 Attempt any two 08
- (1) Identify the input and output of an automatic refrigerator. Is it an open loop or closed loop control system?
 - (2) Explain Air Purge method for level measurement.
 - (3) Write down various block diagram reduction rules.
- Q.4 (A) Write down the differential equations of motions for a given system. 05

(B) Find the closed loop transfer function for the system as shown in figure. 05

OR

(B) Explain in details Turbine flowmeter with neat sketch. 05