

**B.E / B.TECH (FULL TIME) DEGREE END SEMESTER EXAMINATIONS, APR-MAY 2012
MECHANICAL ENGINEERING BRANCH
VI SEMESTER (REGULATION 2004)**

ME 381 - DESIGNS OF JIGS, FIXTURES AND PRESS TOOLS

Time: 3 Hours

Max. Marks: 100

- Note: i) Use of Approved Design Data Books permitted
ii) Drawing sheets will be provided
iii) Drawings need not be drawn to scale but should follow standards.

PART-A

(10 x 2 = 20 Marks)

1. Describe with a neat sketch the 3-2-1 location principles with respect to Jigs and Fixtures.
2. Explain why and how a C-washer is used in conjunction with clamping devices.
3. What are the factors to be considered in the design of a Milling Fixture?
4. Sketch and explain the working of a spring actuated Indexing pin arrangement used in Jigs and Fixtures.
5. Explain the use of dowel pins as fool proofing devices in the design of Jigs, Fixtures and Press Tools with suitable examples.
6. Distinguish between Trimming and shaving.
7. Explain what is meant by shut height of a die-set. What is its relation to the shut height of a press?
8. What are the means adopted to reduce the tonnage requirement in press working.
9. What are the advantages and disadvantages of compound dies?
10. What is the function of a draw bead?

PART-B

(5 x 16 = 80 Marks)

11. i) Explain the function of a diamond pin locator. How is it used in the design of jigs and fixtures?
ii) Explain with the help of neat sketches the working of Quick acting clamps, toggle clamps and a screw clamp.
12. a) Design a drilling jig for use when drilling the 6 $\phi 10$ holes in the component shown in Fig. 1.
 - i) Give a neat operation chart.
 - ii) Draw two views of the Jig.
 - iii) Specify appropriate fits and tolerances for critical parts.
 - iv) Dimension the views.
 - v) Give a neat parts list.

(OR)
12. b) Design a suitable jig for use when drilling the 4 holes in the component shown in Fig. 2.
 - i) Give a neat operation chart.
 - ii) Draw two views of the Jig.