



Q.P. Code : 5687

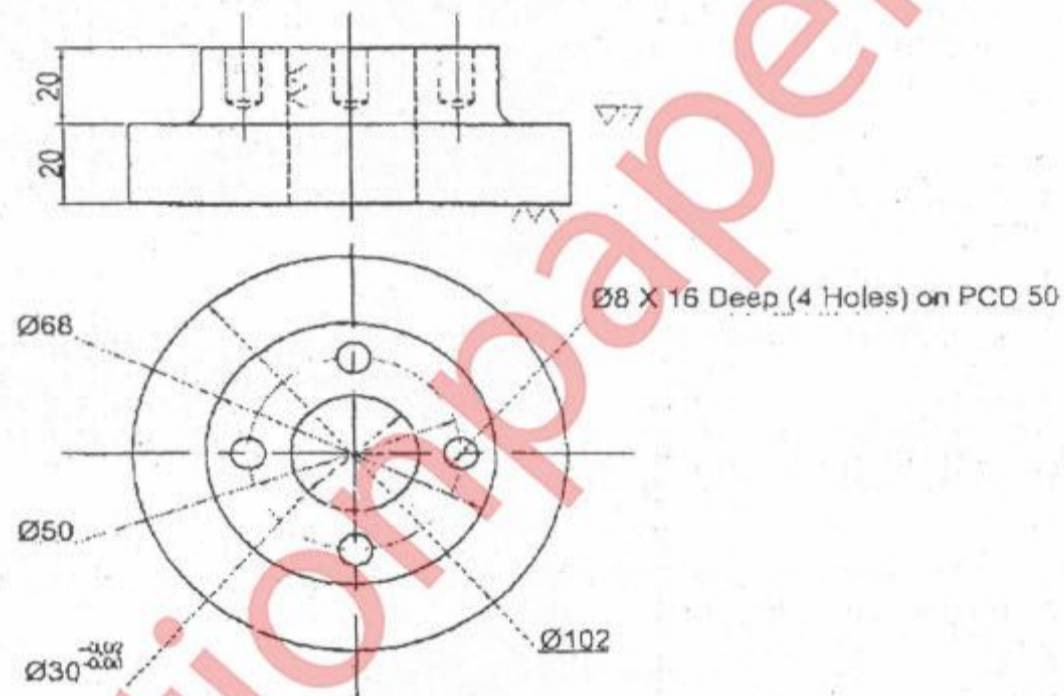
(3 Hours)

[Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory.
(2) Attempt any three questions from remaining questions.
(3) Use of half imperial drawing sheets are permitted & will be supplied as demanded.

1. Design and draw Drill Jig to drill holes of $\phi 8 \times 16$ deep for component shown in fig. 20
1. Draw minimum two views and give the important dimensions. Also write down BOM for the Tool Design. (Material: Cast Iron)

Fig. 1 (All dimensions are in mm.)



- 2) (a) Draw freehand sketches (any three). 12
i. Jig bush with head and without head
ii. Standard strap clamp
iii. Three types of rest buttons
iv. Allen screw and Dowel
(b) Differentiate between (any two). 8
i. Slip bush and Renewable bush
ii. Equalizer and Centralizer
iii. Clamping device and Locating device

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3. (a) State whether the statement is True or False and give reasons (any four). 8
- Tennons are used to locate Jigs on machine table.
 - Strap clamps are made from cast iron.
 - Turning fixture needs dynamic balancing.
 - Centering is an advance method of locating.
 - Diamond pins are provided to prevent jamming.
- (b) Write short notes and draw neat sketches (any three). 12
- Nesting method of location
 - Jamming of components
 - 3-2-1 principle of location
 - Purpose of Ejectors in Jigs and Fixtures and explain any one type of Ejector.
4. Answer the following questions. 20
- What is Jamming? Explain different ways to prevent jamming.
 - Mention 3 different types of fixtures. Explain one of them with the help of a labelled sketch.
 - What is indexing? Explain essential features of an Indexing Jig with sketch.
 - What is a slip bush? When is it used? Draw a sketch of commonly used slip bush.
 - Why use of standard elements is recommended in Jigs and Fixtures? Explain.
5. (a) Explain the benefits and limitations of Jigs and Fixtures? 10
- (b) Mention briefly main steps in designing a drill jig. Describe important features of clamping devices for a drill jig. State recommended material and suitable hardness for the same. 10
- 6] (a) Component shown in Fig. 1 is made by casting. Write down sequence of operations. 5
- (b) Explain Radial Locators with neat sketches. [5 marks] 5
- (c) Explain requirement of setting block and Tennon in Milling Fixture with neat sketches. 10