Reg. No. : | | | | | | | | | | |

Question Paper Code: 49212

M.E. DEGREE EXAMINATION, DECEMBER 2014.

Elective

CAD / CAM

14PCD510 – METROLOGY AND NON DESTURCTIVE TESTING

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (5 x 1 = 5 Marks)

1. A vast majority of functional gages are made to check _____ tolerances
   (a) position (b) runout (c) circularity (d) flatness

2. The following comes under the category of attribute control chart.
   (a) P chart (b) C chart (c) U chart (d) All of the above

3. Penetrant developers are used in which of the following forms?
   (a) Water washable (b) Water suspendable
   (c) Solvent suspendable (d) All of the above

4. Most of the energy applied to an X ray tube is converted into:
   (a) X rays (b) Light (c) Heat (d) Ultraviolet radiation

5. As ultrasonic frequency increases:
   (a) Wavelength increases (b) Wavelength decreases
   (c) Sound velocity increases (d) Sound velocity decreases

PART - B (5 x 3 = 15 Marks)

6. Write short notes on image shearing.

7. What are the different methods of sampling techniques?

8. Define saturation point in magnetic particle inspection.

9. Write short notes on exposure charts?

10. What is the principle of pulse echo method?

PART - C (5 x 16 = 80 Marks)

11. (a) Write short notes on:

(i) Machine vision (8)

(ii) Microprocessors in metrology. (8)

Or

(b) Explain in detail about the possible causes of errors in CMM and with suitable sketch explain accuracy specifications for CMM. (16)

12. (a) What do you understand by frequency distribution? What are the common probability distributions? What are their forms, applications in SQC? (16)

Or

(b) Explain in detail the measures of central tendency and dispersion in detail. (16)

13. (a) Explain the various methods of production of magnetic field and list out the application of magnetic particle test. (16)

Or

(b) Explain the details about the different penetrant testing methods? (16)

14. (a) Explain the important operational parameters of X-ray equipment and show the properties of d and x rays. (16)

Or

(b) (i) Explain the advantages, applications and limitations of radiographic technique. (16)

15. (a) Explain the basic principle of ultrasonic technique and also explain various types of transducers used in ultrasonic inspection. (16)

Or

(b) Explain the basic principle involved in acoustic emission testing technique. (16)