M23BESCK204A

Maharaja Education Trust (R), Mysuru

MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE

An Autonomous Institute, affiliated Visvesvaraya Technological University, Belagavi
Belawadi, Srirangapatna Taluk, Mandya – 571 477
Approved by AICTE, New Delhi [Recognized by Govt. of Karnataka]

IISemester B.E Semester End Examinations

July /August 2024

Introduction to Civil Engineering

Duration: **3 hrs** Max. Marks: **100**

Answer five full questions choosing one complete question from each module.

Sl. No.	Questions	Marks	CO	RBT Level
	Module 1			
1 a)	Discuss the importance of the following fields of Civil Engineering, a) Geotechnical Engineering and b) Environmental Engineering	10	1	2
b)	Describe the requirements of a Good Staircase and explain the types of stairs.	10	1	2
	OR			
2 a)	Write about the Properties of Concrete &applications of Mortar.	10	1	2
b)	Discuss about the types of foundations used in the building construction and explain any two with neat sketches.	10	1	2
	Module 2			
3 a)	Discuss the Functional elements of Solid waste management.	10	2	2
b)	Explain concept of i) Clean city ii) Safe city	10	2	2
	OR			
4 a)	Explain about the Zero hunger(SDG 2) and clean water and sanitation (SDG 6).	10	2	2
b)	Highlight the importance of energy efficient building and smart building.	10	2	2
	Module 3			
5 a)	State and prove the Principle of Transmissibility of forces and Law of Parallelogram of forces.	10	3	3
b)	Three forces acting on a hook are as shown in Fig. Q5(b). Determine the direction of fourth force of magnitude 150N such that the hook is pulled in x-direction only. Determine the resultant force in x-direction	10	3	3

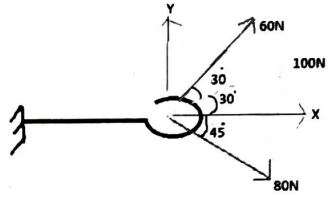


Fig. Q 5(b)

	OR			
6 a)	With real life examples, describe the classification of force systems.	10	3	3
b)	Find the force transmitted by cable BC shown in In the Fig. Q6(b). E is a frictionless pulley, where B and D are Weightless rings. BD has same inclination as BC and DE is horizontal.	10	3	3

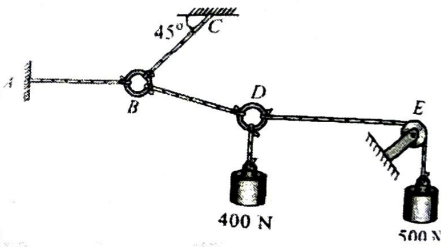
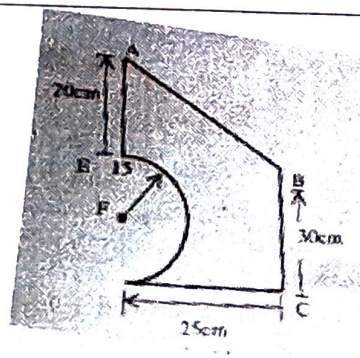
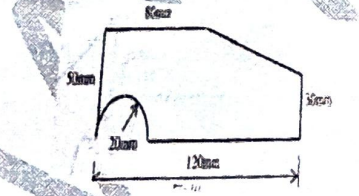
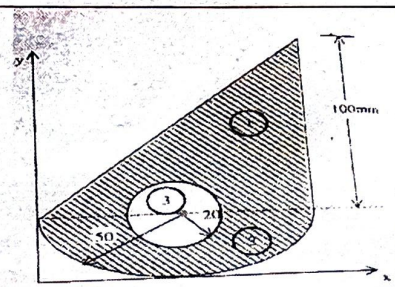
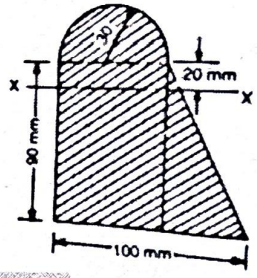


Fig. Q6(b)

	Module 4			
7a)	Determine an expression to locate the centroid of a Right angled triangle using first Principle or by the method of integration.	10	4	3
b)	Determine the centroid of the area shown in Fig.Q7(b).	10	4	3

	 Fig Q. 7(b)			
	OR			
8 a)	Determine an expression to locate the centroid of Rectangle using first Principle.	10	4	3
b)	Determine the co-ordinates of the centroid of the area shown in Figure Q.8(b), if the corner is not cut.  Fig. Q. 8(b)	10	4	3
	Module 5			
9 a)	Determine an expression to find the moment of inertia of a circular section about its diametral axis from first Principle.	10	5	3
b)	Calculate the second moment of area about the horizontal centroidal axis of shaded area as shown in Fig.Q.9(b) and radius of gyration for the same.	10	5	3

	 Fig. Q.9(b)			
	OR			
10a)	Determine an expression to find the moment of inertia of a triangle about the centroidal X- axis by the method of integration.	10	5	3
b)	Determine the moment of inertia of the shaded area about the x-x axis shown in Fig. Q.10(b). All dimensions are in mm.  Fig.Q.10(b)	10	5	3

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