

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Elements of Machine Drawing (MECH 2017) Programme: B.Tech – FSE Time: 03 hrs. Instructions: 1. Assume suitable dimensions if not given. 2. All dimensions are in mm. 3. Take necessary scales if required.	Semester: III No. of pages: 03 Max. Marks: 100
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SECTION A

S. No.		Marks	CO
Q 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	CO5
Q 2	Explain the method for representation of surface roughness on drawings with a neat sketch.	5	CO1
Q 3	Draw the sketch and representation of the following welded joints: (a) flat single V butt weld with flat backing run, (b) convex double J butt weld	5	CO3
Q 4	Draw the symbols for the following flanged pipe fittings: (a) reducing socket, (b) globe valve, (c) lateral, (d) check valve and (e) 45° elbow.	5	CO4

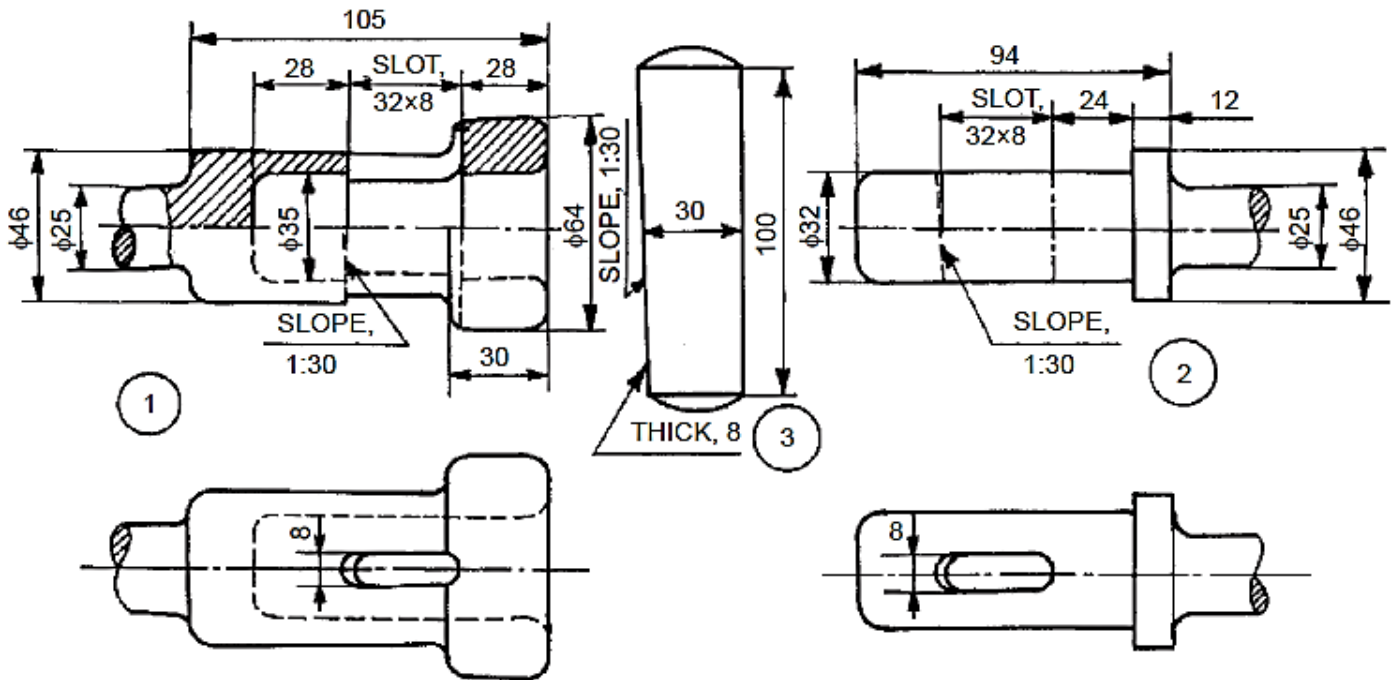
SECTION B

Q 5	Draw the top view, front view and right side view of a hexagonal nut for a bolt of nominal diameter of 24 mm by following standard proportions. <p style="text-align: center;">OR</p> Draw proportionate sketch of the following cap and machine screws: (a) round or cup headed, (b) countersunk headed, (c) fillister headed, (d) socket headed and (e) square headed.	10	CO5
Q 6	Explain the significance of foundation bolts and their use. Sketch neatly, giving proportionate dimensions, the following foundation bolts of diameter 25 mm: (a) eye foundation bolt and (b) Lewis foundation bolt.	2+4+4	CO5
Q 7	On a hole and shaft assembly, the dimensions are as given below: Hole = 80H7 ; Shaft = 80u6 (Diameter step is 50 – 80 mm). Find: a. Tolerance of shaft b. Tolerance on hole c. Type of Fit obtained d. Sketch the assembly For shaft “u”, fundamental deviation (ei) is given by +IT7 + D in microns where IT7 is the tolerance for grade IT7, given by 16 <i>i</i> , and tolerance for grade IT6 is given by 10 <i>i</i> where <i>i</i> is the standard tolerance unit in microns and <i>D</i> the geometrical mean of the diameter step in mm.	2+2+2 +4	CO2
Q 8	Draw proportionate sketches with dimensions for the following threads with 5 mm pitch: (a) BSW thread, (b) Seller thread, (c) Knuckle thread	4+3+3	CO5

