TED (21) 3025
(Revision – 2021)

N22-2110220182 A

Reg. No.....
Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2022

MACHINE DRAWING

[Note: - 1. A2 size drawing sheet will be supplied and both sides of the sheet can be used.
2. Use of BIS tables and charts are permitted.
3. Theory part answers should be written in the answer book.
4. Missing data if any should be suitably assumed.
5. Sketches are accompanied. All dimensions are in mm.
6. First angle projection is to be followed]

[Maximum Marks: **75**] [Time: **3** Hours]

Module - I

I. Answer *any one* of the following questions. Each question carries 15 marks.

(1 x 15 = 15 Marks)

		Module Outcome	Cognitive level
1.	Two vertical metal plates, each 30mm thick are bolted by means of a 20mm diameter Hexagonal headed bolt, a nut and a washer. Draw the sectional view of the assembly showing the plates in section and the end view from the nut side. Assume that the bolt has a spherical end. Take length of the bolt and length of thread of the bolt as 90mm and 40 mm. Use standard proportion of the bolt diameter.	M1.04	A
2.	Draw two views of a double riveted chain lap joint. Take the thickness of the plates as 10mm. Show at least three rivets in a row and indicate all dimensions in terms of the diameter of the rivet. Use snap head rivets.	M1.04	A

Module - II

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

(1 x 15 = 15 Marks)

		Module Outcome	Cognitive level
1.	Top half sectional elevation of a Brass Bush is shown in figure 1. The surface indicated by lowercase letters should be machined to roughness value as mentioned in Table 1. Copy the given figure and indicate the machining process and the given surface roughness value using grade numbers as per B.I.S	M2.02	U

2.	According to the basic hole system, the dimensions of a hole and its mating shaft are given below. Find the value of the shaft tolerances. hole tolerances and clearness. Check the calculated dimensions. Represent the same on a schematic drawing. Hole : 27.500mm Shaft : 27.470mm : 27.575mm : 27.445mm Table 1. Surface Machining Roughness value	M2.01	U

a	Turning	12.5 µm
b	Grinding	0.8 µm
c	Reaming	1.6 µm
d	Boring	6.3 µm

Module - III

III. Answer *any one* of the following questions. Each question carries 30 marks.

(1 x 30 = 30 Marks)

		Module Outcome	Cognitive level
1.	Draw the right half sectional elevation in the direction of 'F' and top view of Plummer Block shown in figure II. Dimension the views and prepare the item list.	M3.02	A
2.	An isometric view of a Knuckle Joint is shown in figure III. Draw the top half sectional elevation in the direction of 'F' and bottom half sectional plan. Indicate all dimensions in elevation and show the bill of materials.	M3.02	A

Module - IV

IV. Answer *any one* of the following questions. Each question carries 15 marks.

(1 x 15 = 15 Marks)

		Module Outcome	Cognitive level
1.	Two views of a Slotted Nut are shown in figure IV. Redraw the given figure by taking d_1= Ø25, d_2= Ø36.6, d_3=36 and h=12. The nut is to be manufactured using the following geometrical tolerances: a) End faces of nut are parallel with a geometrical tolerance of 0.02mm b) The datum axis of the nut to which the tolerance frame is connected should be contained in a cylindrical zone of diameter 0.2mm coaxial with the datum. c) Both the end faces of the nut should be perpendicular to its axis with a geometrical tolerance of 0.02mm Mark all the dimensions and also indicated the geometrical tolerance as per B.I.S.	M4.02	A

2.	Prepare the shop floor drawing of the Sleeve given in figure. V, by incorporating all the requirements: a) Surface 1 should not have a radial run out greater than 0.008mm with respect to the axis of the sleeve. Also, the surface should be contained between two parallel planes 0.008mm apart. b) Surface 1 and 2 should be parallel to each other with a parallelism tolerance of 0.004mm c) Surface 3 should have a geometrical circularity and cylindricity tolerances within 0.003mm each. d) Surface 4 has radial run out limited to 0.008mm with respect to the axis, circularity tolerance limited to 0.003 mm and a cylindricity tolerance of 0.003mm.	M4.02	A

