



28/05/2015

QP Code : 3295

(3 Hours)

[Total Marks : 80

- N. B. :
- (1) All questions carry equal marks.
 - (2) Question no. 1 is compulsory.
 - (3) Answer any three questions out of question nos 2 to 6.
 - (4) Assume additional data, if required.

1. Design a Drill Jig for drilling 06mm holes in a component shown in fig. 20
 No 1. Draw minimum two views. Assume milling of faces to achieve dimension 30 mm is already done.
 Also prepare bill of materials.
 The component is produced by casting process.

2. (a) Draw freehand sketches (any three)- 12
 1. Standard strap clamp
 2. Renewable bush
 3. Three methods of retaining rest buttons
 4. Plate Jig
- (b) Differentiate between (any two)- [8 marks] 8
 1. Locating pin and dowel pin
 2. Turning fixture and Milling fixture
 3. Built up body and Casting body

3. (a) State whether the statement is True or False. Give reasons (any four) 12
 1. Tenons are used to locate Jigs on machine table.
 2. Slip bushes need special care during manufacturing and mounting.
 3. Turning fixture needs balancing.
 4. Leaf drill jig cannot produce consistent accurate result
 5. Jig and fixture design is influenced by quantity of components to be made in prescribed period.
 6. Dowels are used for locating components.
- (b) Write short notes (any two) 8
 1. Advantages of Jigs or Fixtures
 2. 3:2:1 principle of location
 3. Ejectors

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4. (a) Explain 'Degrees of freedom'. Explain in detail how it is deployed in the Milling fixture designed by you in answer question no. 1 10
- (b) Mention 3 different types of Drill jigs. Explain one of them with the help of a sketch. 5
- (c) What is a slip bush? When is it used? Draw a sketch of commonly used slip bush. 5
5. (a) What are benefits and limitations of Jigs and Fixtures? 8
- (b) Mention briefly main steps in designing a milling fixture. Describe important features of clamping devices for a milling fixture. State recommended material and suitable hardness for the same. 12
6. (a) Write down sequence of operations for the component shown in Fig.No.1 10
- (b) Mention material used and recommended hardness, where necessary, for important elements of a milling fixture. 10

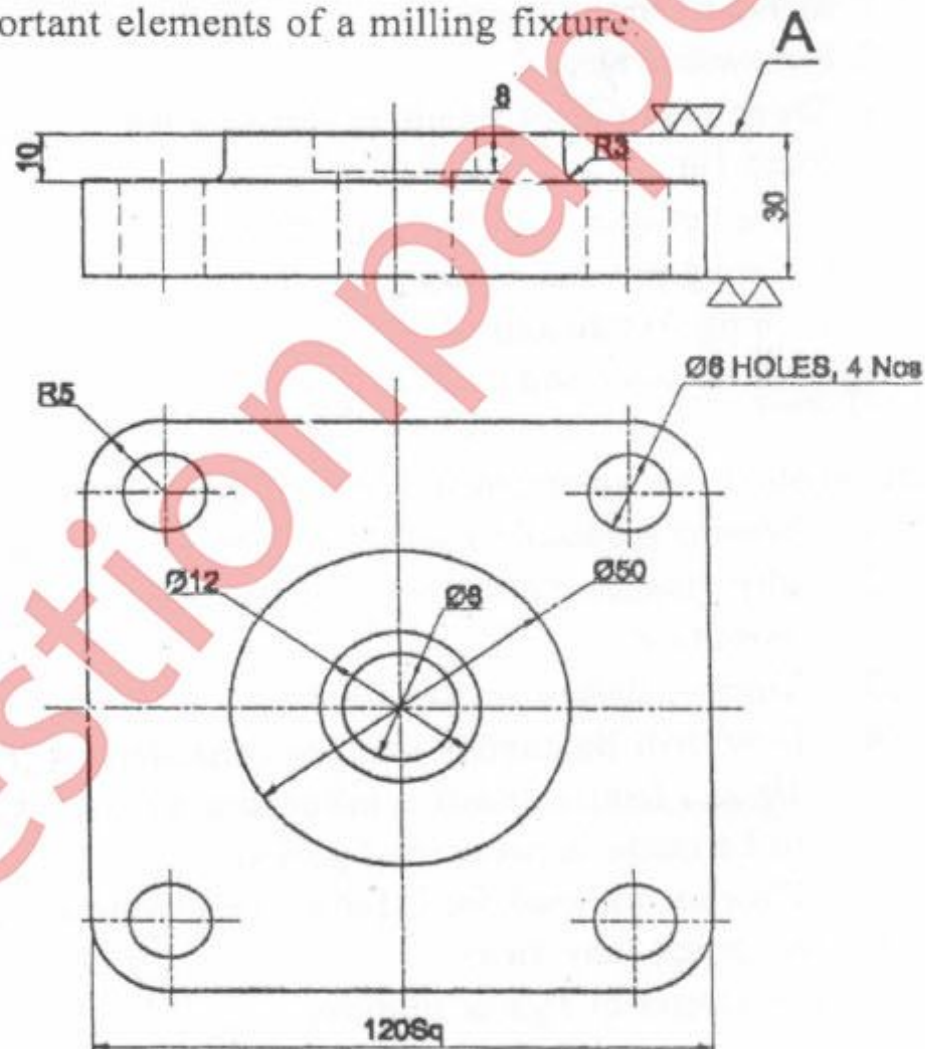


Fig. No.1

All dimensions are in mm.