

**D 50552**

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**SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
NOVEMBER 2013**

Mechanical Engineering

ME 09 706 L 14—DESIGN OF JIGS AND FIXTURES

(2009 Scheme)

Time : Three Hours

Maximum : 70 Marks

***Part A (Answer all questions)***

- I. 1.What is 3-2-1 principle?
- 2.Where should locators contact the part? Why?
- 3.On what type of jobs are commercial clamp lock used?
- 4.List the human factors involved in design of jigs and fixtures .
- 5.What is meant by modular fixture?

(5 × 2 = 10 marks)

***PART B (Answer any Four Questions out of six)***

- II. 6.Where should locators contact the part? Why?
- 7.List the skills of a tool designer .
- 8.Differentiate between pneumatic clamping device and manual clamping .
- 9.Explain the purpose of clamping .
- 10.What are the safety factors related to design of jigs and fixtures?
- 11.Explain the working of indexing fixture .

(4 × 5 = 20 marks)

***PART C***

- III. 12. How work pieces are located? Explain .

Or

13.Explain the following profile locators for locating work in the early stages of machining with schematic diagrams;(i) nest locator;(ii) vee locator.

14.What factors govern the choice of a clamping device to achieve the purpose of clamping? Discuss them in detail.

Or

Turn over

15. Explain the working of eccentric and spiral cams used in cam-action clamps to hold the part in place.

16. Design a jig for drilling equally spaced 4 holes of 8mm diameter on 50 mm pitch circle diameter in mild steel discs of 64 mm diameter and 15 mm thickness .

Or

17. Define and explain the work of a drill jig. In design of drill jigs what are the important points to be remembered?

18. Design a milling fixture for cutting a keyway 5mm wide and 3mm deep on mild steel shafts of 20mm diameter and 120mm length.

Or

19. What are the various types of milling fixtures and the essential elements of a jig and fixture for milling?

(4 × 10 = 40 marks)