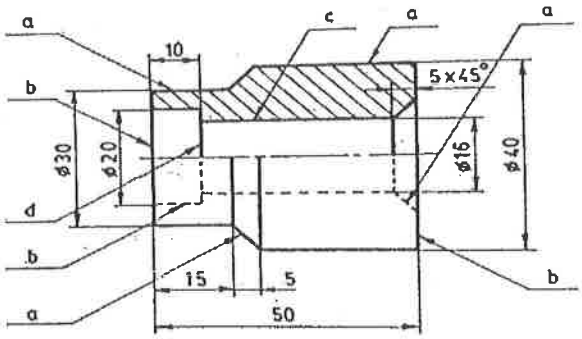
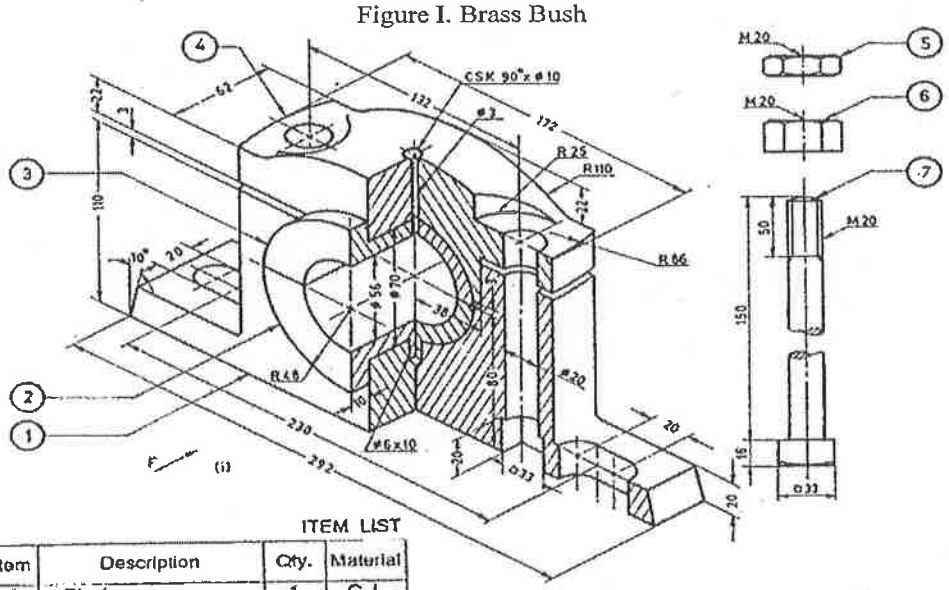


