Vivekananda College of Engineering & Technology, Puttur [A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®] Affiliated to VTU, Belagavi & Approved by AICTE New Delhi CRM08 Rev 1.10 <Civil> <20-09-2021>

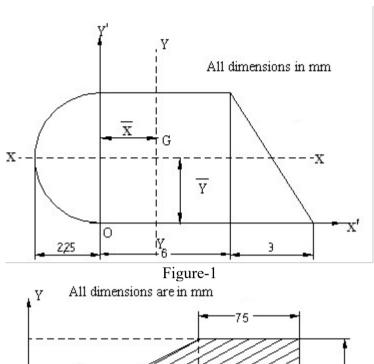
CONTINUOUS INTERNAL EVALUATION- 3

Dept: Civil Engg	Sem / Div: 2nd sem	Sub: Elements of Civil Engg	S Code: 18CIV24	
		& Engg. Mechanics		
Date:25-09-2021	Time: 9:30-11:00 am	Max Marks: 50	Elective: N	
Note: Answer any 2 full questions, choosing one full question from each part.				

PART A 1 a Derive the expression for centroid of a semicircle. b Determine centroid of the figure shown 1 OR 2 a State and prove parallel axis theorem. DART B 3 a What is centrifugal force? What is super elevation? A stone is dropped from the top of the tower 50m high. At the same time another stone is thrown up from the tower with a velocity of 25m/sec. At what distance from the top and after how much time the two stones cross each other? c The motion of a particle is given by the equation x = t³ - 3t² - 9t + 12. Determine the time, distance travelled and acceleration of particle when velocity becomes zero. OR 4 a What is projectile? Define the following terms briefly) Angle of projection ii) Horizontal range iii) Vertical height iv) Time of fight b A burglar's car starts at an acceleration of 2m/s2. A police vigilant party came after 5s and continued to chase the burglar's car with a uniform velocity of 20m/s. find the time taken in which the police van will overtake the car. c The motion of a particle is described by the following equation x = 2(t + 1)², y = 2(t + 1)². Show that path travelled by the particle is rectangular hyperbola. Also find the velocity and acceleration of particle at t = 0	QN	Questions	Marks	RBT	COs
b Determine centroid of the figure shown 1 OR 2 a State and prove parallel axis theorem. b Find the polar moment of inertia of the plane lamina about point O PART B 3 a What is centrifugal force? What is super elevation? b A stone is dropped from the top of the tower 50m high. At the same time another stone is thrown up from the tower with a velocity of 25m/sec. At what distance from the top and after how much time the two stones cross each other? c The motion of a particle is given by the equation x = t³ - 3t² -9t + 12. Determine the time, distance travelled and acceleration of particle when velocity becomes zero. OR 4 a What is projectile? Define the following terms briefly) Angle of projection ii) Horizontal range iii) Vertical height iv) Time of fight b A burglar's car starts at an acceleration of 2m/s2. A police vigilant party came after 5s and continued to chase the burglar's car with a uniform velocity of 20m/s. find the time taken in which the police van will overtake the car. c The motion of a particle is described by the following equation x = 2(t + 1) - 2. Show that path travelled by the particle is rectangular		PART A			
OR 2 a State and prove parallel axis theorem. b Find the polar moment of inertia of the plane lamina about point O 15 L3 CO4 PART B 3 a What is centrifugal force? What is super elevation? b A stone is dropped from the top of the tower 50m high. At the same time another stone is thrown up from the tower with a velocity of 25m/sec. At what distance from the top and after how much time the two stones cross each other? c The motion of a particle is given by the equation x = t³ - 3t² -9t + 12. Determine the time, distance travelled and acceleration of particle when velocity becomes zero. OR 4 a What is projectile? Define the following terms briefly) Angle of projection ii) Horizontal range iii) Vertical height iv) Time of fight b A burglar's car starts at an acceleration of 2m/s2. A police vigilant party came after 5s and continued to chase the burglar's car with a uniform velocity of 20m/s. find the time taken in which the police van will overtake the car. c The motion of a particle is described by the following equation x = 2(t + 9) L3 CO5 1)², y = 2(t + 1)². Show that path travelled by the particle is rectangular	1 a	Derive the expression for centroid of a semicircle.	10	L1	CO4
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CONTINUOUS INTERNAL EVALUATION- 3



All dimensions are in mm

2

150

3

300

X

Figure-2

HOD