



VIT
Vellore Institute of Technology
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SCHOOL OF MECHANICAL ENGINEERING
Continuous Assessment Test – II, Winter 2019-20

Programme : B.Tech (Mechanical)

Slot : A2

Course Title: Engineering Mechanics

Faculty Name: Sakthivel, Senthilnathan, Sharan chandran, Vinoth jebaraj, Seenuvasaperumal

Class No : 0772, 1827, 1840, 1913, 4320

Exam Duration: 90 min

Maximum Marks: 50

Course Code: MEE1002

Exam Mode: Closed book

Answer all the questions

1. The coefficient of friction between all the surfaces of contact is 0.40. Determine the force P for which motion of the 30kg block is impending if cable AB is attached as shown in figure 1. **15 marks**

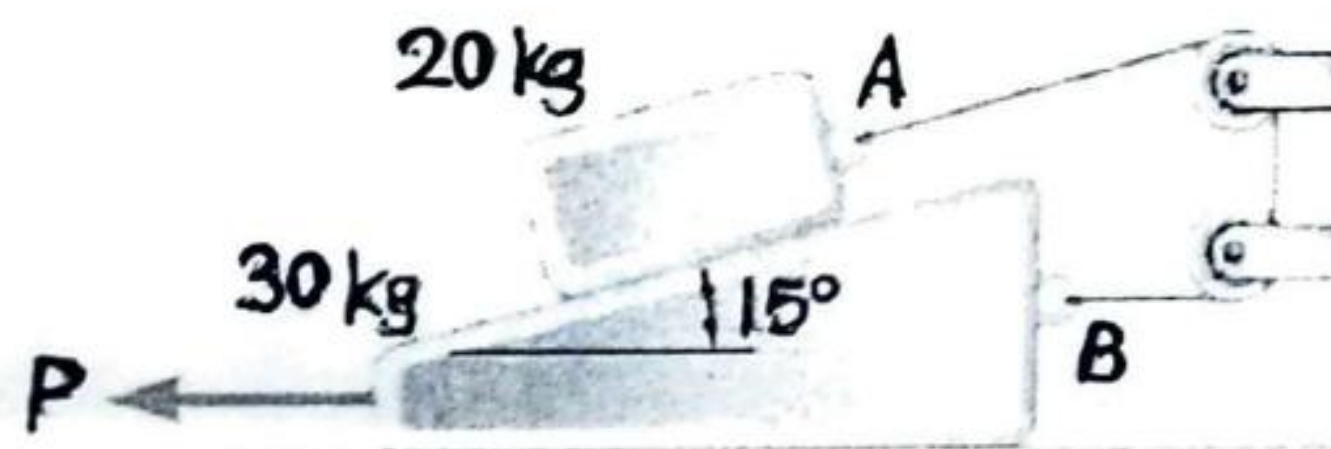


Fig.1

2. A step ladder consisting of two legs pinned together at C is resting on a rough floor as shown in figure 2. Determine whether a worker of 800N weight will be able to change the light bulb if he is required to climb to a height of 1.3m. The uniform legs AC and BC weigh 110N and 70N respectively. The coefficient of static friction at A and B is 0.48. **10 marks**

