

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER - 2024**

MACHINE DRAWING

[Maximum Marks:75]

[Time: 3 Hours]

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

PART - A

- I. Answer any one of the following questions. Each question carries 'Fifteen' marks.
(1 x 15 = 15Marks)**

Module Outcome Cognitive level

1	Two vertical metal plates each 30 mm thick are bolted by means of a 20 mm diameter bolt, a nut and a washer. Draw the full sectional elevation of the assembly and an end view looking from the nut side. Assume that the bolt has a spherical end. Take, Length of the bolt = 90 mm Length of the thread of the bolt = 40 mm Indicate all dimensions in terms of bolt diameter. OR	M1.04	A
2	Draw the following rivet heads. Take the rivet diameter as 12mm. Also indicate all dimensions in terms of rivet diameter. 1. Snap head 2. Pan head 3. Flat counter sunk head 60° 4. Flat head	M1.02	U
3	Compute the limit dimensions of an interference fit on hole basis system, if Basic size of the hole = $\varnothing 30$ mm Minimum negative clearance = 0.001mm Tolerance on hole = 0.021mm Tolerance on shaft = 0.013mm Check the calculated dimensions. Represent the same on a schematic drawing. OR	M2.01	U

4	Elevation of a GO— no - go gauge is shown in the figure. I. The surfaces are identified by the numerals 1 to 7 and the surface roughness values for these surfaces are given below. Draw the given figure and indicate the surface roughness values using grade numbers as per B.I.S. <table><tr><td>Surfaces</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>Roughness Values(μm)</td><td>1.6</td><td>0.4</td><td>12.5</td><td>6.3</td><td>12.5</td><td>0.4</td><td>1.6</td></tr></table>	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	M2.02	U
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												

PART - B

II. Answer any one question from the following. Each question carries ‘Thirty’ marks.
(1 x 30 = 30 Marks)

Module Outcome Cognitive level

1	Draw the left half sectional elevation and top view of a Stuffing Box from the given detailed view shown in Fig.2. Dimension the views and prepare the item list showing quantity and materials of items. OR	M3.02	A
2.	Draw the top half sectional elevation and left end view of a socket and spigot joint shown in figure.3. Mark the dimensions of the views and prepare the item list showing quantity and materials for the items.	M3.02	A

PART - C

III. Answer any one questions from the following. Each question carries ‘ Fifteen’ marks.

(1 x 15= 15 Marks)

Module Outcome Cognitive level

1.	Prepare the production drawing of a Slip bush shown in fig.4 Incorporating following requirements: a) Finish the inside ($\varnothing 30$) and outside ($\varnothing 42$) cylindrical surfaces to a roughness value of $0.8 \mu\text{m}$. All the remaining surfaces are supposed to have a roughness value of $6.3 \mu\text{m}$. b) The inside diameter of the bush should have an upper and lower deviations of $+0.028\text{mm}$ and $+0.015\text{mm}$ respectively while the outside diameter has a tolerance of $h6$. c) Outside diameter of the bush should have a concentricity tolerance of 0.02mm with the axis of the cylindrical hole of $\varnothing 30\text{mm}$. OR	M4.02	A
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2.	A stepped shaft is shown in figure-5. Explain the following by referring the figure: a) A4 x 0.3 b) Dimensional tolerances of: a) $\varnothing 55k6$ b) $\varnothing 75h6$ c) $\varnothing 65n6$ d) 20P7 c) Geometrical tolerance of the frame: 1) Connected with the cylindrical surface with $\varnothing 70$ and datum surface with $\varnothing 55k6$ 2) Connected with the cylindrical surface with $\varnothing 75h6$ and datum surface with $\varnothing 55k6$ 3) Connected with the cylindrical surface with $\varnothing 75h6$ and the end face of cylindrical of diameter $\varnothing 55k6$	M4.02	A
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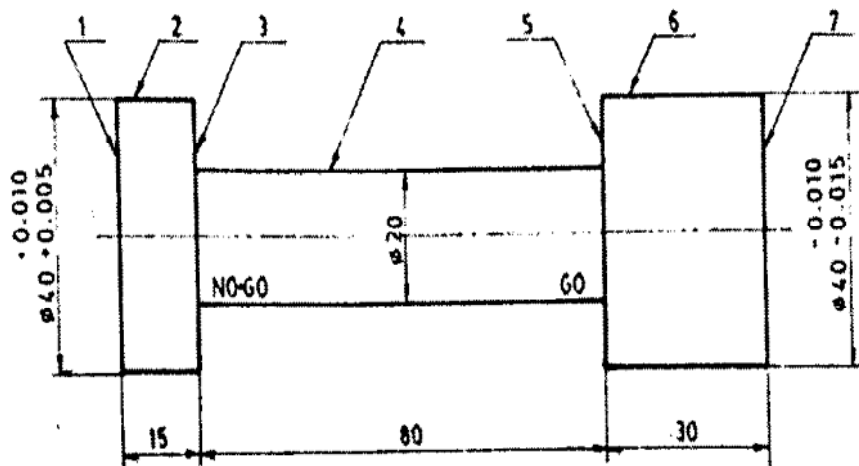


