



M.Tech I Semester Supplementary Examinations August/September 2018

NON DESTRUCTIVE EVALUATION

(Machine Design)

(For students admitted in 2013, 2014, 2015 & 2016 only)

Time: 3 hours

Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks

- 1 With neat sketches, explain the principle, operational steps advantages and limitations of fluorescent dye penetrant inspection.
- 2 Discuss the importance of the physical characteristics of source, object and film and geometrical relationships between them. Explain the problems encountered in image or shadow formation.
- 3 Explain about, how will:
 - (a) Image enlargement.
 - (b) Image unsharpness are controlled in X-ray radiography.
- 4 Draw a sketch of typical IIW standard reference block and explain the usage of this block for checking the following:
 - (i) The index point and beam angle of an angle beam probe.
 - (ii) The sensitivity of normal beam probes.
- 5 Explain the various methods used in Ultrasonic inspection with its special applications.
- 6 Explain the working principles of optical holography and discuss its advantages and disadvantages.
- 7 Suggest an appropriate NDT technique for each of the following inspection requirements:
 - (i) Inspection of pitting corrosion marks inside long seamless pipes.
 - (ii) Identifying the thickness variation of tubular products in mass production. Justify your suggestion with the procedural aspects specific to each case.
- 8 Explain the testing procedures for inspection of the following:
 - (i) A butt welding of 100 mm thick made over single V groove, using ultrasonic test.
 - (ii) A circumferential butt weld in a pressure vessel of 1500 mm diameter using gamma ray radiography.
