

Name:

Enrolment No:



**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**End Semester Examination, December 2018**

**Course:** MECH2008 - Machine and Assembly Drawing

**Semester:** III

**Programme:** B.Tech Mechanical

**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.		Marks	CO
1	Sketch and show the following terms with respect to screw threads: (a) pitch (b) major diameter, (c) lead, (d) root and (e) flank	5	CO1
2	Draw the conventional representation of the following: (a) external threads, (b) internal threads	5	CO2
3	Describe the significance of limit, fit and tolerance on machine components and differentiate between clearance fit, interference fit and transition fit.	5	CO1
4	Explain how the following threads are designated as per the BIS norms: (a) Knuckle thread and (b) Buttress thread.	5	CO3

**SECTION B**

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) Rag foundation bolt, and (b) Bent foundation bolt.	10	CO2
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	CO2

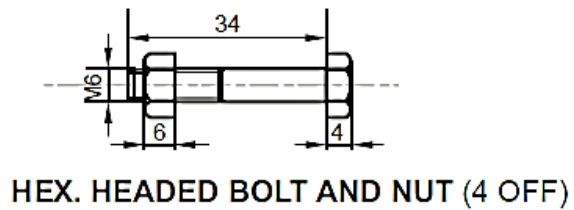
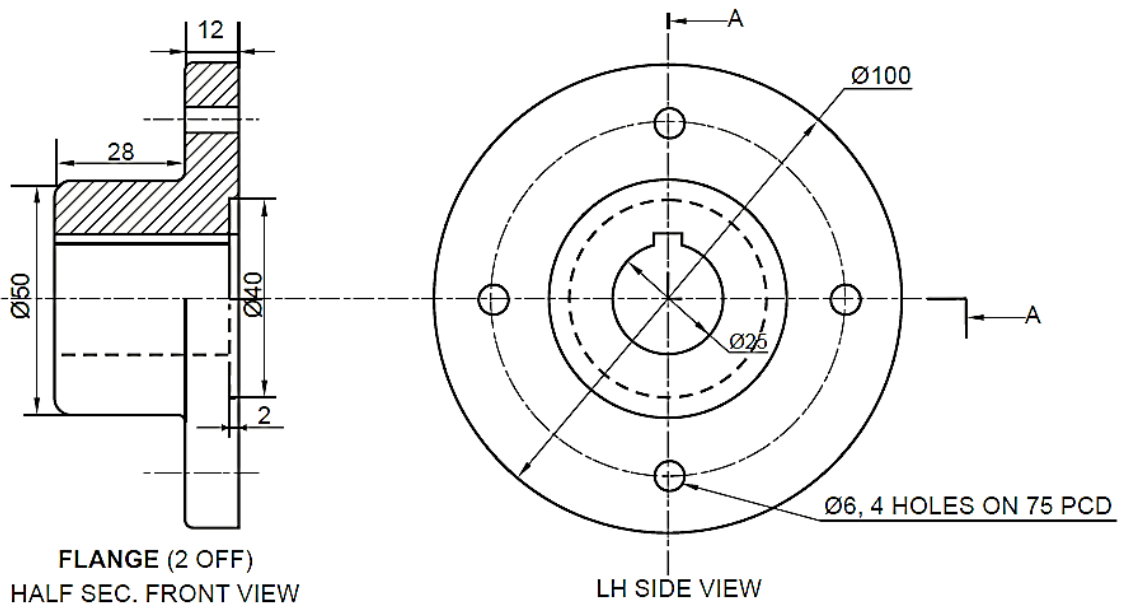
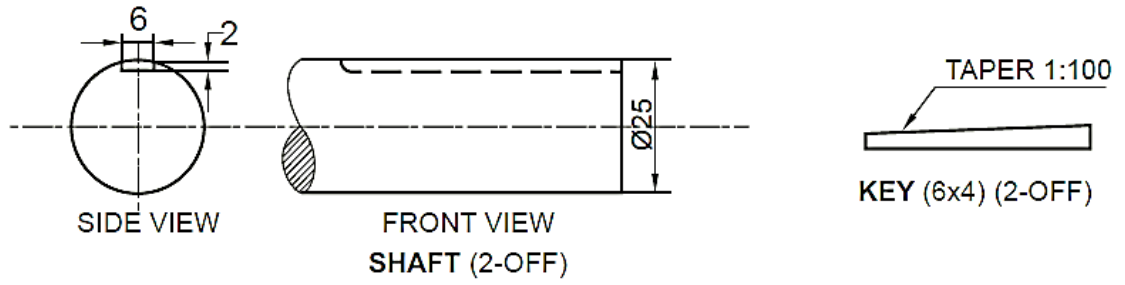
7	<p>A cone 40mm diameter and 50 mm axis is resting on one generator on HP (lying on HP) which is parallel to VP. It is cut by a horizontal section plane through it's base center. Draw sectional top view and front view.</p> <p style="text-align: center;"><b>OR</b></p> <p>A vertical cone, base diameter 75 mm and axis 100 mm long, is completely penetrated by a cylinder of 45 mm diameter. The axis of the cylinder is parallel to HP and VP and intersects axis of the cone at a point 28 mm above the base. Draw projections showing curves of intersection.</p>	<b>20</b>	<b>CO3</b>
<b>SECTION C (40 Marks)</b>			
8	<p>Answer the following questions to the point</p> <ol style="list-style-type: none"> <li>1. The designation of M33 X 2 of a bolt means.</li> <li>2. What type of thread is used for the screw jack and lathe lead screw and why?</li> <li>3. Why hexagonal shape is preferred to square one for nuts?</li> <li>4. What is a stud bolt and where is it used?</li> <li>5. What is a shaft coupling and its use?</li> </ol>	<b>10</b>	<b>CO1</b>

