

Name:



Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, April/May 2018

Course: MHEG249 - Machine and Assembly Drawing

Semester: IV

Program: B.Tech Mechanical with Specialization in Production Engineering

Time: 03 hrs.

Max. Marks: 100

Instructions: 1. Assume suitable dimension if not given.

2. All the dimensions are in mm.

3. Take the necessary scales if required.

SECTION A

| S. No. | Questions | Marks | CO |
|---------------|--|--------------|-----------|
| 1. | Classify the various types of drawings used in mechanical engineering field. | 5 | CO1 |
| 2. | Describe the significance of limit, fit and tolerance on machine components and differentiate between clearance fit, interference fit and transition fit | 5 | CO2 |
| 3. | Explain how the following threads are designated as per the BIS norms: (a) Knuckle thread and (b) Buttress thread. | 5 | CO3 |
| 4. | Sketch and show the following terms with respect to screw threads: (a) pitch (b) major diameter, (c) lead, (d) root and (e) flank. | 5 | CO3 |

SECTION B

| | | | |
|----|--|----|-----|
| 5. | Describe the significance of foundation bolts and where are they used? Sketch neatly, giving proportionate dimensions; the following foundation bolts of diameter 25 mm a) Rag foundation bolt, and (b) Bent foundation bolt. | 10 | CO3 |
| 6. | Draw the top view, front view and right-side view of a square nut for a bolt of 24mm diameter by following the ISO proportions. | 10 | CO3 |
| 7. | A cylinder 50mm diameter and 70mm axis is completely penetrated by a square prism of 25 mm sides and 70 mm axis, horizontally. Both axes intersect & bisect each other. All faces of prism are equally inclined to HP. Draw projections showing curves of intersections. | 20 | CO1 |

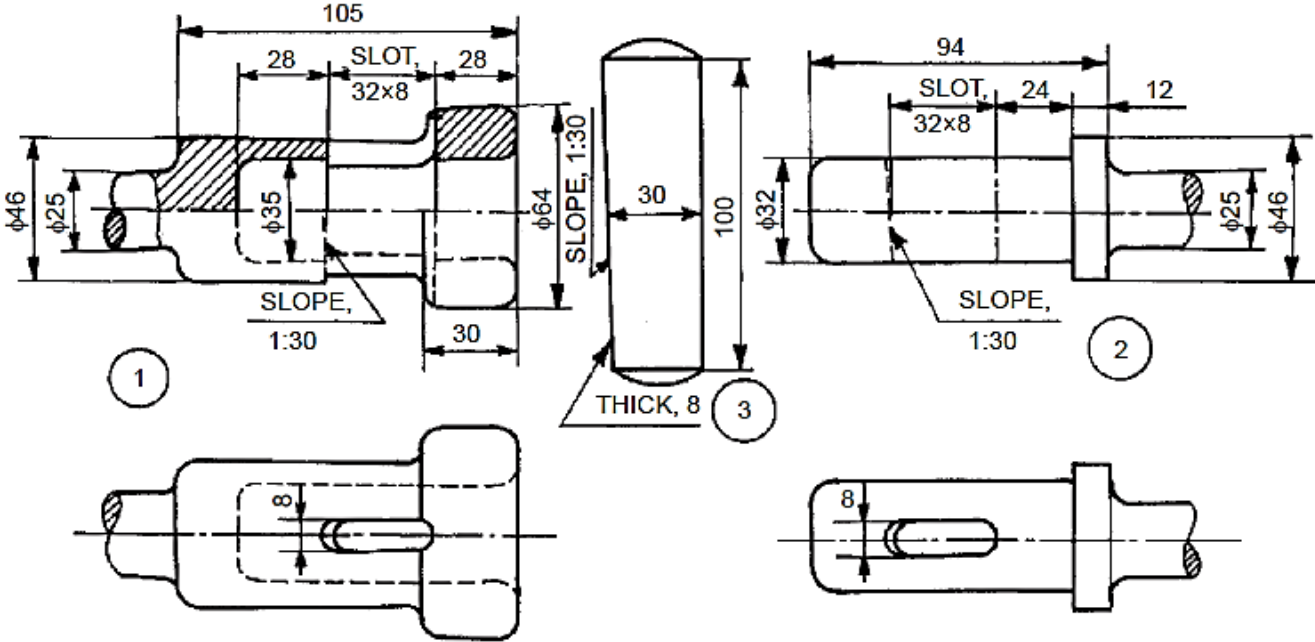
OR

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.

