

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019**

**PRODUCTION DRAWING**

[Time : 3 hours

(Maximum marks : 100)

[Note :— Sketches accompanied.]

**PART — A**

(Maximum marks : 20)

Marks

I Answer *all* questions in one or two sentences. Each question carries 5 marks.

1. Define and classify Fits.
2. Interpret a fit designated by  $\phi 45 H8g7$ .
3. Draw and indicate a surface texture symbol showing all characteristics as per BIS.
4. Define a process chart. List and explain any four types. (4×5 = 20)

**PART — B**

(Maximum marks : 30)

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

1. Compute the limit dimensions of the shaft and hole for a clearance fit based on hole basis system, if
 

Basic size of the shaft	=	$\phi 30$ mm
Minimum clearance	=	0.020 mm
Tolerance on the hole	=	0.033 mm
Tolerance on the shaft	=	0.021 mm

Represent the limit dimensions schematically. Check the calculated dimensions.

2. Figure 1 shows top half sectional elevation of a brass brush. The surfaces indicated by lower case letters are to be machined as detailed below :
  - a represent turning to 12.5  $\mu$ m finish
  - b represent grinding to 0.8  $\mu$ m finish
  - c represent reaming to 1.6  $\mu$ m finish and
  - d represent boring to 6.3  $\mu$ m finish

Redraw the figure indicating the actual surface roughness values and the machining process.

3. Prepare an operation sheet of a locating pin shown in Figure 2 incorporating the following details :

Part name	:	locating pin
Part number	:	93 0031 08
Drawing number	:	LP 0030 09
Equipment	:	Drill jig
Material	:	Steel
Specification	:	IS 666 PART- I
Qty. required	:	25 nos.

Also mention the departments, machines, tools/gauges for production/measurements, weight per piece, total number of operations, set up and operation time. (2×15 = 30)

### PART — C

(Maximum marks : 50)

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

- Sectional elevation of a sleeve is shown in Figure 3. The surfaces to be tolerance symbolically are represented by 1, 2, 3 and 4. Prepare a shop floor drawing incorporating the following requirements :
  - Surface 1 should not have a radial run out greater than 0.008 mm with respect to the axis of the sleeve. Also, the surface should be contained between two parallel planes 0.008 mm apart.
  - Surface 1 and 2 should be parallel to each other with a parallelism tolerance of 0.004 mm.
  - Surface 3 should have a geometrical circularity and cylindricity tolerances within 0.003 mm each.
  - Surface 4 has radial run out limited to 0.008 mm with respect to the axis, circularity tolerance limited to 0.003 mm and a cylindricity tolerance of 0.003 mm.
- Prepare a production drawing of a slip bush shown in Figure 4 incorporating the following requirements.
  - Finish the inside ( $\phi 30$ ) and outside ( $\phi 42$ ) cylindrical surfaces to a roughness value of 0.8  $\mu\text{m}$ . All the reaming surfaces are supposed to have a roughness value of 6.3  $\mu\text{m}$ .
  - The inside diameter of the bush should have an upper and lower deviation of +0.028 mm and +0.015 mm respectively while the outside diameter has a tolerance of h6.
  - Outside diameter of the bush should have a concentricity tolerance of 0.02 mm with the axis of the cylindrical hole of  $\phi 30$ .

Redraw the figure and indicate all informations as per BIS. (1×50 = 50)

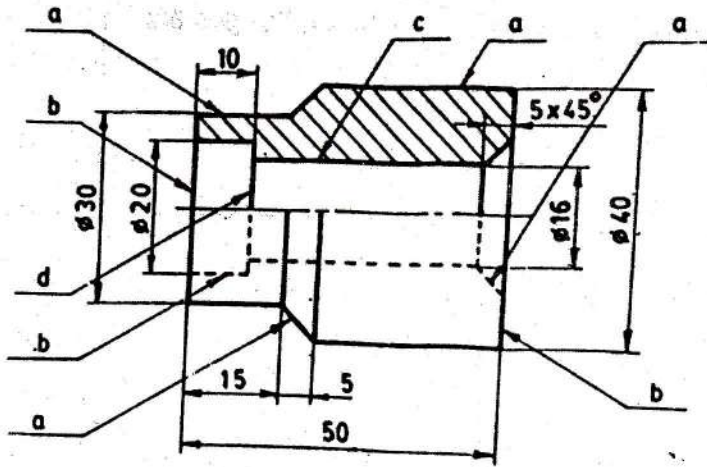


Figure - 1 (Brass Bush)

