U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

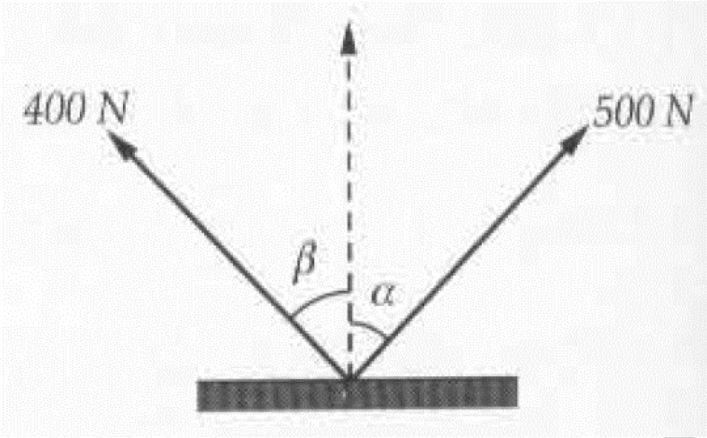
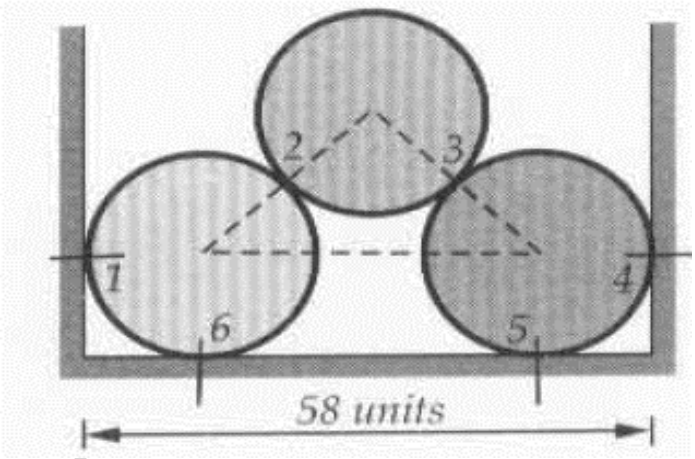
April 2025 Semester End Make-Up Examinations

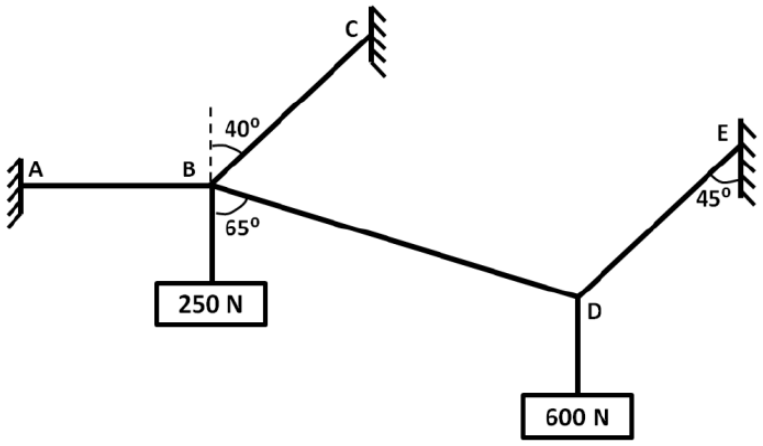
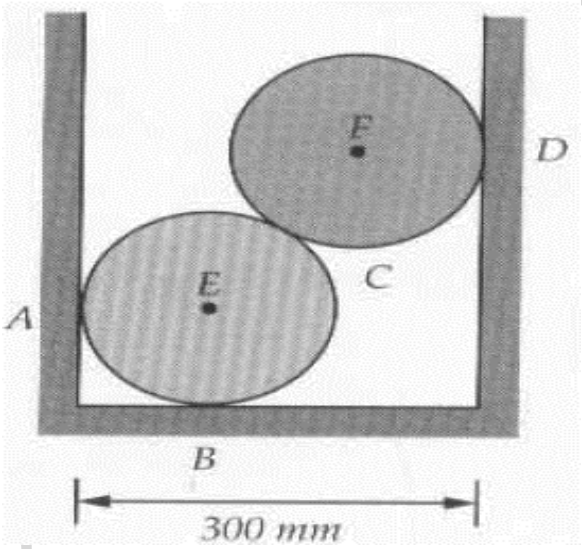
Programme: B.E. **Semester: I**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 23CV1ESICV **Max Marks: 100**
Course: Introduction to Civil Engineering

