

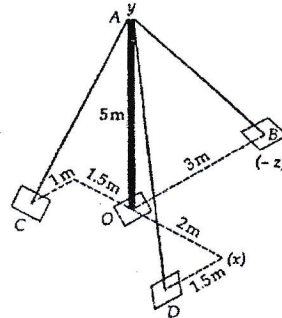
TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Ashwin

Exam.	Back	
Level	BE	Full Marks 80
Programme	BEL, BEX, BCT, BAM, BIE, BAG, BAE, BAS	Pass Marks 32
Year / Part	I / I	Time 3 hrs.

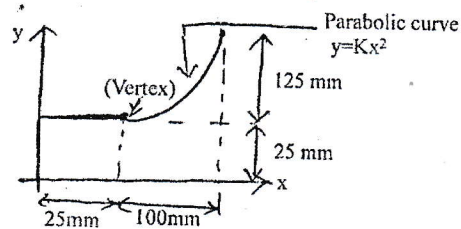
Subject: - Applied Mechanics (CE 401)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

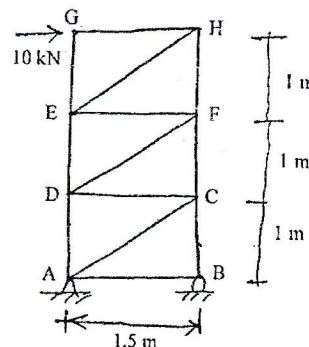
1. Define the terms Rigid body and particles. [2]
2. What do you understand by Free Body Diagram? Explain with sketches. What is the physical significance of static equilibrium? [4+4+2]
3. In the system shown in figure, a 5m long pole is held in vertical position by three guy wires AB, AC and AD. If the tension of 600 N is induced in AD and the resultant force at A is to be vertical, determine the tension in cables AB and AC. [8]



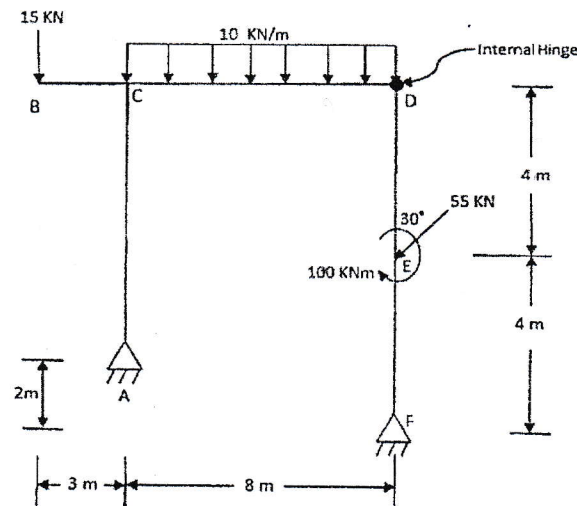
4. What are the characteristics of couple? [4]
5. What are the uses of friction in engineering field? [2]
6. Determine the centroid of the following composite figure. [10]



7. Analyze the following pin-jointed frame regarding the members AD, DC, DF, ED and FC, using Method of Moment. [10]



8. Draw axial force, shear force and bending moment diagram of the given frame. Indicate salient features if any. [14]



9. What do you mean by dependent motion, explain with example? [2+8]

A projectile is fired from the top of a 30 m high building with an initial velocity of 45 m/s at an angle of 35° with the horizontal. Neglecting air resistance, find

- the greatest elevation above the ground,
 - the horizontal distance from the point of projection to the point where the projectile strikes the ground
 - the velocity with which it strikes
10. Define principle of impulse momentum for particle. A 20-kg package is at rest on an incline when a force P is applied to it. Determine the magnitude of P if 10 s is required for the package to travel 5 m up the incline. The kinetic coefficients of friction between the package and the incline is equal to 0.3. [2+8]

