

FOURTH SEMESTER DIPLOMA EXAMINATION IN MECHANICAL  
ENGINEERING—OCTOBER, 2013

**PRODUCTION DRAWING**

[Time : 3 hours

(Maximum marks : 100)

- [Instructions : 1. A2 size drawing sheet will be supplied.  
2. Both side can be used.  
3. Use of BIS tables and charts are permitted in examination hall.  
4. Theory part answers should write in answer book.]

Marks

PART—A

I Answer all questions. Each question carries 5 marks.

1. Illustrate the symbols and grade number for following roughness values :
 

(i) 25 microns	(iii) 0.8 microns
(ii) 6.3 microns	(iv) 0.1 microns
2. Explain systems of fit with necessary examples.
3. Make a table for following geometrical characteristics :
 

(i) Flatness	(iv) Perpendicularity
(ii) Circularity	(v) Coaxiality
(iii) Parallelism	
4. Explain method of connecting tolerance frame to tolerance features with figure.
 

(4×5=20)

PART—B

II Answer any two of the following questions. Each question carries 15 marks.

- (a) Draw a production drawing for a slip bush as figure 1, incorporating following requirements :
  - (i) Finish the inside and outside cylindrical surfaces to a roughness value of  $0.8 \mu\text{m}$ . All the remaining surfaces are supposed to have roughness value of  $6.3 \mu\text{m}$ .
  - (ii) Inside diameter  $\phi 30 \text{ mm}$  has an upper and lower deviations of  $+0.028$  and  $+0.015$  respectively, while the outside diameter has h6 tolerance.

- (iii) Outside diameter of bush should have a concentricity tolerance of 0.02 mm with the axis of the cylindrical hole  $\phi 30$ .

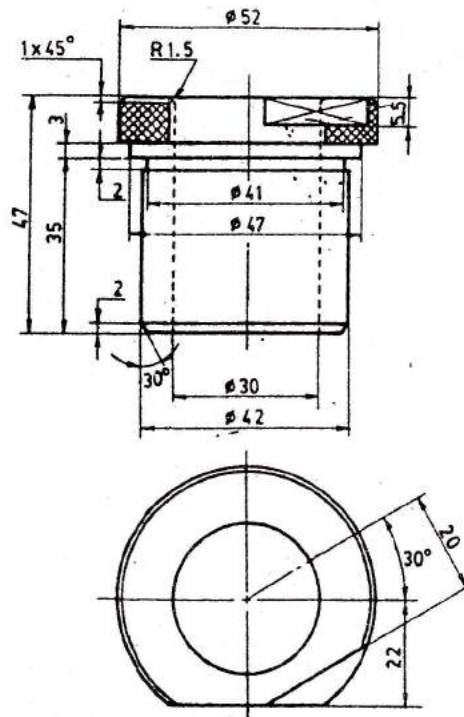


Figure 1

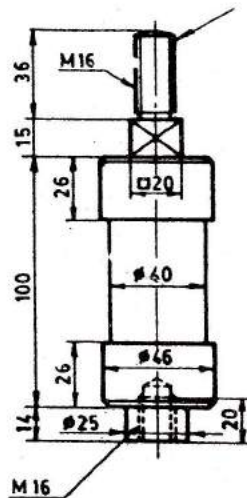
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- (b) Compute the limit dimensions of an interference fit on hole basis system, if :

Basic hole size	=	$\phi 30$ mm.
Minimum negative clearance	=	0.001 mm.
Tolerance on hole	=	0.021 mm.
Tolerance on shaft	=	0.013 mm.

Check the calculated dimensions and represent the same on a schematic drawing. 15

- (c) Draw a freehand sketch and make an operation chart for a locating post as shown in figure. (Mild steel of 7.8 g/cc. A hardened part). Also calculate the final weight of the part.



