U.S.N.										

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

Autonomous Institute Affiliated to VTU

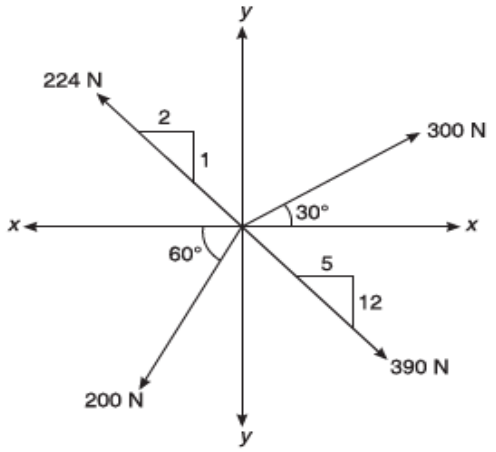
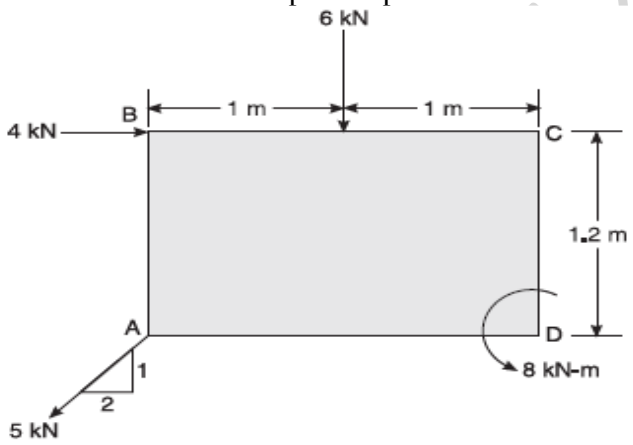
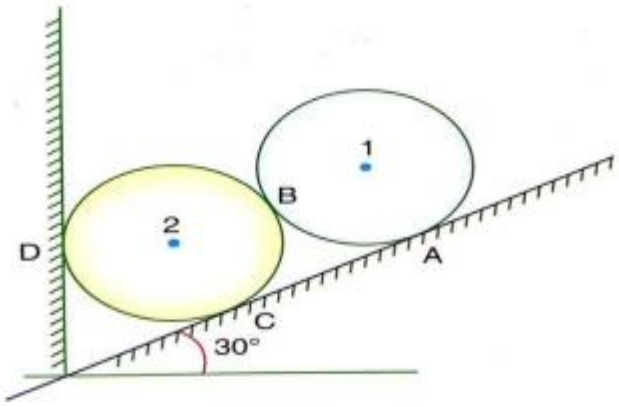
February / March 2025 Semester End Main Examinations

