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B.E / B.Tech (FT) END SEMESTER EXAMINATIONS – MAY 2019

MANUFACTURING ENGINEERING
Fifth Semester

MF8502 Metrology and Computer Aided Inspection
(Regulation 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Distinguish between 'Precision' and 'Accuracy'.
2. List some don't inside a metrology laboratory.
3. What are the essential characteristics of a good comparator?
4. Mention few uses of a bevel protractor.
5. What are the applications of a floating carriage micrometer?
6. Comment on the errors associated with round components.
7. Write short notes on precision instruments based on laser.
8. What are the functions of a beam splitter in an interferometer?
9. What are the advantages of computer aided inspection?
10. Compare Human vision system with machine vision system.



Part – B (5 x 16 = 80 marks)
(Question No.11 is Compulsory)

11. Briefly explain various types of errors that may arise in engineering measurement giving examples wherever needed.
12. a) Explain the construction and working of a Sigma comparator with a neat sketch.
(OR)
b)i Describe the principle, construction and functioning of an injected graticule autocollimator with a suitable diagram. (12)
ii Brief on the applications of sine bars. (4)
13. a) Explain the methods of finding the effective diameter of a screw thread with diagrams.
(OR)
b)i Explain the importance of maintaining roughness of machined components for engineering applications. (4)
ii Describe the applications of computerized form measuring equipments. (12)
14. a)i Enumerate the application of interference microscope. (4)
ii Brief on the construction and working of Twyman-Green interferometer. (12)
(OR)
b) Discuss of the testing of machine tools using Laser Interferometer.
15. a) Describe the applications of various configurations of CMM with suitable sketches.
(OR)
b) Elaborate on various applications of machine vision systems with matching industrial cases.