SECTION C (40 Marks – Attempt anyone – CO4)

8. Fig 1. 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 |

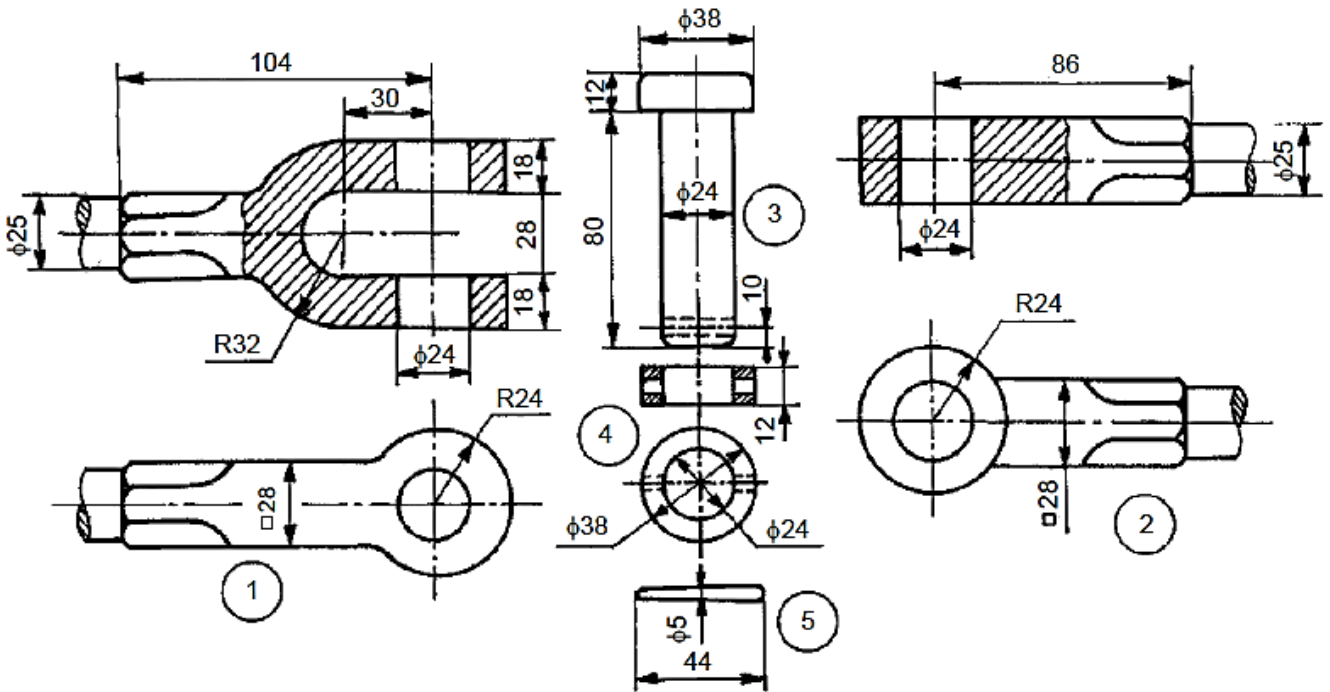
Figure 1: Details of Socket and Spigot Joint

OR

Fig 2. shows the details of an 'Knuckle Joint. Assemble the details and draw the following views of the assembly.

- a. Half Sectional Front View
- b. Top 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 2 : Details of a Knuckle Joint