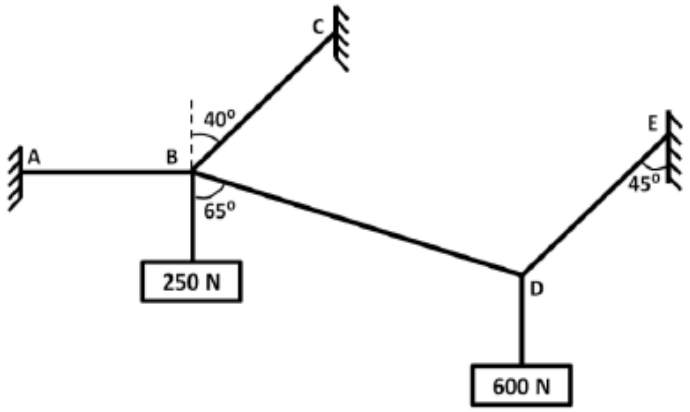
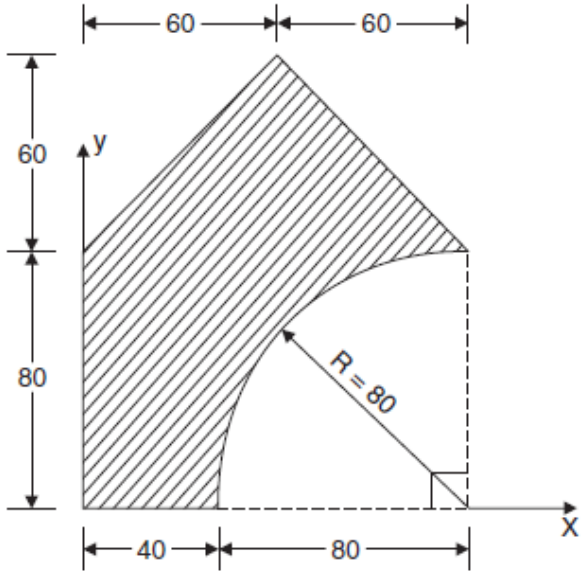
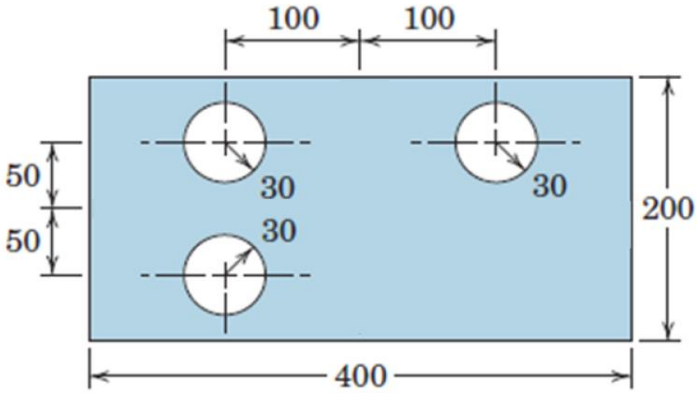
Programme: B.E. **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 23CV1ESICV/23CV2ESICV/22CV1ESICV/22CV2ESICV **Max Marks: 100**
Course: Introduction to Civil Engineering

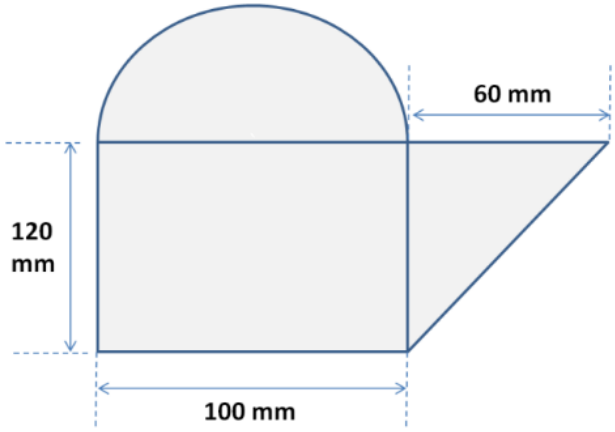
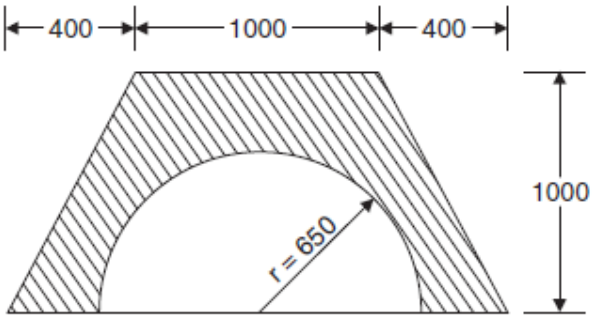
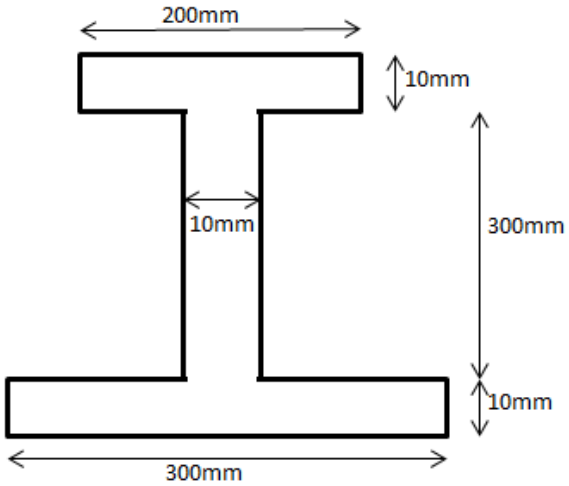
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

