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L 1492

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008

Sixth Semester

Mechanical Engineering

ME 339 — DESIGN OF JIGS, FIXTURES AND PRESS TOOLS

Time : Three hours

Maximum : 100 marks

Use of approved data book is permitted.

All the drawings are not to scale.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term fixture.
2. What is fool proofing?
3. Sketch a shaped drill bush.
4. Differentiate between post and pot jig.
5. What is the use of stop pin in machine vices?
6. What is meant by cutter setting?
7. Which is a press tool?
8. Differentiate cutting and forming.
9. List any eight sheet metal cutting operations.
10. What is combination die?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss in detail the principles employed in jigs and fixtures design.

Or

(b) Sketch and explain a clamping device which uses mechanical and pneumatic actuators.

12. (a) With neat sketches explain the uses of plate and channel jigs. (8 + 8)

Or

(b) Explain the use of turnover jig with a neat diagram.

13. (a) With neat sketches explain the different turning fixtures.

Or

(b) With suitable examples, explain the assembly and inspection fixtures. (8 + 8)

14. (a) Make a neat sketch of the assembly of a die set showing the components and explain the uses of various components available in the die set assembly.

Or

(b) Explain the step by step procedure for the computation of press capacities and tonnage requirements for cutting and drawing operations. (6 + 10)

15. (a) With a neat sketch explain the working of a progressive die and mention its advantages and disadvantages.

Or

(b) Explain the working of a compound die with a neat diagram and mention its applications, merits and demerits over progressive die.