

Sem-V / PRAD / CBGS) • DJF / 27-05-16
Design of Jigs & Fixtures

Q.P. Code : 31169



(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 No.2 to No.6.
 - (4) Assume missing data suitably, if required.

1. Design and draw a drill jig to drill $\phi 12$ hole for a component shown in fig. no.1. Draw minimum two views of the jig and indicate important dimensions: 20

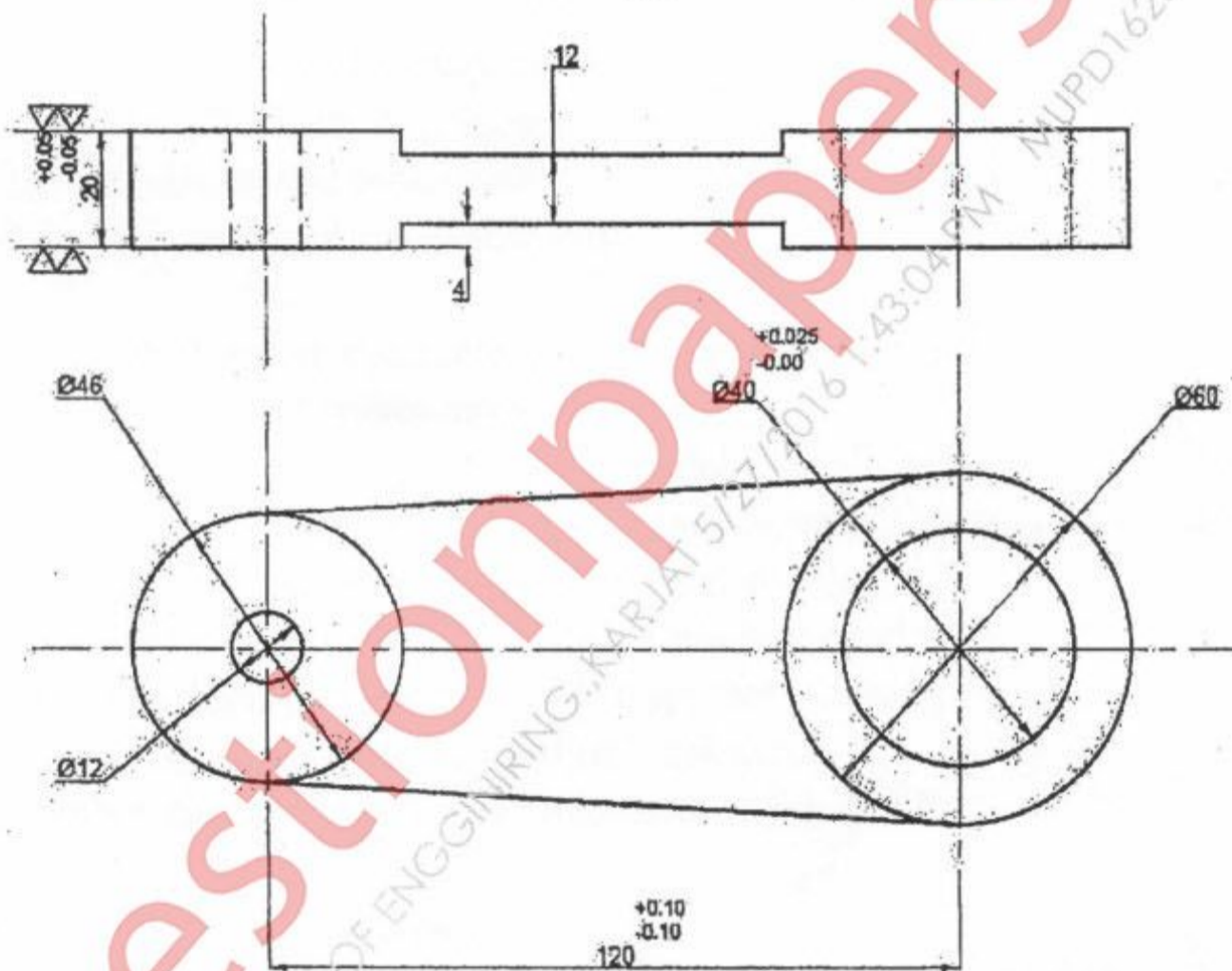


Fig. 1

TURN OVER

FW-Con. 11336-16.

2. (a) Draw freehand sketches (**Any three**) : 12
- (i) Jig bush with head
 - (ii) Renewable bush
 - (iii) 3-2-1 principle of Location depicting case of a rectangle plate as a work piece.
 - (iv) Plate Jig
- (b) Differentiate between (**Any Two**) : 8
- (i) Drill jig and milling fixture
 - (ii) Equalizer and centralizer
 - (iii) Slip bush and renewable bush
3. (a) State whether the statement is true or false, Give reasons (**Any Five**) : 10
- (i) C-washer is a time saving device.
 - (ii) Cast iron is preferred body material for milling fixture.
 - (iii) If tenons are provided in milling fixtures, setting blocks are not required.
 - (iv) Milling fixtures are very strong and sturdy.
 - (v) Jig bush is made from HCHCr and hardened to HRc 59-61.
 - (vi) Diamond pins are provided to prevent jamming.
 - (vii) Dowels are used for locating work piece.
- (b) Explain the advantages and limitations of Jigs and Fixtures. 10
4. Answer the following questions : 20
- (a) What is indexing? Explain essential features of an Indexing Jig with sketch.
 - (b) Explain nesting method of location with neat sketch.
 - (c) What is a slip bush? When is it used? Draw a sketch of commonly used slip bush.
 - (d) Explain any one of them with the help of labelled sketch.

TURN OVER

5. Answer the following questions :

20

- (a) Explain characteristics of good locating system.
- (b) Explain the essential features of turning fixture with neat sketch.
- (c) Purpose of ejectors in jigs and fixtures and explain any one type of ejector.
- (d) Write a short note on materials and hardness selection of locating elements in jigs and fixtures.

6. Answer the following questions :

- (a) Write down sequence of operations for the component shown in Fig.1. 5
- (b) Mention material used and recommended hardness, where necessary, for 5 important elements of the Jig drawn in question no.1. 5
- (c) Write down basic steps in design of Drill Jig. 10