D 90301 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2015

ME 09 706 L14—DESIGN OF JIGS AND FIXTURES

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

I. 1 What is duplicate locating ?

2 What percentage of the part tolerance must be applied to the tool ?

3 On what types of work are swinging clamps used ?

4 List the basic elements of jigs.

5 What is the working principle of a magnetic chuck ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions out of* **six**.

II. 6 What do you mean by fool proofing ?

7 When designing a tool, the designer must keep the part tolerance in mind. Why ?

8 What considerations to be kept in mind when selecting a clamp for a job ?

9 What are the advantages and disadvantages of four locating points in a plane ?

10 Differentiate between plate jig and template jig.

11 What do you mean by assembly fixtures ?

(4 × 5 = 20 marks)

Part C

III. 12 Explain the three primary methods of locating work from a flat surface.

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 Explain different types of clamps and their design

Or

15 With the help of neat sketches explain (i) toggle clamps (ii) hydraulic clamping.

Turn over

16 Explain the fundamental principles of jigs and fixtures design.

Or

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

18 Explain the materials used in jigs and fixtures.

Or

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

(4 × 10 = 40 marks)