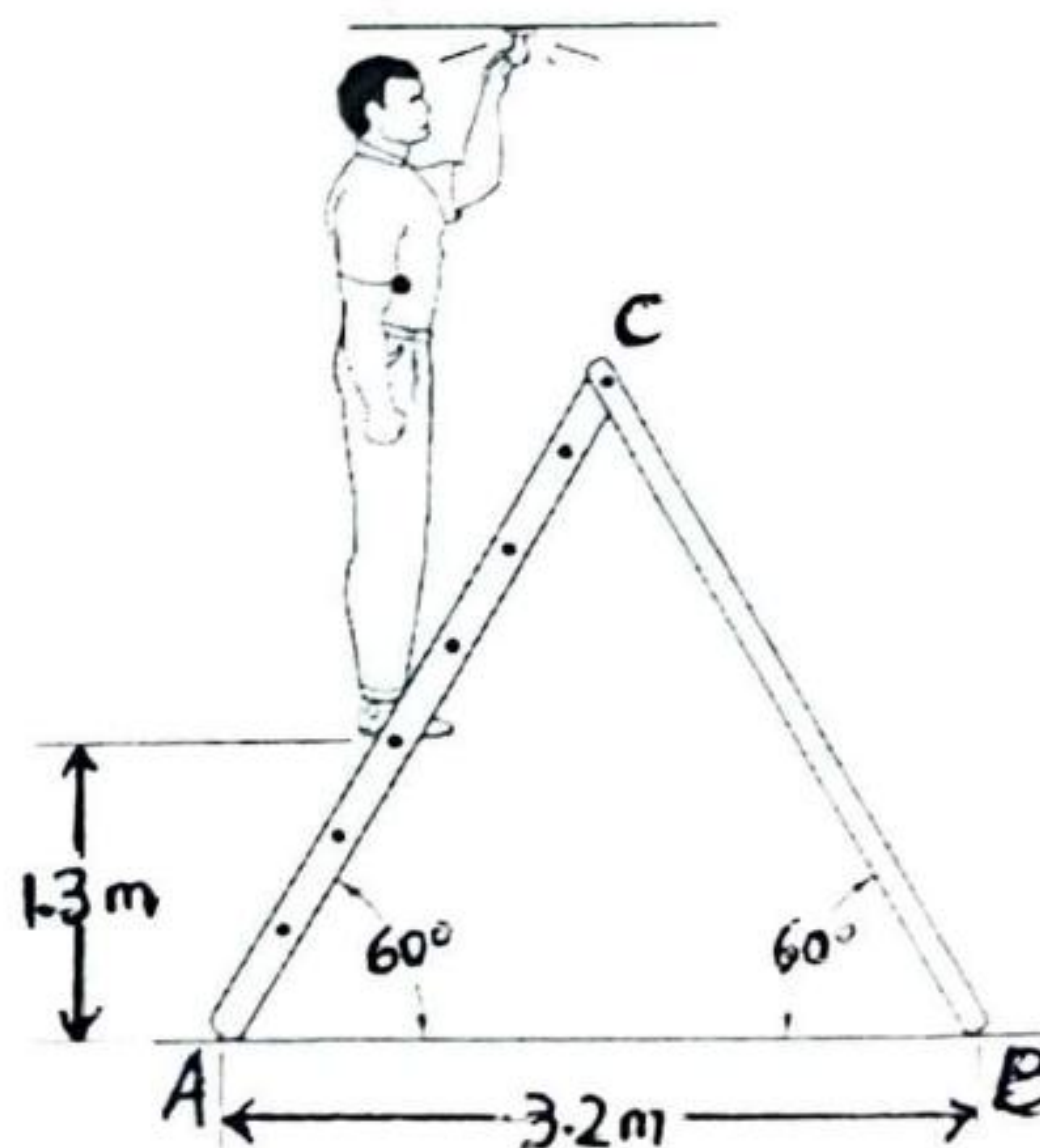


Fig.2

3. Determine the volume of the solid generated by revolving the area shown in figure 3 about the horizontal axis using pappus and guldinus theorem. **10 marks**

