

FOURTH SEMESTER DIPLOMA EXAMINATION IN
MECHANICAL ENGINEERING — APRIL, 2017

PRODUCTION DRAWING

[Time : 3 hours

(Maximum marks : 100)

[Instructions— :

1. A2 size drawing sheet will be supplied and both sides can be used.
2. Use of BIS tables and chart are permitted in the examination hall.
3. Theory portions of the questions must be answered in the answer book.
4. Sketches on 3rd and 4th pages.]

PART — A

(Maximum marks : 20)

Marks

I Answer all questions. Each question carries 5 marks.

1. Show by sketch the symbols used for indicating the following.
 - (a) Indication of the machining allowance
 - (b) Indication of the direction of lay
2. State the type of fit obtained with the following tolerance dimension.
 - (a) $\phi 50H7/b8$
 - (b) $\phi 40H9/t7$
3. Represent schematically clearance fit and interference fit on hole basis system.
4. What is meant by Roughness value ? (4×5 = 20)

PART — B

(Maximum marks : 30)

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

1. Calculate the limit dimensions for clearance fit on the hole basis system.

Basic size	=	$\phi 50\text{mm}$
Minimum clearance	=	0.05mm
Tolerance on hole	=	0.035mm
Tolerance on shaft	=	0.020mm

Check the calculated dimensions and show it on a schematic drawing.

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2. A fully dimensioned knurled rest pin is shown in figure 1. The surface indicated by capital letters should be finished to roughness values mentioned below :
- Surface A to 0.8 microns
 - Surface B and C to 3.2 microns
 - Surfaces other than A, B and C to 6.3 microns

Later the surface A is to be chromium plated and then it should be finished to a roughness value of 0.4 microns. Copy the figure and indicate the surface roughness using grade numbers as per BIS.

3. In the figure 2, the surfaces are identified by 1 to 7. The required surface roughness values are given in the table. Draw the figure and indicate the surface roughness by grade numbers.

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PART — C
(Maximum marks : 50)

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

- III (a) Figure 3 shows sectional view of a gun metal bush. Convert it into a shop floor drawing incorporating the following.

- (i) Surface finish 1.6 microns to surface (a) and (b), while 6.3 microns to the remaining surfaces.
- (ii) Dimensional tolerance-H7 to dia 50 and h6 to dia 70, while the remaining medium class general tolerance.
- (iii) Surface (a) can have circularity and cylindricity tolerance of 5 microns each.
- (iv) The surface (b) should be within a radial run out of 8 microns referred to the axis of the hole and cylindricity of 15 microns.
- (v) The surface (c) can have an axial run out of 10 microns referred to the axis.

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OR

- (b) Figure 4 shows the assembly of a socket and spigot joint. Draw the necessary views of the parts and mark suitable dimensional as well as geometrical tolerances to result easy running fit between socket and spigot. The cotter and the hole are to be toleranced for normal running fit. Also give N7 finish to mating surfaces and N9 for the remaining.

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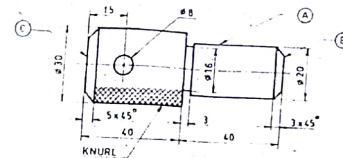
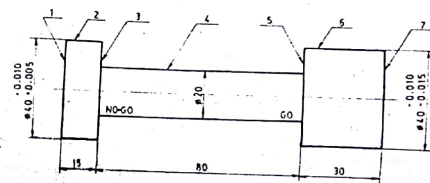


Figure 1



Surfaces	1	2	3	4	5	6	7
Roughness values (μm)	1.6	0.4	12.5	6.3	12.5	0.4	1.6

Figure 2

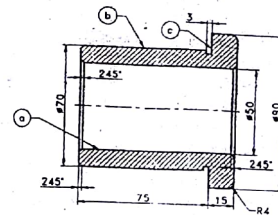


Figure 3 – GM Bush

