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**UNIVERSITY OF PETROLEUM
AND ENERGY STUDIES**



End Semester Examination, December 2017

**Program: Mechanical, Mechanical with Specialization in (Machine Design, Production,
Thermal & MSNT)**

Semester – III

Subject (Course): Machine and Assembly Drawing

Max. Marks: 100

Course Code : MHEG249

Duration : 3 Hrs

No. of page/s: 3

Note : 1. Assume suitable dimension if not given.

2. All the dimensions are in mm.

3. Take the necessary scales if required.

SECTION A (20 Marks)

1. Sketch and show the following terms with respect to screw threads: (a) pitch (b) major diameter, (c) lead, (d) root and (e) flank. **[5M]**
2. Draw the conventional representation of the following: (a) external threads, (b) internal threads **[5M]**
3. Explain how the following threads are designated as per the BIS norms: (a) square thread and (b) ACME thread. **[5M]**
4. Describe the significance of limit, fit and tolerance on machine components and differentiate between clearance fit, interference fit and transition fit. **[5M]**

SECTION B (40 Marks)

5. Explain the significance of foundation bolts and where are they used? Sketch neatly, giving proportionate dimensions; the following foundation bolts of diameter 25 mm a) eye foundation bolt, and (b) Lewis foundation bolt. **[10M]**
6. Draw the top view, front view and right-side view of a hexagonal nut for a bolt of 24mm diameter by following the ISO proportions. **[10M]**
7. A cylinder of 80 mm diameter and 100 mm axis is completely penetrated by a cone of 80 mm diameter and 120 mm long axis horizontally. Both axes intersect & bisect each other. Draw projections showing curve of intersections **[20M]**

OR

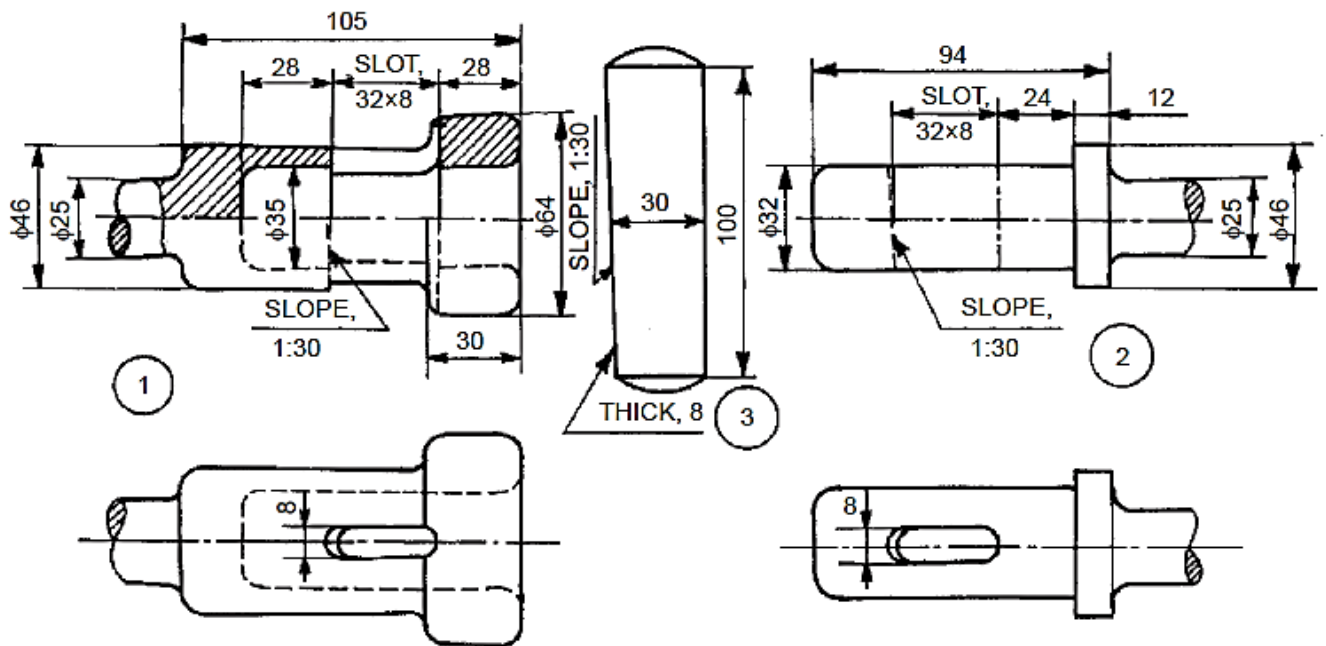
A cone, 50 mm base diameter and 70 mm axis is standing on its base on Hp. It cut by a section plane 45° inclined to HP through base end of end generator. Draw projections showing front view, sectional top view and true shape of section. [20M]

SECTION C (1 × 40M = 40 Marks)

8. Fig 2. shows the details of an Socket and Spigot Joint. Assemble the details and draw the following views of the assembly.

