

Roll No



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JUN 2023**

Semester : Semester IV - 2021

Course Code : MEC2015

Course Name : Sem IV - MEC2015 - Metrology and Mechanical Measurements

Program : MAM,MCM&MEC

Date : 12-JUN-2023

Time : 9.30AM - 12.30PM

Max Marks : 100

Weightage : 50%

Instructions:

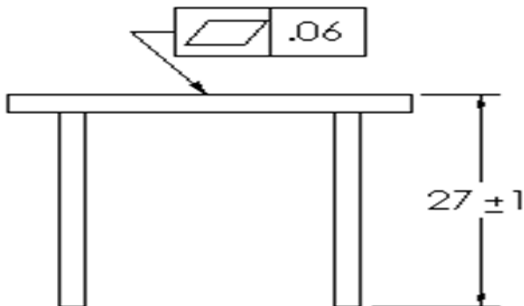
- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

(5 X 2 = 10M)

1. What do you mean by universal interchangeability?
(CO2) [Knowledge]
2. What is SELECTIVE ASSEMBLY?
(CO2) [Knowledge]
3. Build up a length of 35.4875 mm using M112 set. Use two protector slips of 2.5 mm each.
(CO1) [Knowledge]
4. Draw the possible outcomes of the following figure.



(CO3) [Knowledge]

5. Write the dimensions of the following.
 LMC for a shaft. LMC of $\text{Ø}0.240 \pm 0.005$?
 LMC for a hole. LMC of $\text{Ø}0.250 \pm 0.005$?

(CO3) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

(6 X 10 = 60M)

6. Determine type of Fit of Basic size 105 shaft basis system, shaft is being prepared by grinding only & hole fit is N7.
 (CO2) [Comprehension]
7. Explain the advantages and disadvantages of Plain Gauges.
 (CO2,CO3) [Comprehension]
8. Determine type of Fit of Basic size 75 hole basis system, hole being prepared by broaching and honing & shaft fit is s6.
 (CO2) [Comprehension]
9. List and explain the types of errors in Threads.
 (CO3) [Comprehension]
10. In a limit system, the following limits are specified to give a clearance fit between a shaft and a hole. Determine:(a)basic size (b) shaft and hole tolerance (c) Shaft and hole limit (d) the maximum and minimum clearance.

$$\begin{array}{l} \text{shaft } 30 \begin{array}{l} -0.005 \\ -0.018 \end{array} \text{ mm}\phi \\ \text{hole } 30 \begin{array}{l} +0.020 \\ -0.000 \end{array} \text{ mm}\phi \end{array}$$

- (CO2) [Comprehension]
11. Explain the functional requirement of comparators and classify the same.
 (CO1) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

(2 X 15 = 30M)

12. Radial distance between tip circle and pitch circle is called as the Addendum. An engineer wants to articulate the equation to measure the addendum, help her achieve the same.
 (CO2,CO3) [Application]
13. Choose the type of Fit of Basic size 95 hole basis system, hole being prepared by broaching and honing & shaft fit is s-type and prepared using cylindrical grinding machine. Also draw the tolerance diagram.
 (CO2) [Application]