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Question Paper Code : S 4710

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

Sixth Semester

Mechanical Engineering

ME 339 — DESIGN OF JIGS, FIXTURES AND PRESS TOOLS

(Regulation 2001)

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. Name any four locators that are generally used.
2. What is best method to locate a rough surface?
3. What is the purpose of the drilling jig?
4. Give the importance of clamping force.
5. What forces does a drill bit exert on a work piece?
6. What are the basic differences between a lathe fixture and a milling fixture?
7. Mention the application of turning fixture.
8. What is the purpose of stripper?
9. Define deep drawing.
10. What is the type of press used for drawing? Why?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the main objectives to be considered while designing jig and fixture? (8)
(ii) Explain briefly the main elements of jig and fixture. (8)

Or

- (b) Explain the following clamps :
(i) Clamp with heel pin (3)
(ii) Two-point clamps (3)
(iii) Three-point clamps (3)
(iv) Pressure pads (3)
(v) Cam clamps. (4)

12. (a) (i) Describe any two types of locating device with neat sketches. (8)
(ii) Describe any two types of clamping device. (8)

Or

- (b) (i) Explain unconventional clamping with a neat sketch. (8)
(ii) Explain the important accessories of jig and fixture. (8)

13. (a) Describe the universal jig and plastic jig. (16)

Or

- (b) Explain the box jig and turnover jig. (16)

14. (a) Explain the welding fixture and grinding fixture. (16)

Or

- (b) Explain the following sheet metal forming processes :
(i) Processes related to shearing (6)
(ii) Process related to bending (4)
(iii) Process related to forming. (6)

15. (a) Explain in detail the following :
(i) Variables affecting drawing operation (6)
(ii) Curling dies, swaging dies, bulging dies. (10)

Or

- (b) Write short notes on following :
(i) Sketch combination die (4)
(ii) Describe various type of cutting operation. (6)
(iii) Discuss the design procedure of drawing die. (6)