U.S.N.										

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

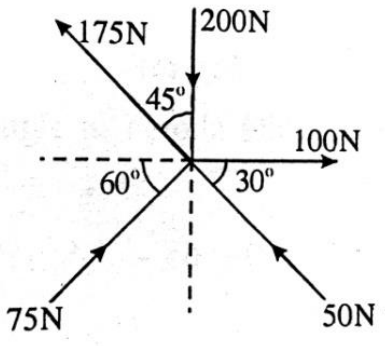
Autonomous Institute Affiliated to VTU

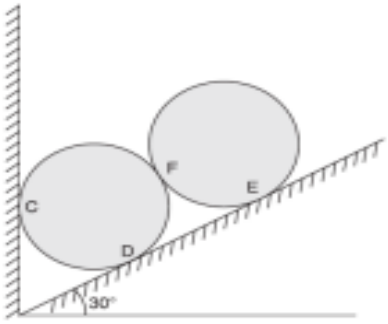
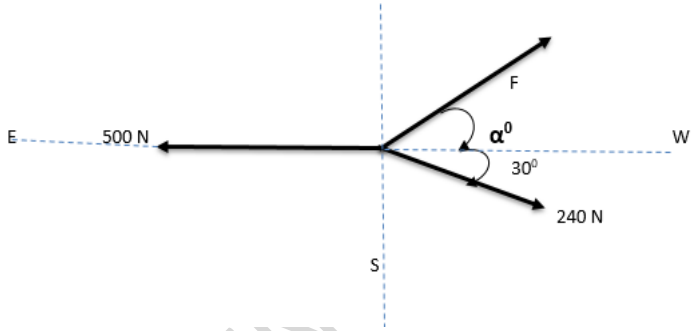
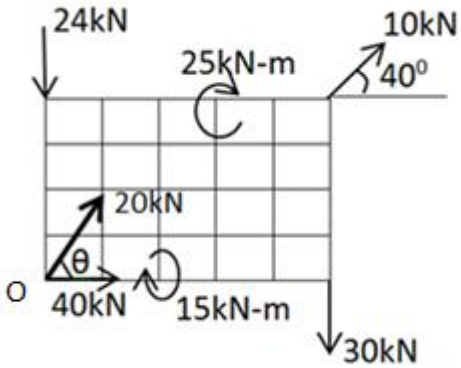
October 2024 Supplementary Examinations

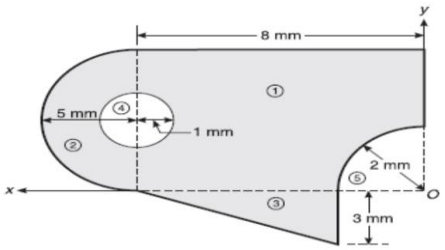
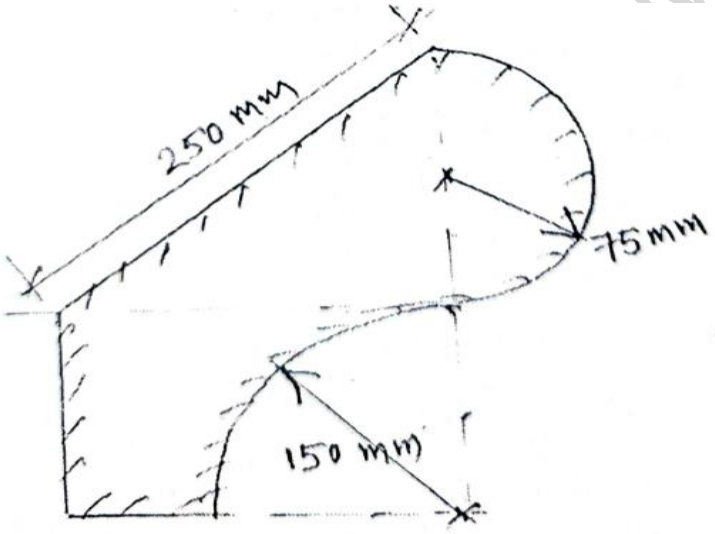
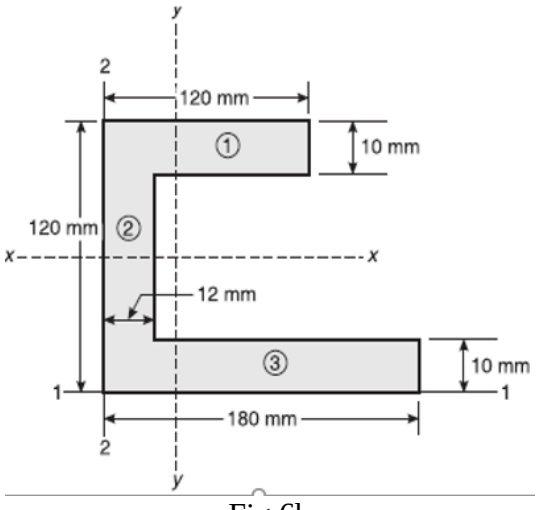
Programme: B.E. **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 22CV1ESICV / 22CV2ESICV **Max Marks: 100**
Course: Introduction to Civil Engineering