9. Fig 2. Shows the details of an “Unprotected Flange Coupling”. 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.

**[30Marks – CO4]**



**Figure 1: Details of an Unprotected Flange Coupling**

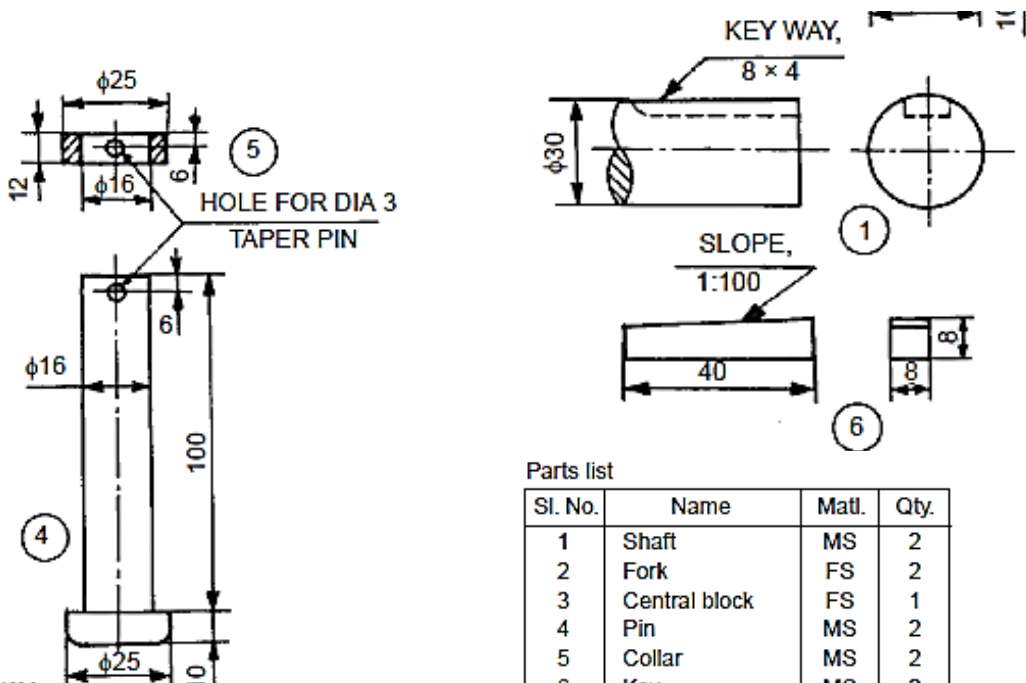
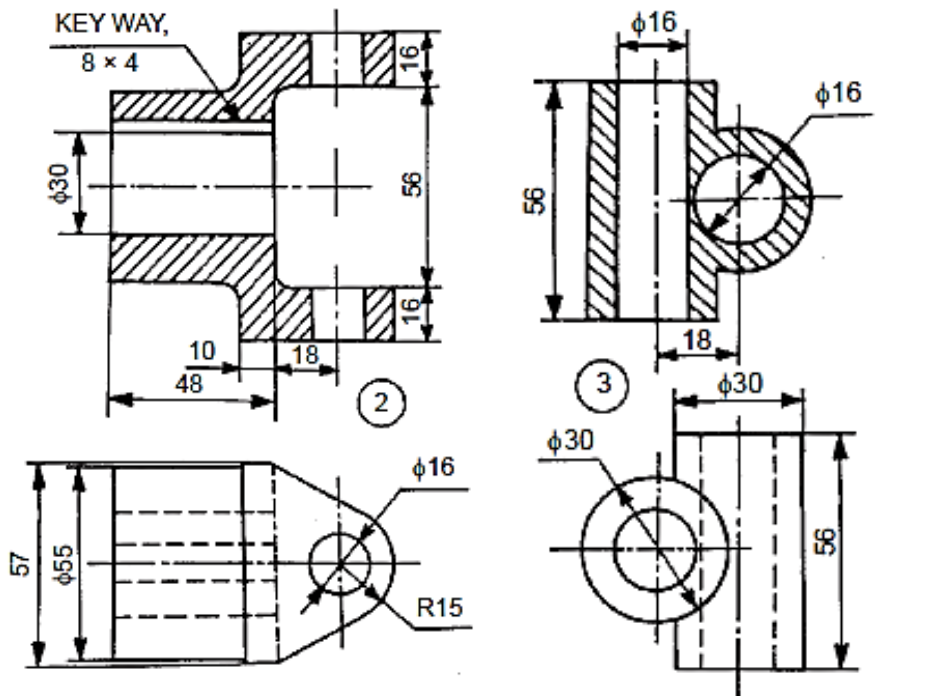
OR

Fig 2. Shows the details of an 'Universal Coupling'. Assemble the details and draw the following views of the assembly

- Front view, top half in section.
- Left 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.

[30 Marks – CO4]



Parts list

Sl. No.	Name	Matl.	Qty.
1	Shaft	MS	2
2	Fork	FS	2
3	Central block	FS	1
4	Pin	MS	2
5	Collar	MS	2
6	Key	MS	2

**Figure 2 : Details of an Universal Coupling**