- a. Half Sectional Front View
- b. Side View

Show the bill of materials and projection symbol along with the Title Block. Draw the views with proper dimensions and show the dimensions in the views. Take necessary scale if required.



Parts list

Sl. No.	Name	Matl.	Qty.
1	Socket end	MS	1
2	Spigot end	MS	1
3	Cotter	HCS	1

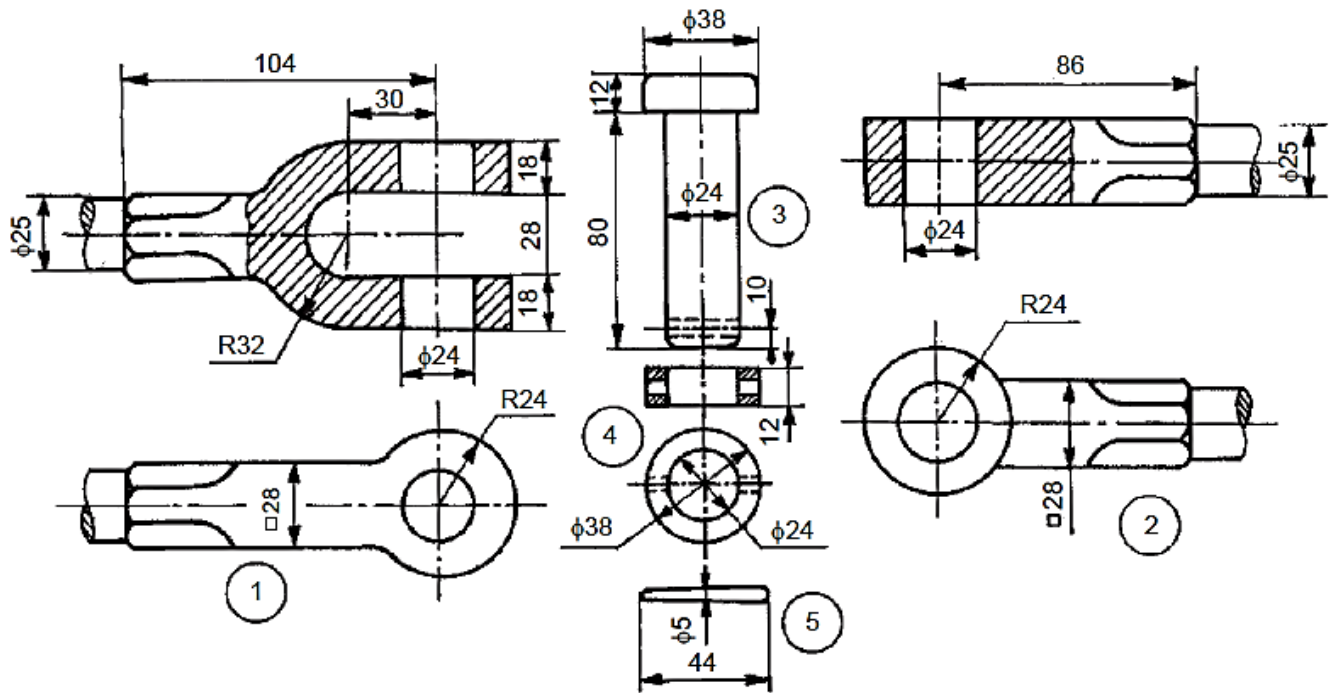
Figure 2: Details of Socket and Spigot Joint

OR

Fig 3. shows the details of an 'Knuckle Joint. Assemble the details and draw the following views of the assembly.

- Half Sectional Front View
- Side View

Show the bill of materials and projection symbol along with the Title Block. Draw the views with proper dimensions and show the dimensions in the views. Take necessary scale if required.



Parts list

Sl. No.	Name	Matl.	Qty.
1	Fork end	Forged steel	1
2	Eye end	Forged steel	1
3	Pin	Mild steel	1
4	Collar	Mild steel	1
5	Taper pin	Mild steel	1

Figure 3 : Details of Knuckle Joint