PRN:		Course Code:	U01ES001

First Year **B. Tech** End Semester Examination Summer 2024

Engineering Mechanics

Day and Date: 25 MAY 2024 , Sat Max Marks: **35**

Time: 02:00PM To 04:00PM Duration: **02** hrs

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary and mention it clearly.

		Marks	Bloom's Level	CO
Q.1	**Attempt the following Question.**			
a)	Explain the following terms 1. Define the force and enlist the characteristics of the force 2. State the Varignon's theorem of moment 3. Define Centre of gravity and centroid 4. State D' Alembert Principle 5. Define coefficient of restitution	7	1	1
Q.2	**Attempt the following Question.**			
a)	Three concurrent forces as shown in Fig 1. Calculate the resultant in magnitude, direction and its position.	7	3	1

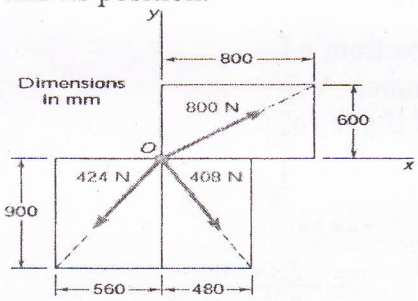


Fig 1.

OR

b)	Determine the force in each member of the truss shown in fig 2. State whether each member is in tension or compression.	7	3	2

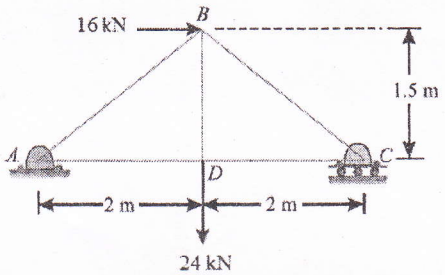


Fig.2

Q.3	**Attempt the following Question.**			
a)	Determine the centroid of the shaded area as shown in Fig 3.	7	2	2

OR

b)	Locate the centroid of the Z shape lamina as shown in Fig 4.	7	2	2

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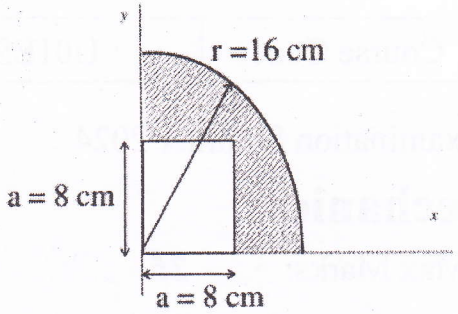


Fig.3

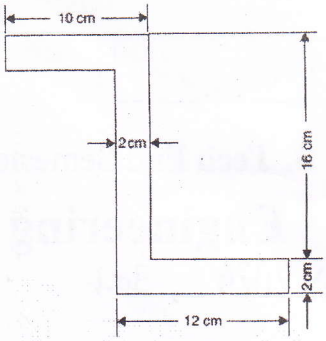


Fig.4

Q.4 **Attempt the following Question.**

a) Explain following terms 7 1 4

1. Dependent Motion
2. Relative Motion

OR

Explain following terms

b)
1. Projectile Motion
2. Kepler's Law of planetary motion

Q.5 **Attempt the following Question.**

a) Determine the velocities of the two ball: opposite directions. Take weight of ball A : impact is 6m/s, weight of ball B is 10N an 8m/s and coefficient of restitution is 0.8.

OR

b) A hammer of mass 1200 kg drops from a l mass 700kg. Find a) The Common Vel Average resistance of the ground if pile co. 10cm into the ground.

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