

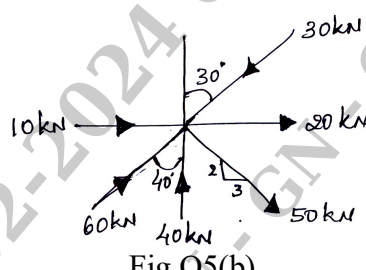
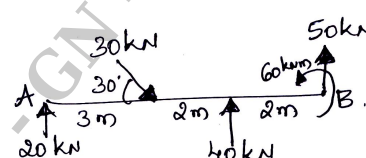
First Semester B.E./B.Tech. Degree Examination, Dec.2023/Jan.2024

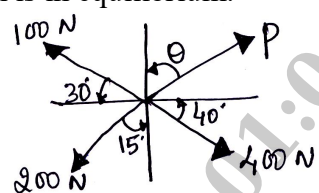
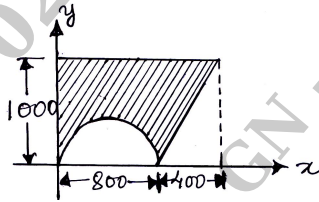
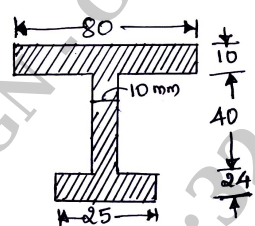
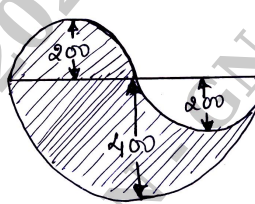
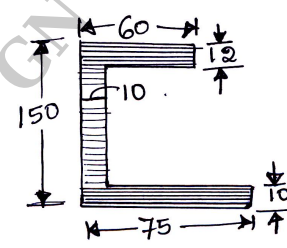
Introduction to Civil Engineering

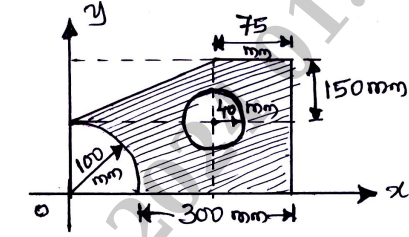
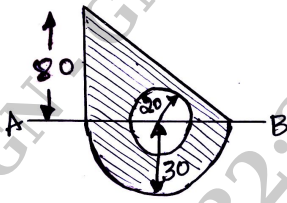
Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks, L: Bloom's level, C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Explain briefly the scope of following specification of civil engineering: i) Environmental Engineering ii) Structural Engineering	08	L1	CO1
	b.	Write the composition of cement.	06	L1	CO1
	c.	What is brick? Write the classes of bricks.	06	L1	CO1
OR					
Q.2	a.	Differentiate Reinforced and Prestressed Concrete.	08	L1	CO1
	b.	Write a note on Construction Chemicals.	06	L1	CO1
	c.	Enumerate Structural Elements of a building.	06	L1	CO1
Module – 2					
Q.3	a.	Discuss on salient points on sustainable development goals.	08	L1	CO2
	b.	Write a note on Smart City Concept.	06	L1	CO2
	c.	Describe Solid Waste Management.	06	L1	CO2
OR					
Q.4	a.	Write the key points to be considered while identifying the landfills sites.	08	L1	CO2
	b.	Explain Refuse, Reuse and Recycle concepts.	06	L1	CO2
	c.	Write a note on Energy Efficient buildings.	06	L1	CO2
Module – 3					
Q.5	a.	Explain principles of superposition with a neat sketch.	04	L2	CO3
	b.	Determine the resultant of the system of forces shown in the Fig.Q5(b) below:  Fig.Q5(b)	08	L3	CO3
	c.	Determine the resultant of non concurrent system of forces shown in the Fig.Q5(c) below:  Fig.Q5(c)	08	L3	CO3
OR					
Q.6	a.	State and prove Varignon's theorem.	04	L2	CO3
	b.	Discuss resolution and composition of forces.	08	L2	CO3

	c.	Four forces of magnitude P, 100 N, 200 N, and 400 N are acting at a point as shown in Fig.Q6(c). Determine the magnitude and direction of force 'P' such that the force system is in equilibrium.	08	L3	CO3
 <p>Fig.Q6(c)</p>					
Module – 4					
Q.7	a.	Derive the centroid of a triangle having base 'b' and height 'h' from the first principles.	05	L2	CO4
	b.	Locate the centroid of the shaded area shown in Fig.Q7(b) with respect to reference axis. All dimensions are in mm.	08	L3	CO4
 <p>Fig.Q7(b)</p>					
	c.	Locate the centroid of the shaded area shown in Fig.Q7(c). All dimensions are in mm.	07	L3	CO4
 <p>Fig.Q7(c)</p>					
OR					
Q.8	a.	Derive the centroid of a rectangle of base 'b' and height 'h'.	05	L2	CO4
	b.	Determine the centroid of the shaded area shown in the Fig.Q8(b) below. All dimensions in mm.	08	L3	CO4
 <p>Fig.Q8(b)</p>					
	c.	Determine the centroid of the shaded area shown in the Fig.Q8(c). All dimensions in mm.	07	L3	CO4
 <p>Fig.Q8(c)</p>					

Module – 5					
Q.9	a.	State and prove parallel axis theorem.	05	L5	CO5
	b.	Derive the moment of inertia of a triangle of having base 'b' and height 'h' from the first principle.	05	L5	CO5
	c.	Find the polar moment of inertia of the plane lamina shown in Fig.Q9(c) about the point 'O' [I_{Oz}].	10	L5	CO5
 <p>Note : Radius of circle is 40mm. Fig.Q9(c)</p>					
OR					
Q.10	a.	Derive Moment of Inertia of a circle from the first principle.	05	L5	CO5
	b.	Define the terms i) Moment of Inertia ii) Radius of Gyration.	05	L5	CO5
	c.	Compute the MI of the area shown in Fig.Q10(c) about the axis AB. All dimensions are in mm only. Radius of circle is 20mm.	10	L5	CO5
 <p>Fig.Q10(c)</p>					

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