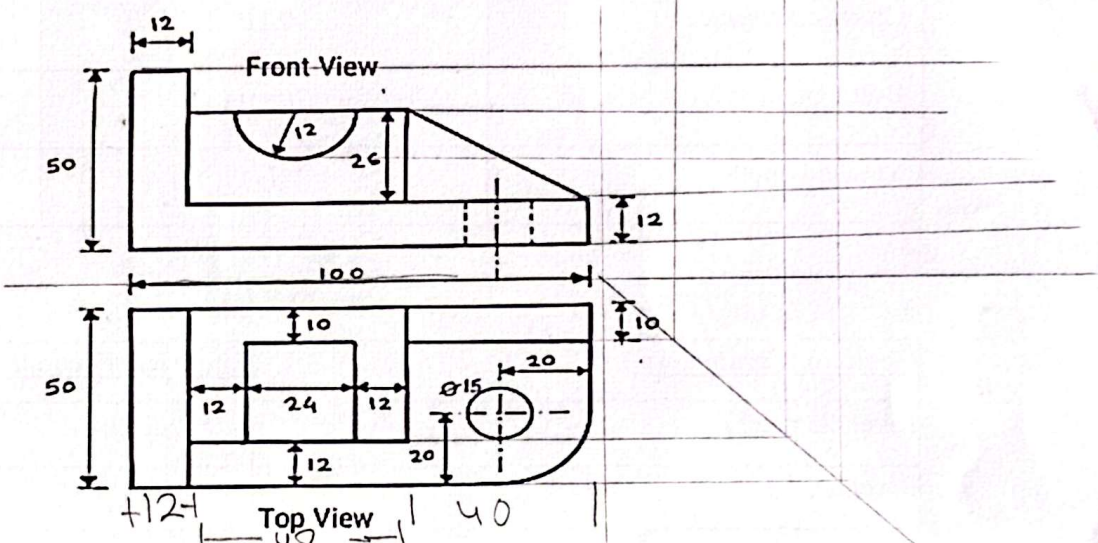
KATHMANDU UNIVERSITY
End Semester Examination
2025

Level : B.E.		Course	: EDRG
102			
Year/Semester : I/II		FM	: 40
Time : 2 hrs. 30 min.	Set B	PM	: 20

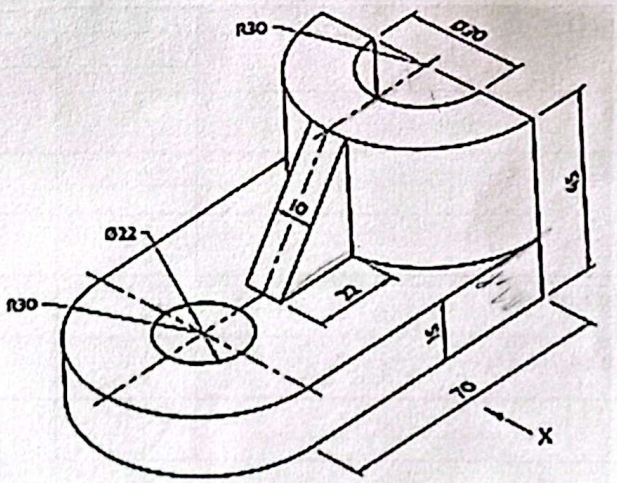
[3Q × 12 = 36 marks]

Use appropriate instruments and **one** drawing sheet. Answer *ALL* questions. Assume missing dimensions if and only if any. Flip the page to refer tables for empirical relations. 4 marks is dedicated for title block.

1. Draw the three views of a square headed bolt with a hexagonal nut. Show the bolt head and the nut across the corner in the front view. The nut is screwed on the bolt. The bolt is 25mm diameter, 150 mm long with a thread length of 60 mm. the end of the bolt is chamfered to 45 degrees.
2. Draw the isometric view of the orthographic views shown in figure 1 and show all the dimension.



3. Draw the orthographic views of the objects shown in figure 2 and show all the dimensions. Front view is indicated by the arrow.



Parameters	Hexagonal Nut and Bolt	Square Nut and Bolt
Nominal Diameter	Given D	Given D
Across the Flat (A/F)	$1.5D + 3$	$1.5D + 3$
Across the Corner (A/C)	$2D$	$\sqrt{2}.(\frac{A}{F})$
Height of the Nut	$0.9D$	$0.9D$
Height of the Bolt	$0.75D$	$0.75D$
Minor Diameter (Nut)	$0.8D$	$0.8D$
Chamfer Distance	$0.1D$	$0.1D$
Bolt Length	*Given L*	*Given L*
Thread Length	L_t	L_t

Common Parameters	Empirical Formula			
Rivet diameter d	$6\sqrt{t}$ (t given)			
Rivet head diameter	$1.6d$			
Rivet head height	$0.7d$			
Case Specific Parameters	Lap Joints		Butt Joints	
	Chain	Zigzag	Chain	Zigzag
Pitch(p)	$3d$	$3d$	$3d$	$3d$
Back pitch(p_b)	$2d+6$	$2d$	$3d$	$3d$
Margin (m)	$1.5d$	$1.5d$	$1.5d$	$1.5d$
Single cover plate thickness(t_1)	-	-	$1.125t$	$1.125t$
Double cover plate thickness(t_2)	-	-	$0.75t$	$0.75t$
Chamfer angle	$10°$	$10°$	$10°$	$10°$