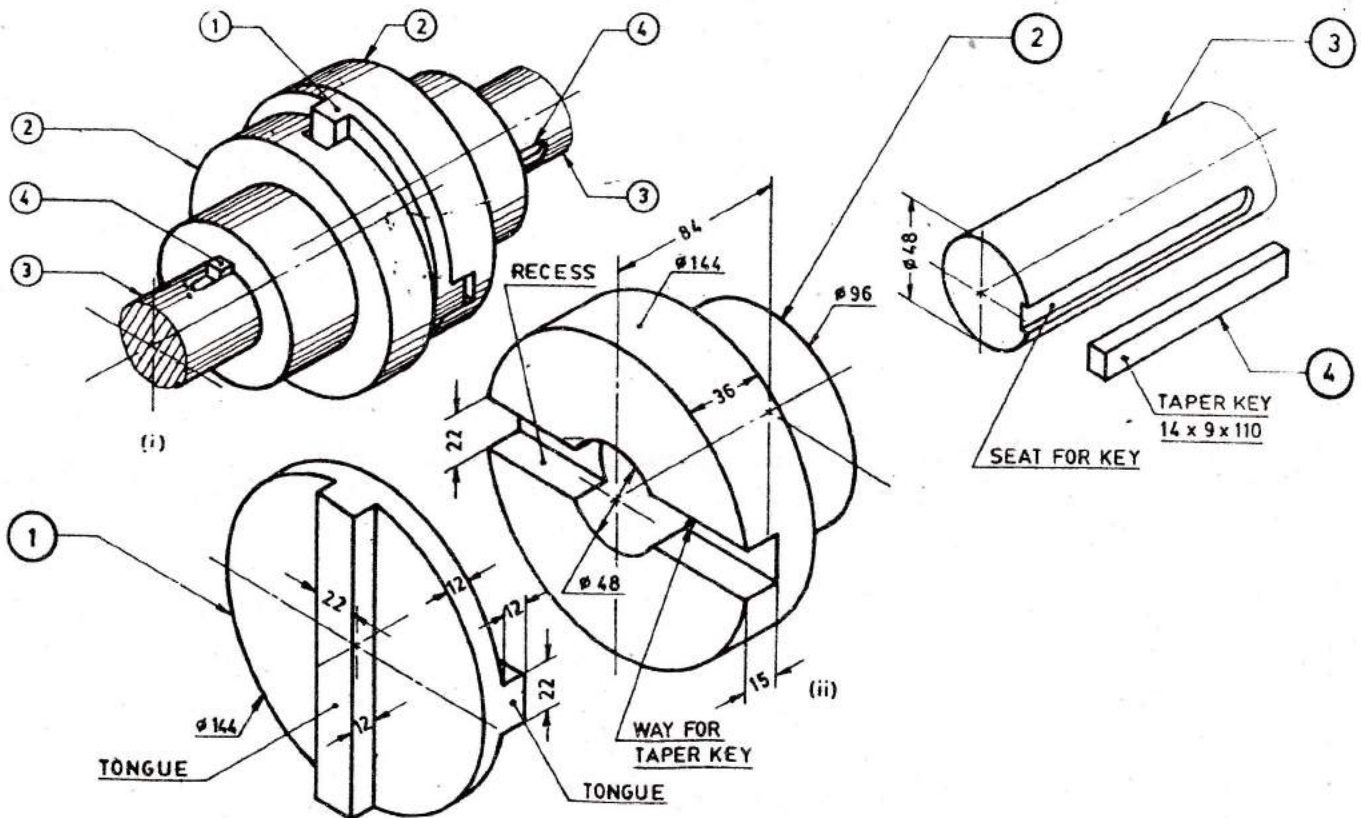
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PART—C

III Answer any one full question from the following. Each question carries 50 marks.

(a) Prepare a shop floor drawing for given oldham's coupling parts. Mention the surface finish and dimensional tolerances required for different functional requirements :

Sliding disc, light keying, slight push fit for shaft and flange, perpendicularity of tongue on recess. Make an item list and standard title block.



OR

(b) Prepare a shop floor drawing for a muff coupling parts as shown in figure :  
Functional requirements :

- (i) Shaft and muff in light push fit.
- (ii) Key way and key in light keying fit.

(iii) Key way must be parallel within 0.03 mm, with shaft axis.

Make a title block with all details and an item list.

