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Code No. : 8136

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**

**M.E. (Mech. Engg. : CBCS) I-Semester Main Examinations, Jan./Feb.-2017**

(Advanced Design & Manufacturing)

**Advanced Non-Destructive Evaluation Techniques**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Name at-least six defects that are encountered during casting processes.
2. List any four discontinuities that are encountered during welding processes.
3. State any four disadvantages of using Liquid Penetrant Test method.
4. Name the three factors that influence the selection of test coil used in Eddy Current Test setup.
5. State the reasons for carrying out demagnetization in magnetic particle testing.
6. State the importance of attenuation in Ultrasonic Testing.
7. Explain the principle of photo elasticity in the Nondestructive evaluation of medical implants.
8. State any four advantages of Laser speckle techniques.
9. Explain the principle of microwave.
10. List out the applications of acoustic emission testing method.

**Part-B (5 × 10 = 50 Marks)**

11. a) Explain the factors that influence the reliability of the Non Destructive Evaluation. [5]  
b) Explain the functioning of Borescope and Endoscope with the aid of neat sketches. [5]
12. a) Explain the working principle of Eddy Current Test with neat sketches. Also highlight the factors affecting the eddy currents during its operation. [4]  
b) Explain leak testing method of NDT. [6]
13. a) Explain the different methods of demagnetising the component after MPT. [4]  
b) Explain the method of testing different types of defects using normal beam inspection. [6]
14. a) Explain how the following casting radiographs are interpreted [5]  
(i) Gas porosity, (ii) Shrinkage, (iii) Misruns, (iv) Cold Shuts, (v) Cracks.  
b) With neat sketches, explain how Computer Tomography is used as a powerful tool in NDT techniques. Explain its relevance in medical field applications. [5]
15. a) Narrate the usage and transducers used in fibre optics of NDT. [4]  
b) Explain the working principle of Acoustic Emission Testing method with a neat sketch. [6]
16. a) List any three advantages and limitations of Non Destructive testing over traditional testing methods. [4]  
b) Explain with a neat sketch the effect of crack on the impedance diagram while testing with Eddy Current testing method. [6]
17. Write short notes on any *two* of the following:  
a) Wet inspection technique in Magnetic particle testing. [5]  
b) Principle of Tomography testing. [5]  
c) Moire Fringe method with the aid of neat sketches. [5]