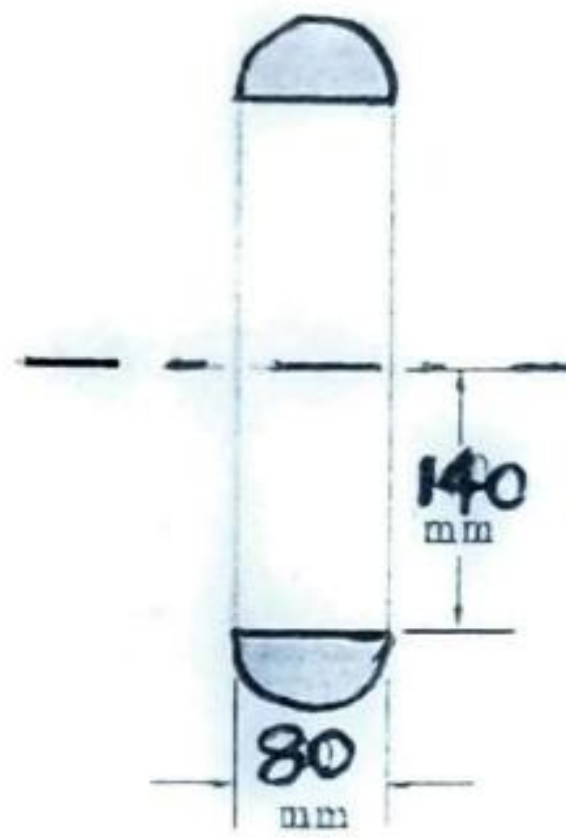


Fig.3

4. Determine the orientation of the principal axis at the origin and the corresponding values of the moment of inertia for the area shown in figure 4. **15 marks**

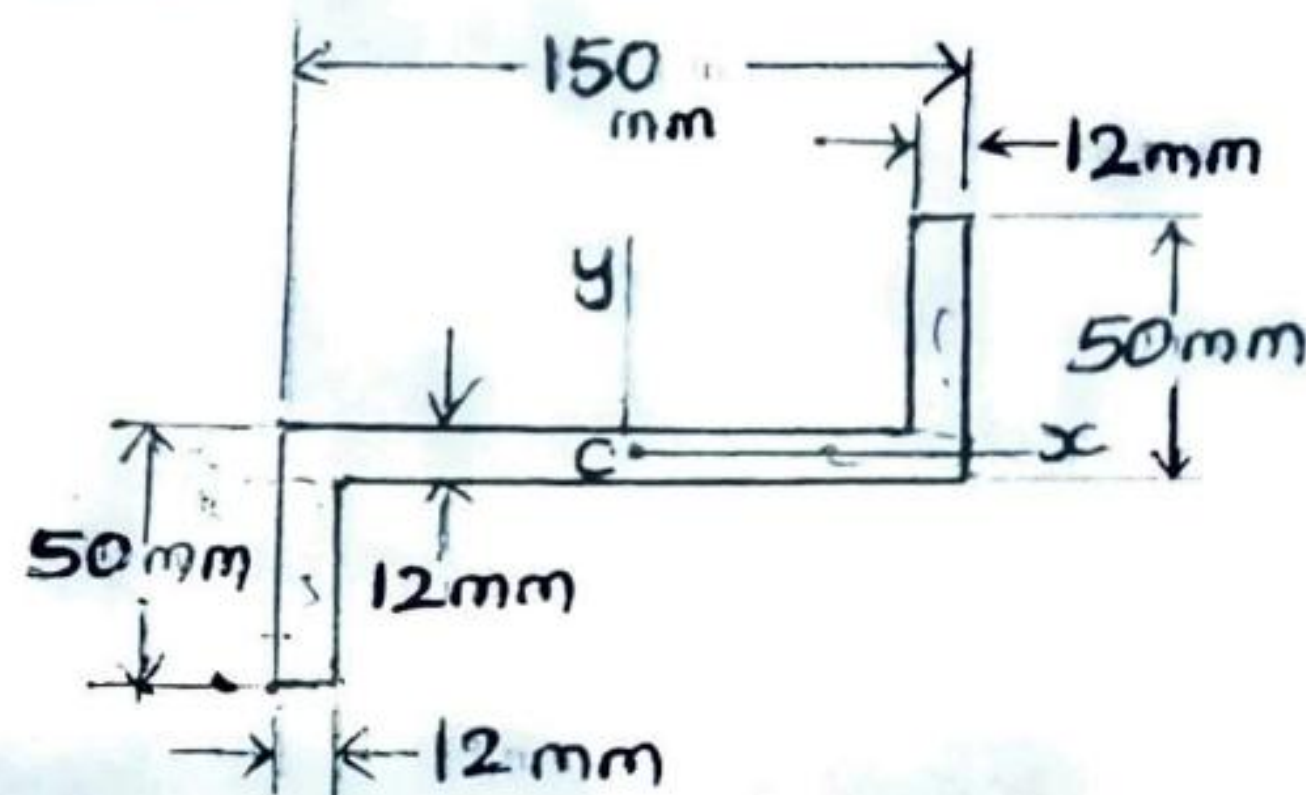


Fig.4

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