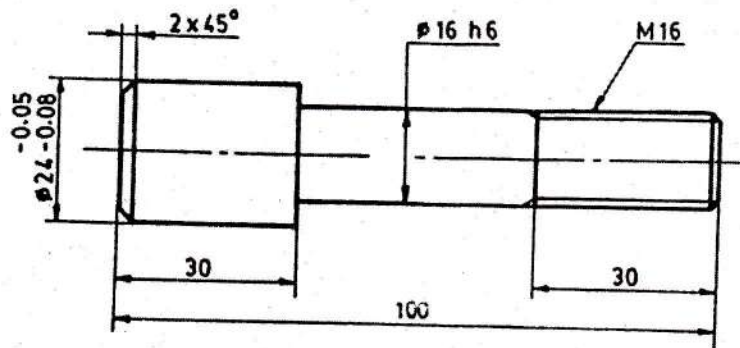


Figure - 2 (Locating Pin)

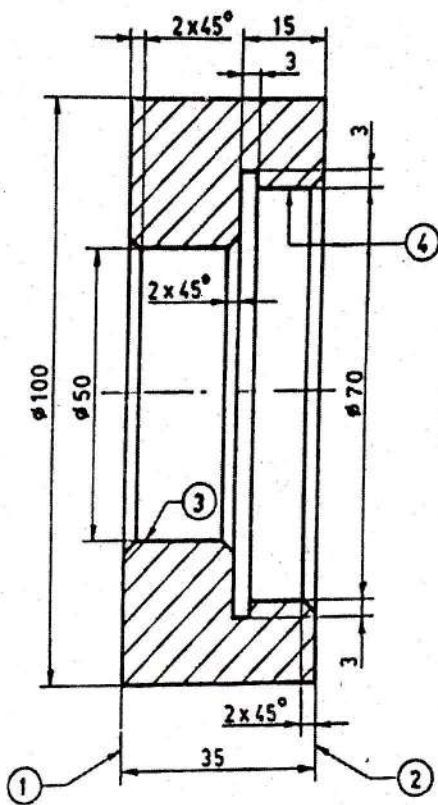


Figure - 3 (sleeve)

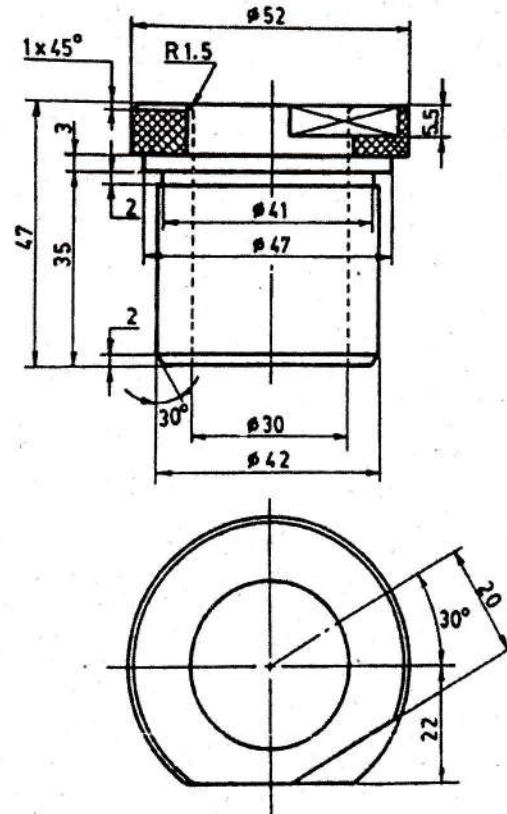


Figure - 4 (slip bush)