SECTION-C

Q 9	(a) Interpret the representation M 18 × 2 mm. (b) Explain the reason for preferring hexagonal bolt over square bolts.	2×5	CO5
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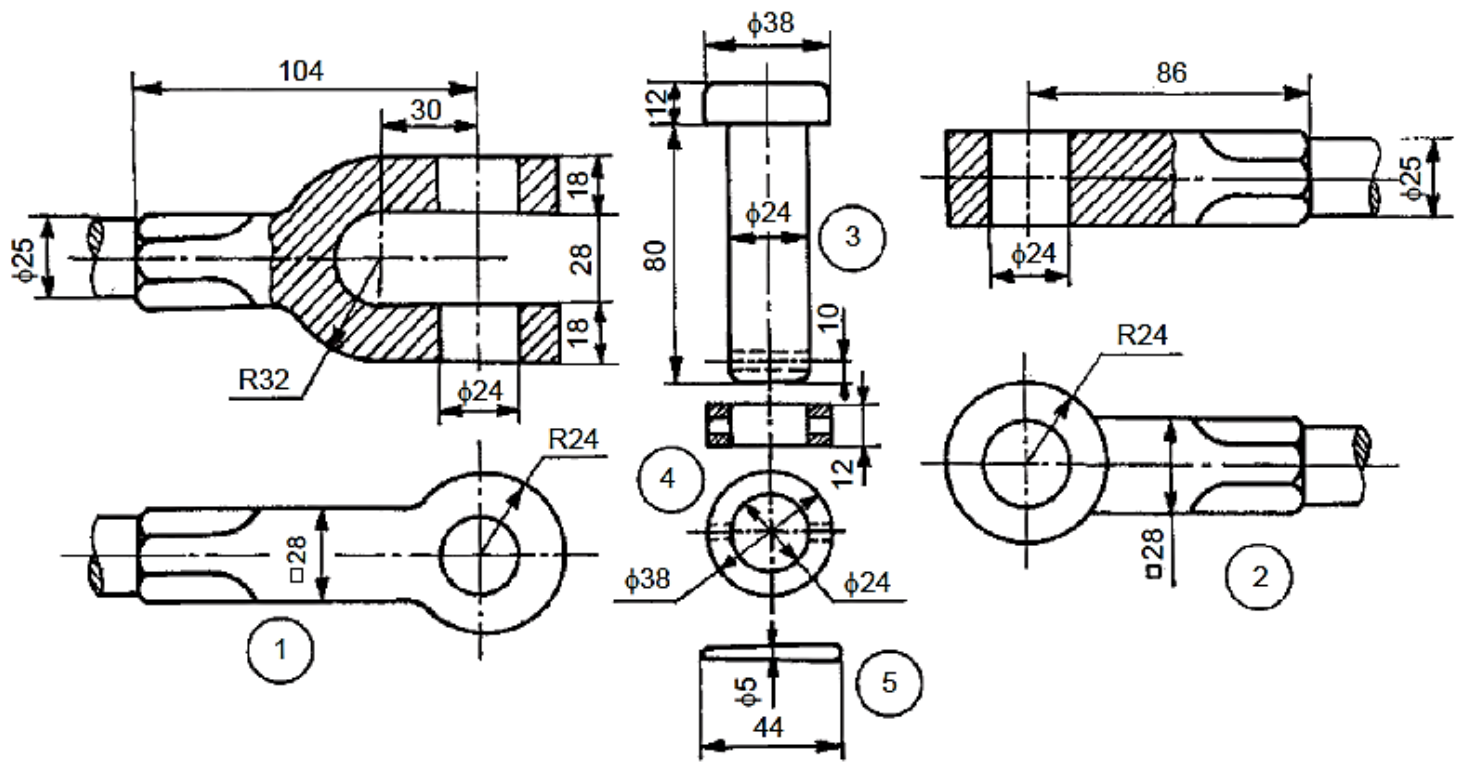
	(c) Explain studs and their use. (d) Explain the significance of washer in bolted joints. (e) Mention four methods of locking a nut.		
Q 10	<p>Fig. 1 shows the details of a Socket and Spigot joint. Assemble the parts and draw the following views of the assembly:</p> <p>(a) Half – sectional front view (b) Side view</p> <p>Show the bill of materials and projection symbol along with Title Block. Draw the views with properly representing the dimensions. Take necessary scale if required.</p> <p style="text-align: center;">OR</p> <p>Fig. 2 shows the details of a Kunckle joint. Assemble the parts and draw the following views of the assembly:</p> <p>(a) Half – sectional front view (b) Side view</p> <p>Show the bill of materials and projection symbol along with Title Block. Draw the views with properly representing the dimensions. Take necessary scale if required.</p>	30	CO5



Parts list

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

Fig. 1: Details of Socket and Spigot joint



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

Fig. 2: Details of Knuckle joint