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

# Question Paper Code: 55P10

M.E.DEGREE EXAMINATION, JAN 2021

Elective

CAD / CAM

15PCD510 – METROLOGY AND NON DESTRUCTIVE TESTING SYSTEMS

(Regulation 2015)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. The principle of 'Interchangeability' is normally employed for CO1- R

   (a) Mass production (b) Production of identical parts

   (c) Parts within the prescribed limits of sizes (d) All of the above

2. _____ is equal to the differences of the two limits of size of the part CO1- R

   (a) Tolerance (b) Low limit (c) High limit (d) Design size

3. Process control is carried out CO2- R

   (a) before production (b) during production

   (c) after production control (d) All of the above

4. A six sigma process has defect level below _____ defects per million opportunities. CO2- R

   (a) 3.4 (b) 4.5 (c) 5.6 (d) 6.7

5. Which order is right for LPI? CO3- R

   (a) Penetrant apply, development, inspection, surface preparation

   (b) Surface preparation, penetrant apply, development, inspection

   (c) Penetrant apply, development, surface preparation, inspection

   (d) Development, surface preparation, penetrant apply, inspection

6. Which material can't be tested by MPI? CO3- R

   (a) Co (b) Fe (c) Ni (d) Mg

7. Radiography don't give _____ CO4- R

(a) Thickness of material (b) Hardness

(c) Blow holes in casting (d) Pores in weldment

8. What is the wavelength of X-rays? CO4- R

(a) 10 picometers (b) 0.01 to 10 nanometers

(c) 10 to 400 nanometers (d) 400 to 700 nanometers

9. How many transducers are used to record the acoustic waves CO5- R

(a) One and more transducers (b) Always one transducer

(c) Four transducers (d) 80°

10. In what acoustic frequency range works AE testing usually? CO5- R

(a) 10 Hz - 100 KHz (b) 20 KHz to 1 MHz

(c) 20 KHz to 100 KHz (d) First decreases and then increases

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

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| 11. | Examine the working principle and functions of machine vision technology. | CO1- U | (8) |
| 12. | Describe the characteristics, functions, merits, demerits and applications of sequential sampling plan by attributes. | CO2- U | (8) |
| 13. | Explain the principle of magnetic flaw detection. | CO3- U | (8) |
| 14. | Analyze the x-ray production methods in the order of succession. Also tabulate the differences in terms of up gradation. | CO4- U | (8) |
| 15. | Illustrate the functions and applications of AMT with reference to astronomical surveying. | CO5- U | (8) |