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Question Paper Code : Q 2745

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Seventh Semester

Mechanical Engineering

ME 1009 — DESIGN OF JIGS, FIXTURES AND PRESS TOOLS

(Common to Automobile Engineering)

(Common to B.E. (Part-Time) Sixth Semester Mechanical Engineering --
Regulation 2005)

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

(Use of approved design data book is permitted)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is fool proofing?
2. Mention the errors that are to be considered while designing jigs and fixtures.
3. Sketch a locating bush.
4. Give the names of any four types of jigs.
5. What is meant by modular fixture?
6. Sketch a machine vice with special extension jaws.
7. Differentiate punching from blanking.
8. Classify the presses according to the mechanism used for applying power to ram.
9. Which is called as simple die?
10. What is 'spring back' in bending?

PART B -- (5 × 16 = 80 marks)

11. (a) Discuss in detail the principles of jig and fixture design and mention the uses of jigs and fixtures. (10 + 6)

Or

- (b) Sketch and explain a fixture which uses both mechanical and pneumatical energy for operation.
12. (a) Design a suitable drill jig which can be used to drill holes on the pitch circle diameter of a flange coupling and make a neat sketch of it.

Or

- (b) Sketch and explain a turnover jig and mention its uses.
13. (a) Sketch and explain a turning fixture which can be used for holding non-cylindrical components in lathe for turning.

Or

- (b) Design, sketch and explain a broaching fixture used for broaching keyways in a flange.
14. (a) Sketch the assembly of a die set and explain the uses of various components available in the die set.

Or

- (b) Explain the step-by-step procedure for the computation of capacities and tonnage requirements for drawing operation by assuming a suitable example.
15. (a) Sketch and explain a compound die and list the types of components made using compound die.

Or

- (b) List the various design considerations in forging and casting and explain their importance with relevant to the process.