



ME 3002

**III Semester B.Tech. in Mechanical Engineering Examination, August 2011
ENGINEERING MECHANICS**

Time : 3 Hours

Max. Marks : 75

Instruction : Answer any five questions from Part – A, and Part – B.

PART – A

Answer any five questions :

(5×5=25)

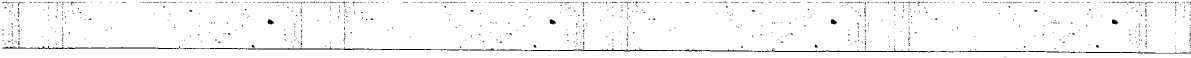
1. Explain the equilibrium of equation.
2. Explain about cross product of two vectors.
3. Explain the concurrent force in plane.
4. Describe the Varignon's theory.
5. Write the differences between centre of gravity and centroid.
6. State the theorems of Pappus and Guldinus to find out the surface area and the volume of a body.
7. Explain the curvilinear kinematics.
8. Discuss the system of unit and give example.

PART – B

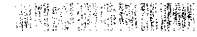
Answer any five questions :

(5×10=50)

9. Write the fundamental concepts and principles of mechanics.
10. Briefly explain the fundamental laws of mechanisms.
11. Give an account on graphical solution.
12. Explain the rectangular components of a force in space.
13. Explain the centroid with example.
14. Explain the principle of axes of inertia.
15. Explain the rigid body kinematics with example.
16. A 200-lb block rests on a horizontal plane. Find the magnitude of the force P required to give the block an acceleration of 10 ft/s^2 to the right. The coefficient of kinetic friction between the block and the plane is $\mu_k = 0.25$.



CODE 311



THE UNIVERSITY OF THE WEST INDIES
TRINIDAD AND TOBAGO
BACHELOR OF SCIENCE (HONOURS) IN PHYSICS
SECOND SEMESTER EXAMINATION, AUGUST 2011

Time: 2 hours

Total Marks: 75

Answer any five questions from Part A and any two questions from Part B.

PART - A

(5x15=75)

1. Explain the definition of a vector.
2. Explain the addition of two vectors.
3. Explain the resultant force in space.
4. Describe the Newton's laws.
5. Write the difference between static and kinetic friction.
6. State the definition of torque and explain its effect on the rotation of a body.
7. Explain the conservation of momentum.
8. Explain the conservation of energy and give examples.

PART - B

(2x15=30)

9. Write the fundamental concepts and principles of mechanics.
10. Briefly explain the fundamental laws of mechanics.
11. Give an account of graphical solution.
12. Explain the vector gain component of a force in space.
13. Explain the work done with examples.
14. Explain the principle of axes of inertia.
15. Explain the rigid body rotation - give examples.
16. A 200 g block rests on a horizontal plane. Find the magnitude of the force P required to give the block an acceleration of 10 m/s^2 to the right. The coefficient of kinetic friction between the block and the plane is $\mu_k = 0.25$.