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 importance of Structural steel and Pre stressed concrete in Civil Engineering construction.	*CO* 1	*PO6*	**10**
	b)		Elucidate the scope of Structural Engineering & Transportation Engineering	*CO* 1	*PO6*	**10**
			OR			
2	a)		Explain the importance of Construction Chemicals in Civil Engineering construction projects with examples.	*CO* 1	*PO6*	**6**
	b)		Describe the roles and responsibilities of the following disciplines of civil engineering. i. Survey Engineering ii. Construction Project Management	*CO* 1	*PO6*	**8**
	c)		Explain the roles and responsibilities of civil engineering professional.	*CO* 1	*PO6*	**6**
			UNIT – II			
3	a)		Analyze the challenges linked to urban flooding and evaluate the functions of urban flood control systems.	*CO* 2	*PO7*	**10**
	b)		Elaborate on the following concepts i) Smart City ii) Urban air pollution.	*CO* 2	*PO7*	**10**
			OR			
4	a)		Discuss in detail about the Sustainable Development Goals (SDGs) highlighting any 4 SDGs.			**10**
	b)		Explain the significance of water supply and sanitary systems in buildings and urban areas			**10**

			UNIT-III			
	5	a)	Determine the resultant and its direction of the forces acting on a particle as shown in Fig -1.  Fig-1	***CO*** 3	***PO2***	**08**
		c)	For the force system shown in Fig- 2 determine i) Magnitude of resultant ii) Direction of resultant iii)Position of resultant with respect to point D  Fig-2	***CO3***	***PO2***	**12**
			OR			
	6	a)	Two identical cylinders, each weighing 500 N, are placed in a trough as shown in fig.3. Determine the reactions developed at contact points A, B, C, D. Assume all points of contact are smooth.  Fig-3	***CO*** 3	***PO3***	**10**

		b)	Determine the tension in different parts of the string shown in fig.4  Fig-4	*CO* 3	*PO3*	**10**
			UNIT – IV			
	7	a)	Determine the centroid of the shaded area shown in Fig.5. All dimensions are in mm.  **Fig-5**	*CO* 4	*PO2*	**12**
		b)	Derive for the centroid of semi-circle from first principles	*CO* 4	*PO1*	**08**
			OR			
	8	a)	Determine the centroid of the shaded area shown in Fig.6. All dimensions are in mm.  Figure 6.	*CO* 4	*PO2*	**10**

		b)	Locate the centroid of the area shown in Fig 7  **Fig 7**	*CO* 4	*PO2*	**10**
			UNIT – V			
	9	a)	The cross-section of a plain concrete culvert is shown in Fig.8 Determine the moment of inertia about the horizontal centroidal axis. All dimensions are in mm.  **Fig-8**	*CO* 4	*PO2*	**12**
		b)	State and prove Parallel axis Theorem and Perpendicular axis Theorem.	*CO* 4	*PO1*	**08**
			OR			
	10	a)	Determine the radius of gyration of the given I section shown in fig.9 about horizontal and vertical centroidal axis.  **Fig-9**	*CO* 4	*PO2*	**15**
		b)	Explain the about Polar moment of Inertia and the radius of gyration	*CO* 4	*PO1*	**05**

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