T.E. SEM V / PROD / MAY 2017 / 05.06.2017

Q.P. Code : 608401

(3 Hours) **Marks : 80**

Note : (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 and draw a drill jig to drill φ 12 hole for a component shown in fig. no 1. **20**
Draw minimum two views of the jig and indicate important dimensions.

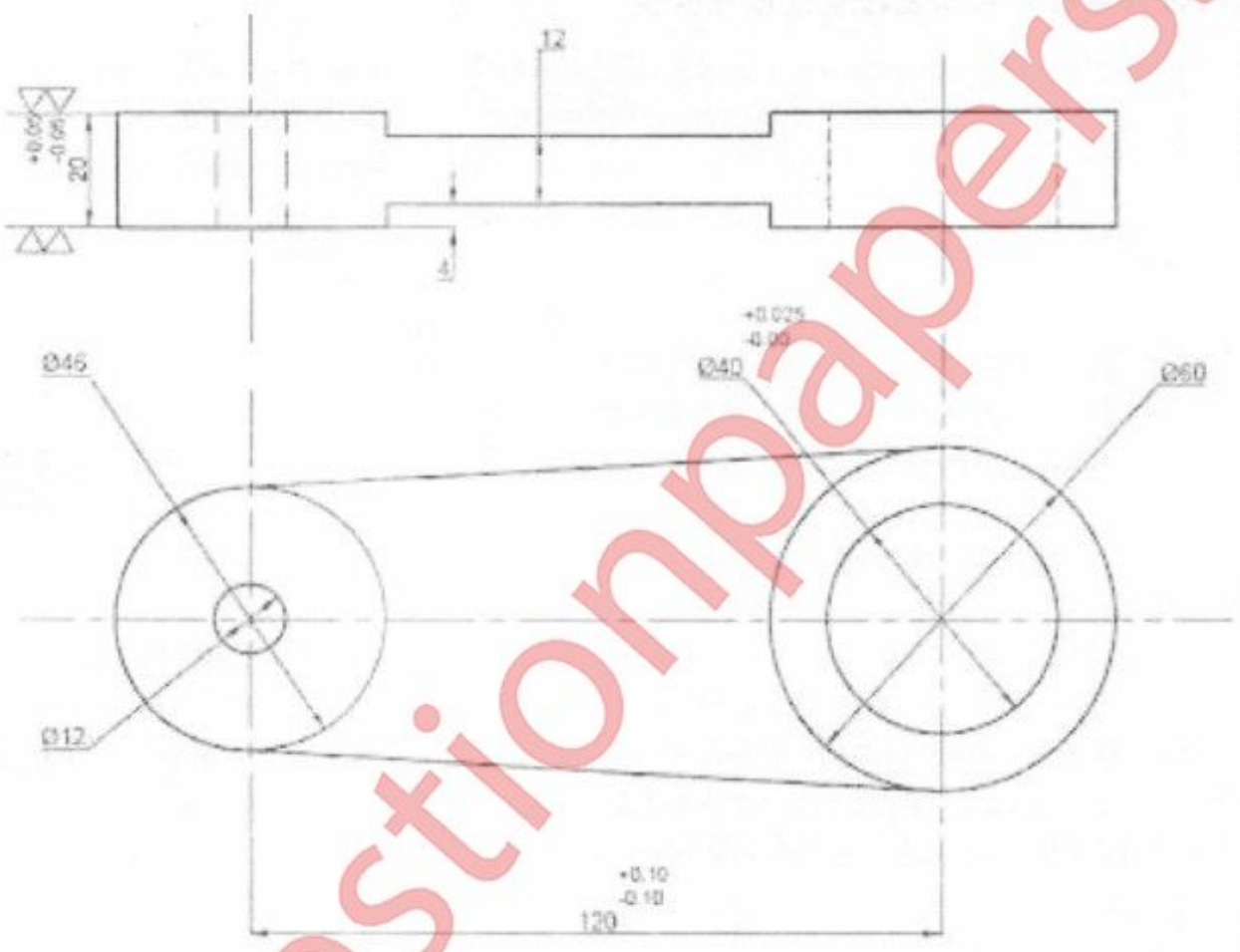

Fig. 1

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

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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 ofJigs 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.

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 sequece or 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**