Fig.1 GO – no – go gauge

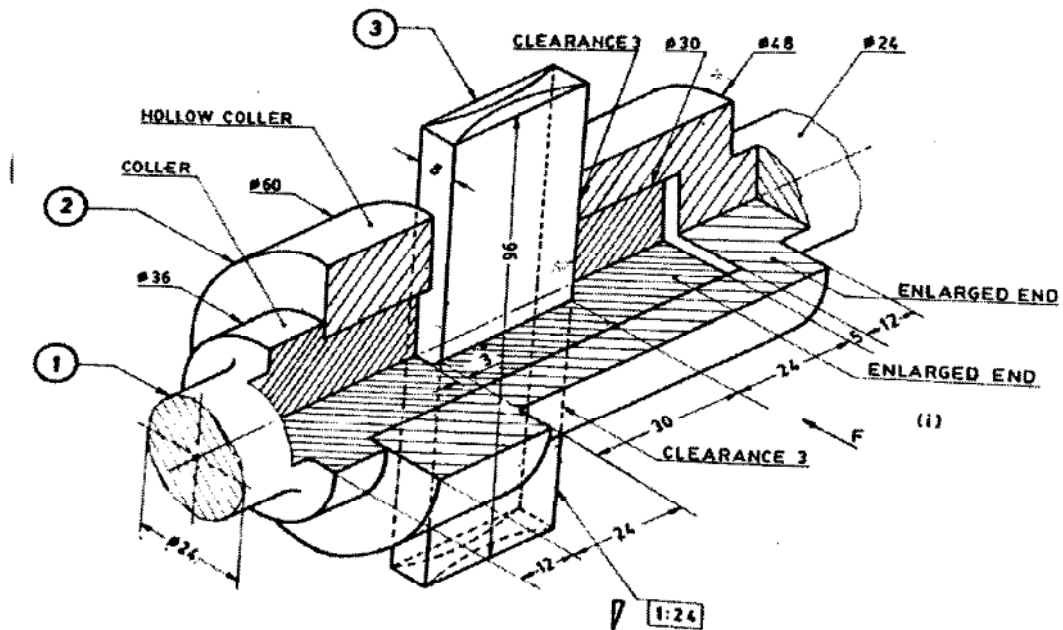
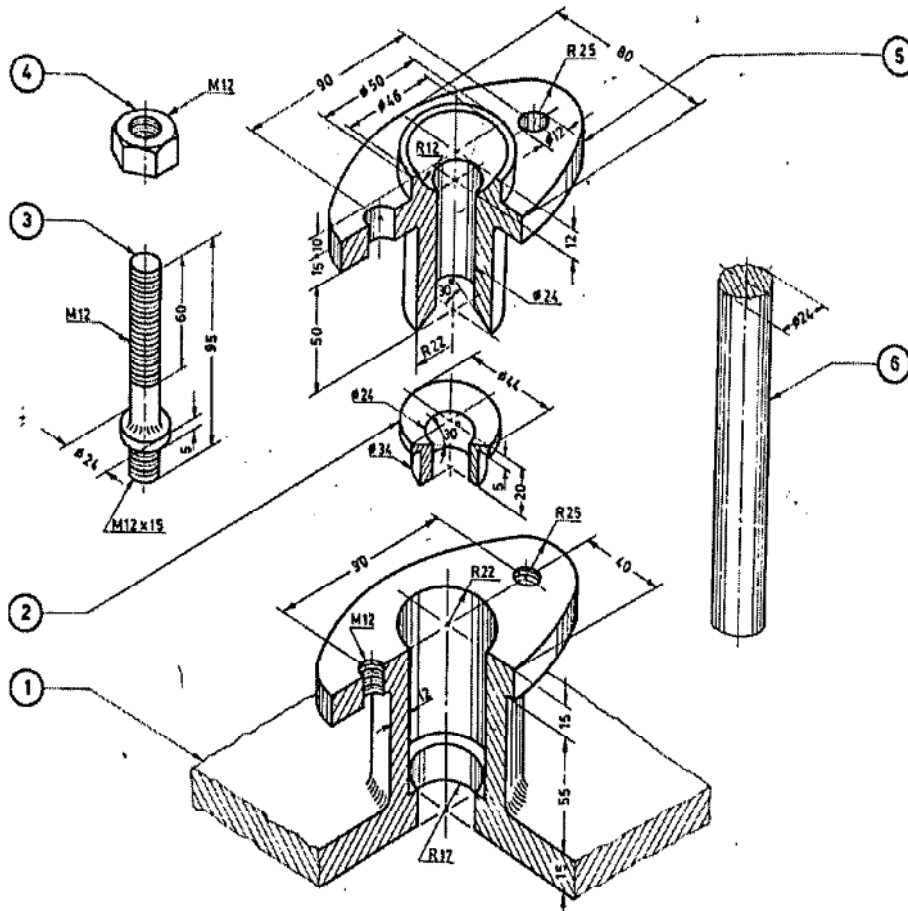
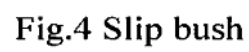


Fig.3 Socket and spigot joint



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