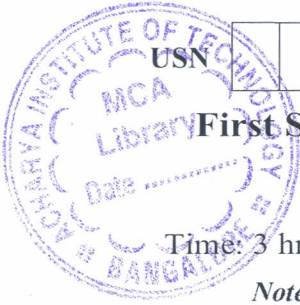


# CBCS SCHEME



USN: \_\_\_\_\_

BESCK104A/BESCKA104

**First Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025**

## Introduction to Civil Engineering

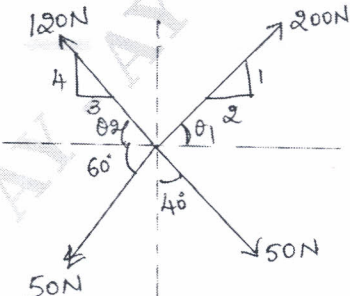
Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.*

*2. VTU Formula Hand Book is permitted.*

*3. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	List out different branches of civil engineering and explain any 4 branches briefly.	10	L1	CO1
	b.	What are cement and Mortor? What are their uses?	10	L1	CO1
<b>OR</b>					
Q.2	a.	Explain briefly the structural elements of a building.	10	L1	CO1
	b.	What is RCC? Explain its advantages and disadvantages.	10	L1	CO1
<b>Module – 2</b>					
Q.3	a.	Write a short note on: i) Smart city concept ii) Clean city concept.	10	L1	CO2
	b.	Why landfills are important? Explain the advantages and disadvantages of land fills.	10	L1	CO2
<b>OR</b>					
Q.4	a.	Explain the importance of water supply and sanitary system.	10	L1	CO2
	b.	What is solid waste management? Explain the sources and origin of solid wastes.	10	L1	CO2
<b>Module – 3</b>					
Q.5	a.	Explain the principles of superposition and transmissibility of force system.	5	L2	CO3
	b.	State and prove Varignon's theorem of moments.	5	L2	CO3
	c.	Compute the magnitude and direction of the resultant force in Fig.Q.5(c). 	10	L3	CO3

OR

Q.6 a. Find the magnitude, direction and point of application of the resultant force with respect to point O in Fig.Q.6(a). 12 L3 CO3

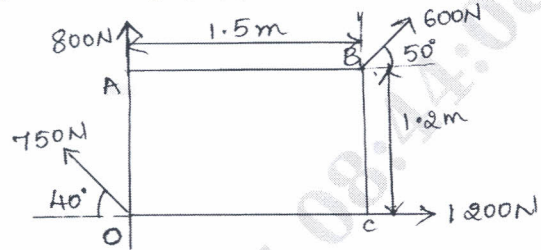


Fig.Q.6(a)

b. In the Fig.Q.6(b) the portion BC of the string is horizontal and pulley is frictionless. Determine the tension in different parts of the string. Also find  $w_1$  and  $w_2$ . 8 L3 CO3

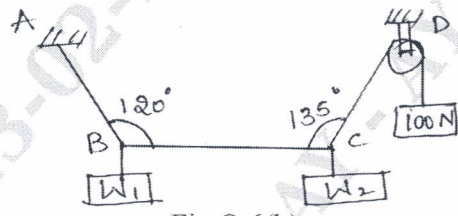


Fig.Q.6(b)

Module - 4

Q.7 a. Define centroid and centre of gravity. 4 L1 CO4

b. Find the centroid of a semicircle using first principle. 6 L3 CO4

c. Locate the centroid of a shaded area shown in Fig.Q.7(c). 10 L3 CO4

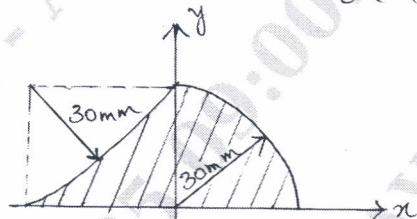


Fig.Q.7(c)

OR

Q.8 a. Find the centroid of a triangle from first principle. 8 L3 CO4

b. Determine the centroid of a shaded area shown in Fig.Q.8(b). 12 L3 CO4

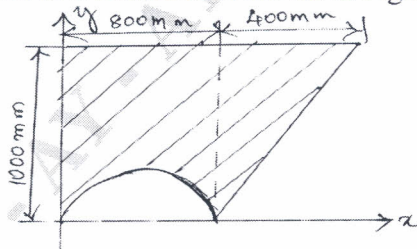
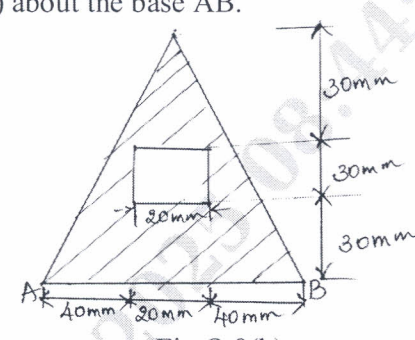
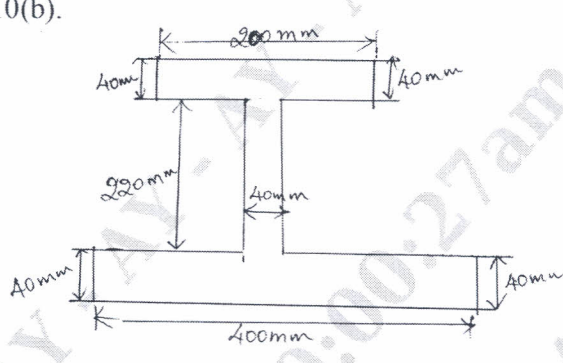


Fig.Q.8(b)

Module – 5

Q.9	a. State and prove parallel and perpendicular axis theorem.	10	L2	CO5
	b. Determine the moment of inertia and radius of gyration of the shaded area shown in Fig.Q.9(b) about the base AB. <div style="text-align: center;">  <p>Fig.Q.9(b)</p> </div>	10	L3	CO5

OR

Q.10	a. Derive an expression for moment of inertia of a circle along its centroidal axis ( $I_{XX}$ and $I_{YY}$ ).	10	L2	CO5
	b. Determine the polar radius of gyration about the horizontal centroidal axis for the Fig.Q.10(b). <div style="text-align: center;">  <p>Fig.Q.10(b)</p> </div>	10	L3	CO5

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