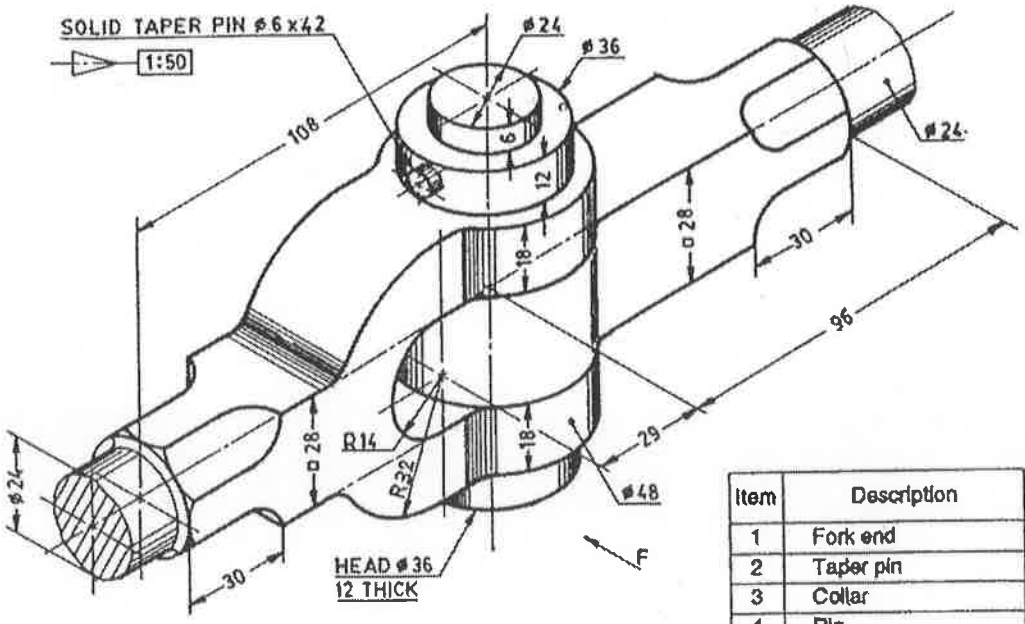
Figure I. Brass Bush



ITEM LIST

Item	Description	Qty.	Material
1	Block	1	C. I.
2	Brass (Bottom)	1	Brass
3	Brass (Top)	1	Brass
4	Cover	1	C. I.
5	Locknut	2	M. S.
6	Nut	2	M. S.
7	Bolt	2	M. S.

Figure II. Plummer Block



ITEM LIST

Item	Description	Qty.	Material
1	Fork end	1	M. S.
2	Taper pin	1	M. S.
3	Collar	1	M. S.
4	Pin	1	M. S.
5	Eye end	1	M. S.

Figure III. Knuckle Joint

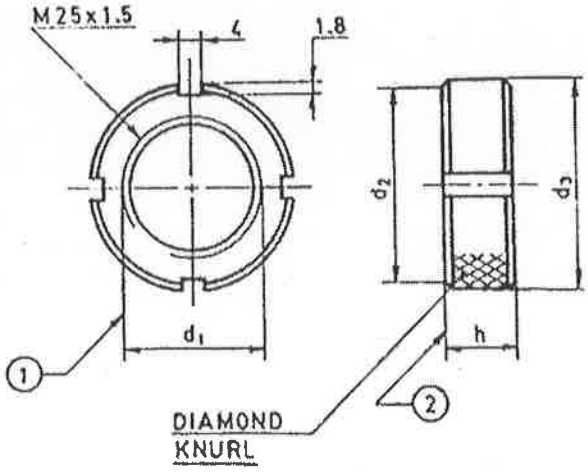


Figure IV. Slotted Nut

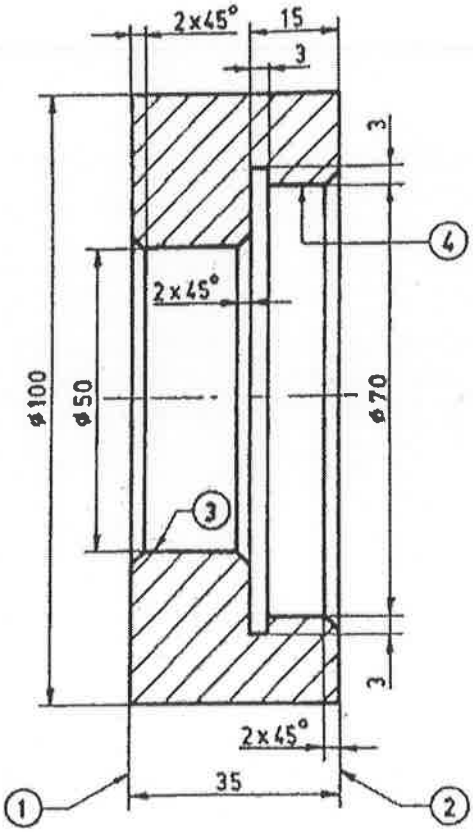


Figure V. Sleeve

****