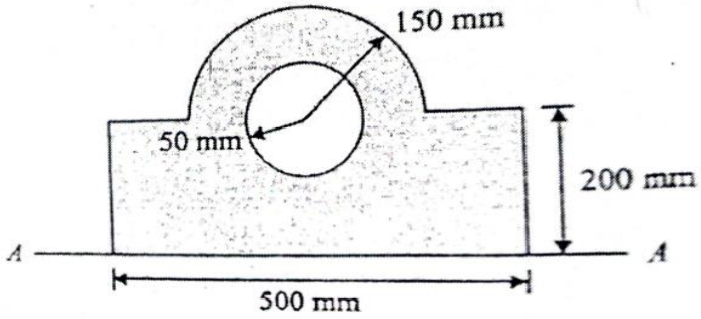
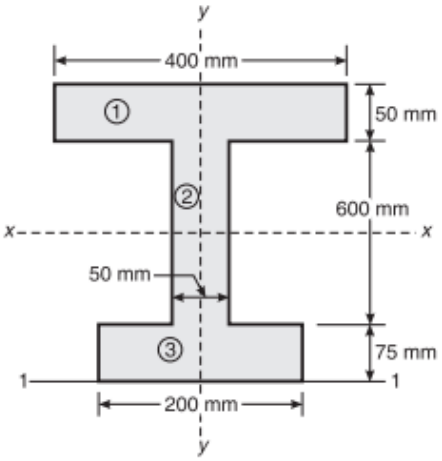
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

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)		Briefly outline the importance of the streams Environmental engineering and hydraulics & water resources engineering to the society.	*CO1*	*PO6*	**08**
	b)		Discuss the different proportions and functional properties of mortar.	*CO1*	*PO6*	**06**
	c)		Classify the structural and nonstructural elements of the building.	*CO1*	*PO6*	**06**
			UNIT - II			
2	a)		Justify how effectively sustainable goals are achieved in civil engineering industry?	*CO2*	*PO7*	**07**
	b)		Enumerate the recycling of different materials in construction field.	*CO2*	*PO7*	**07**
	c)		Discuss the major problems associated with urban flooding problems.	*CO2*	*PO7*	**06**
			UNIT - III			
3	a)		Explain with the examples idealization of bodies as applied to mechanics.	*CO3*	-	**04**
	b)		Find the resultant and its direction for the system of forces shown in the Fig.3b  Fig.3b	*CO3*	*PO1, PO2*	**06**

		c)	Two identical rollers each of weight 700 N are supported by an inclined plane and vertical wall as shown in Fig.3c. Find the reaction exerted by the wall and the inclined plane at C, D. Assume all contact surfaces to be smooth.  Fig.3c	*CO 3*	*PO1, PO2*	**10**
			OR			
	4	a)	The force system shown in Fig Q4(a) has a resultant of 250 N acting vertically up. Determine the value of F and α^0 required to give this resultant.  Q4(a).	*CO3*	*PO1, PO2*	**06**
		b)	List the characteristics of a couple.	*CO3*	*PO1, PO2*	**04**
		c)	Determine the magnitude, direction and position of the resultant of system of forces shown in Fig.4c with respect to point "O ". The spacing of the grids is 2m along both the directions.  Fig.4c	*CO3*	*PO1, PO2*	**10**

			UNIT - IV			
	5	a)	Differentiate between centroid and center of gravity.	*CO4*	-	**04**
		b)	Obtain from first principles coordinates of a sector of a circle using usual notations.	*CO4*	*PO1*	**06**
		c)	Locate the centroid of the plane given in Fig 5.c with respect to the point O.  Fig 5.c	*CO4*	*PO1*	**10**
			UNIT - V			
	6	a)	Determine the radius of gyration of the shaded area shown in Fig Q6(a) about the vertical axis passing through centroid.  Fig Q6(a)	*CO4*	*PO1*	**12**
		b)	Find the moment of inertia of the area shown in Fig.6b about the horizontal axis passing through centroid.  Fig.6b	*CO4*	*PO1*	**08**

			OR			
	7	a)	Determine the moment of inertia of the shaded area shown in Fig Q7(a) about the axis AA  Fig Q7(a)	*CO4*	*PO1*	**10**
		b)	Determine the moment of inertia of the section shown in Fig.7b about its horizontal axis passing through its centroid.  Fig.7b	*CO4*	*PO1*	**10**

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