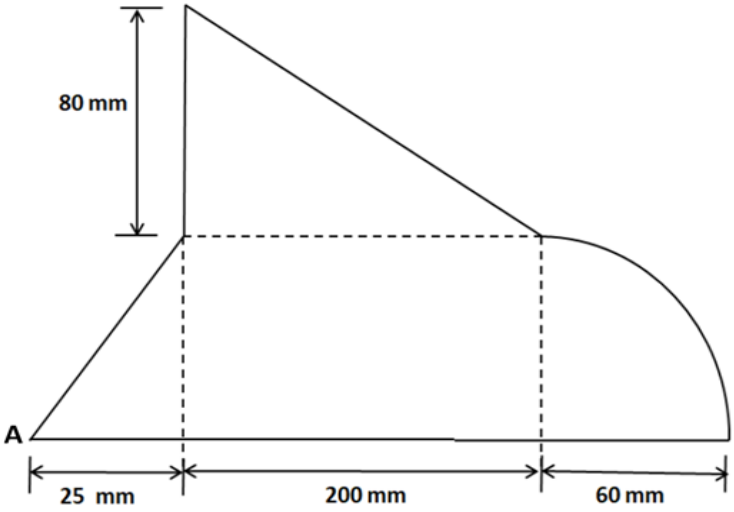
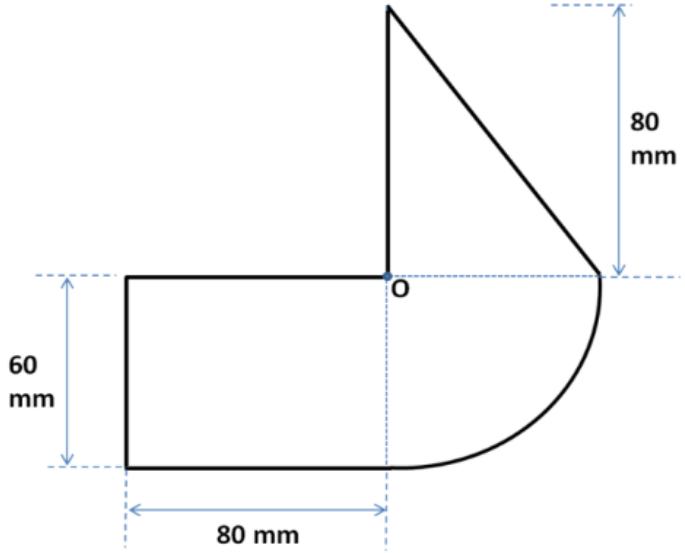
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

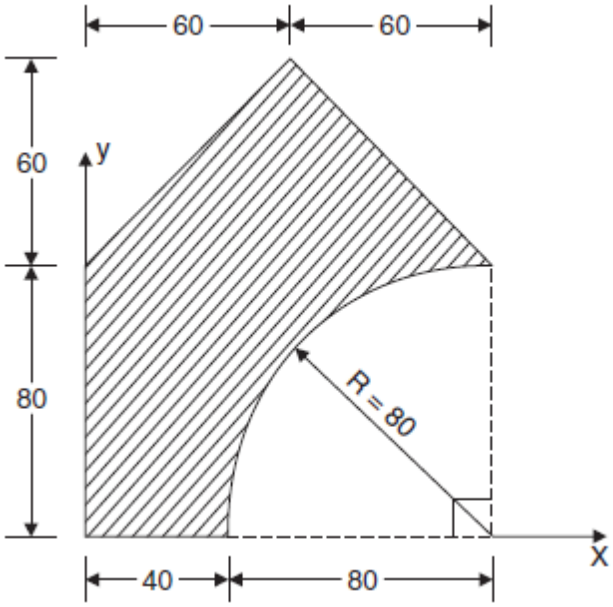
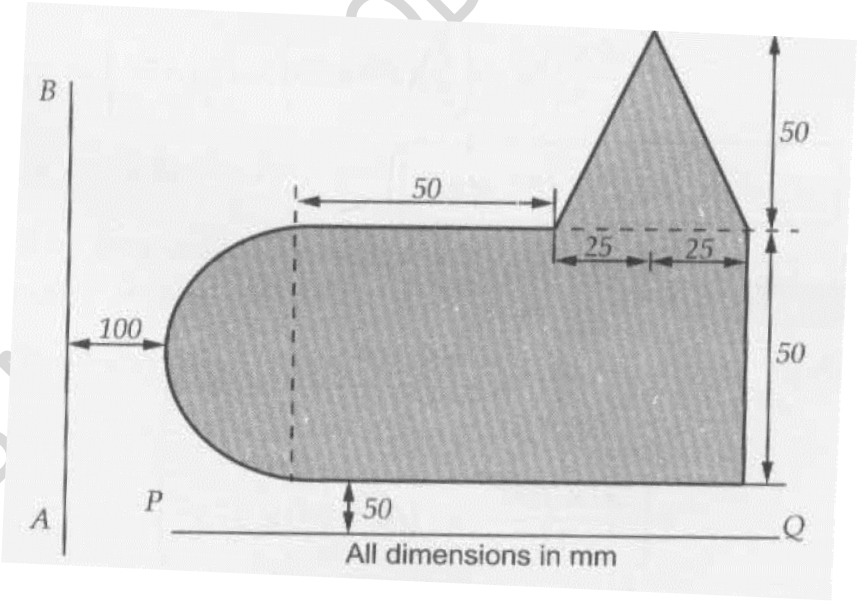
Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

