

Roll No



**PRESIDENCY UNIVERSITY
BENGALURU**

SET A

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - MAY 2024**

Semester : Semester VIII - 2020

Course Code : MEC3067

Course Name : Engineering Instruments and Measurements

Program : B.Tech.

Date : June 03, 2024

Time : 01.00pm -4.00pm

Max Marks : 100

Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ANY FIVE QUESTIONS

5QX2M=10M

1. How are Random errors assessed?
(CO1) [Knowledge]
2. When a steel rule is used, what is the source of measurement uncertainty?
(CO1) [Knowledge]
3. What is parallax error?
(CO1) [Knowledge]
4. When a set of readings of a measurement has a wide range, it indicates.....
(CO1) [Knowledge]
5. Name the comparators that can give amplification of up to 50,000?
(CO2) [Knowledge]
6. What is the minimum number of angle gauges required to set any angle between 0° and 180° in increments of 5'?
(CO2) [Knowledge]
7. Explain the purpose of providing relief holes in sine bars.
(CO2) [Knowledge]

PART B

ANSWER ANY FIVE QUESTIONS

5QX10M=50M

8. The smallest division on the main scale of a Vernier calipers is 0.1 cm. Ten divisions of the Vernier scale correspond to nine divisions of the main scale. The figure below on the left shows the reading of this calipers with no gap between its two jaws. The figure on the right shows the reading with a solid sphere held between the jaws. Find the correct diameter of the sphere.

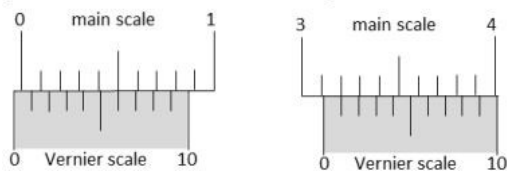


fig.

- (CO1) [Comprehension]
9. Discuss a servo-controlled dynamometer with a neat schematic diagram. (CO2) [Comprehension]
10. Explain the working of a McLeod gauge with a neat sketch. (CO1) [Comprehension]
11. Explain how the strain gauge is influenced by temperature variations (CO2) [Comprehension]
12. Explain industrial U tube manometer with neat diagram. Show that the rise of liquid in the wide limb is proportional to the differential pressure. (CO1) [Comprehension]
13. Explain the working of a torsion-bar dynamometer with suitable diagram (CO4) [Comprehension]
14. Explain the construction and working of an optical pyrometer with the help of a schematic diagram. (CO3) [Comprehension]

PART C

ANSWER ANY TWO QUESTIONS

2QX20M=40

15. [A] Explain how optical squares are made use of in testing the squareness of machine parts with the help of a simple sketch.[10M]
[B] Explain the measurement methodology involved in the use of optical flats.[10M] (CO3) [Application]
16. Explain the construction and working of an analytical balance with help of neat and clean diagram (CO4) [Application]
17. Explain the determination of force using a load cell with neat and clean diagram. Also explain the equations involved. (CO4) [Application]