

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year II Semester Supplementary Examinations May/June-2024

METROLOGY & MEASUREMENTS

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

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|---|----------------------------------------------------------------------------|-----|----|----|
| 1 | a Distinguish unilateral and bilateral tolerance system. | CO1 | L2 | 6M |
| | b Distinguish between 'Hole basis system' and 'Shaft basis system' of fits | CO1 | L2 | 6M |

OR

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|---|---------------------------------------------------------------------|-----|----|----|
| 2 | a Explain selective assembly. | CO1 | L2 | 6M |
| | b List out types of assembly systems? Elaborate interchangeability. | CO1 | L2 | 6M |

UNIT-II

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|---|----------------------------------------------------------------------------------------|-----|----|----|
| 3 | a State the principle of a micrometer. Explain with neat Sketch an outside micrometer. | CO2 | L2 | 6M |
| | b Estimate possible sources of errors in micrometers. | CO2 | L3 | 6M |

OR

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|---|----------------------------------------------------------------------------------------------------------|-----|----|----|
| 4 | a Explain why it is not preferred to use sine bar for measuring angles more than 45°. | CO2 | L2 | 6M |
| | b A 100mm sine bar is to be set up to angle of 33°, determine the slip gauges needed from 87 pieces set. | CO2 | L3 | 6M |

UNIT-III

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| 5 | Briefly describe the construction, principle and operation of Talysurf with a neat sketch. | CO3 | L2 | 12M |
|---|--------------------------------------------------------------------------------------------|-----|----|-----|

OR

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|---|-------------------------------------------------------------------------------------|-----|----|----|
| 6 | a Describe measurement of effective diameter with two wire method with neat sketch. | CO4 | L2 | 6M |
| | b What are the errors and its causes in screw threads? | CO4 | L2 | 6M |

UNIT-IV

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| 7 | With neat sketch discuss the working principle of potentiometer transducer and its advantages, limitation. | CO5 | L2 | 12M |
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OR

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| 8 | Write short notes on: (i) Photoelectric tachometer (ii) toothed rotor variable reluctance tachometer (iii) stroboscopic tachometer. | CO5 | L2 | 12M |
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UNIT-V

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|---|----------------------------------------------------------------------|-----|----|----|
| 9 | a Explain the principle and working of dynamometer with neat sketch. | CO6 | L2 | 6M |
| | b Write short notes on electric resistance sensor. | CO6 | L2 | 6M |

OR

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|----|--------------------------------------------------------------------------------------------------|-----|----|-----|
| 10 | List out very high pressure measuring instruments and draw with neat sketch C type Bourdon tube. | CO6 | L2 | 12M |
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