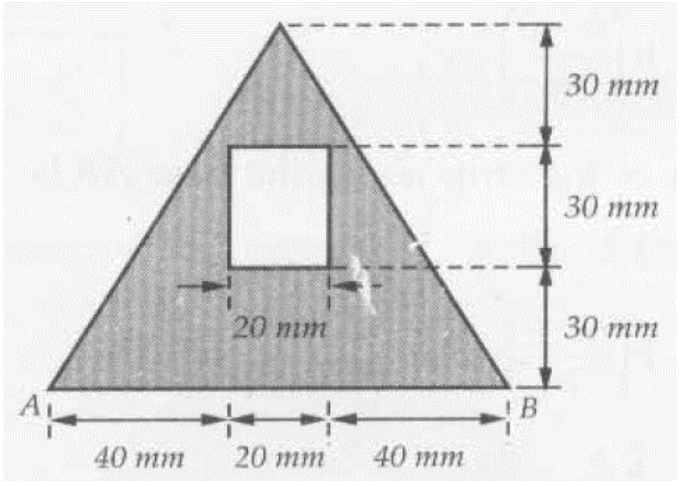
				CO	PO	Marks
			UNIT – I			
1	a)		Explain the roles and responsibilities of civil engineering professional.	CO 1	PO6	05
	b)		Explain briefly the following two disciplines of civil engineering. i. Structural Engineering ii. Geotechnical engineering	CO 1	PO6	10
	c)		Briefly explain the difference between cement mortar and concrete	CO1	PO6	05
			OR			
2	a)		Describe the roles and responsibilities of the following disciplines of civil engineering. i. Survey Engineering ii. Highway/Transportation Engineering iii. Environmental Engineering	CO1	PO6	12
	b)		Elaborate the importance of Foundation, Columns, Beams and Slabs are Building components.	CO1	PO6	08
			UNIT – II			
3	a)		Explain in detail about the Sustainable Development Goals (SDGs) highlighting any 4 SDGs.	CO 2	PO7	10
	b)		Discuss the significance of water supply and sanitary systems in buildings and urban areas	CO 2	PO7	10
			OR			
4	a)		Elaborate on the following concepts i) Urban air pollution ii) Solid waste Management.	CO 2	PO7	10
	b)		Analyze the challenges linked to urban flooding and evaluate the functions of urban flood control systems.	CO 2	PO7	10

			UNIT - III			
	5	a)	In the force system shown in Fig 1, find the angles α & β, if i) The resultant is 700N directed vertically up ii) The resultant is 1000N directed horizontally to the right.  Fig 1	***CO*** 3	***PO2***	**10**
		b)	Three cylinders weighing 500N each 24 units in diameter are placed in channel as shown in Fig 2. Determine reactions at all contact points. Take cylinders are smooth  Fig 2	***CO*** 3	***PO2***	**10**
			OR			

	6	a)	For the system of cables under equilibrium as shown in Figure 3, determine the tension in all the segments of cable.  **Fig 3**	***CO*** 3	***PO2***	**10**
		b)	Two spheres each of radius 100mm and weight 5kN is in a rectangular box as shown Fig 4. Calculate the reactions at all points of contact.  **Fig 4**	***CO*** 3	***PO2***	**10**

			UNIT – IV			
	7	a)	Locate the centroid of the plane area as shown in Figure 5 with A as origin.  **Fig.5**	*CO* 4	*PO2*	**10**
		b)	Determine the co-ordinates of centroid of plane area shown in Fig 6 with respect to O as origin  **Fig 6**	*CO* 4	*PO2*	**10**
			OR			

	8	a)	Determine the centroid of the shaded area shown in Fig.7. All dimensions are in mm.  Fig-7	*CO* 4	*PO2*	**12**
		b)	Derive for the centroid of semi-circle from first principles	*CO* 4	*PO1*	**08**
			UNIT – V			
	9	a)	Determine the moment of inertia of the area shown in Fig 8 about the axes AB and PQ  Fig 8	*CO* 4	*PO2*	**16**
		b)	State both parallel axes theorem and perpendicular axis theorem	*CO* 4	*PO1*	**04**
			OR			

	10	a)	Determine the moment of inertia and radii of gyration of the area shown in Fig 9 about the base AB and the centroidal axis parallel to AB  Fig 9	***CO*** 4	***PO2***	**16**
		b)	Explain the polar moment of inertia and the radius of gyration	***CO*** 4	***PO1***	**04**

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