



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Third Semester, B.E. - Industrial and Production Engineering

Semester End Examination; Dec. - 2014

Engineering Metrology

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each Unit.

ii) Assume suitable missing data if any.

UNIT - I

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| 1 .a. Differentiate between accuracy and precision (any five). | 5 |
| b. List five characteristics of the end standard. | 5 |
| c. Sketch and explain standard yard and also discuss the airy points. | 10 |
| 2 a. What is fits? Sketch and explain the types of fits. | 10 |
| b. Sketch and explain the hole basis and shaft basis system. | 10 |

UNIT - II

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| 3 a. Explain Taylor's principle in design of limit gauges with suitable example. | 10 |
| b. Write a note on wear allowance. | 4 |
| c. Explain straightness and flatness | 6 |
| 4 a. List different types of gauges. Also sketch and explain any two types of gauges. | 10 |
| b. Sketch and explain the working principle of sinebars. | 10 |

UNIT - III

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| 5 a. List different types of comparators. Also explain the need of comparator. | 10 |
| b. With a neat sketch explain the working principle of mechanical comparator. | 10 |
| 6 a. List any five advantages and disadvantages of optical comparator. | 8 |
| b. Sketch and explain the working principle of laser interferometer. | 12 |

UNIT - IV

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| 7 a. Explain the following : i) R_a , ii) R_z iii) R_{max} iv) R_t v) R_{Pk} | 10 |
| b. With a neat sketch explain the working of Tomlinson's surface meter. | 10 |
| 8 a. Explain the following : i) Addendum ii) Dedendum iii) Major diameter | 10 |
| iv) Minor diameter v) Effective diameter | 10 |
| b. With a neat sketch, explain two wire methods. | 10 |

UNIT - V

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| 9 a. List various alignment test carried on lathe. Briefly explain any two. | 10 |
| b. List various alignment test carried on drilling. Briefly explain any two. | 10 |
| 10a. Compare destructive testing method with non-destructive testing method (Any five). | 10 |
| b. With a neat sketch explain magnetic particle inspection. | 10 |