University School of Automation and Robotics
GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
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USAR
UNIVERSITY SCHOOL OF AUTOMATION AND ROBOTICS

Subject- Engineering Mechanics

Time-1hr **Max Marks-30**

Note: - Provide all answers in A4 sheet.

1. **What is Engineering Mechanics?** **[2]**
   a) Study of bodies under motion without considering forces
   b) Application of mechanics to issues involving common engineering aspects
   c) Study of bodies only under rest
   d) Study of bodies only under motion

2. **Force is** **[2]**
   A. A Fixed Vector
   B. A Free Vector
   C. A Sliding Vector

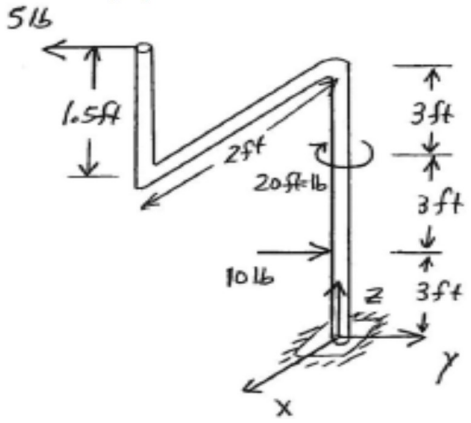
3. **Which of the following forces do not cause the rotation?** **[2]**
   A. Non-Parallel
   B. Non-concurrent
   C. Parallel
   D. Concurrent

4. **The product of either force of couple with the arm of the couple is called** **[2]**

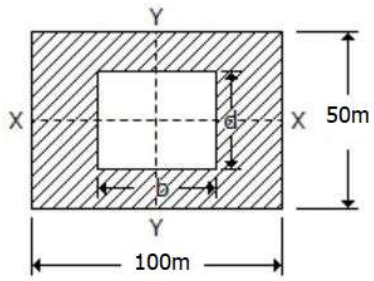
   (A) Resultant couple
   (B) Moment of the forces
   (C) Resulting couple
   (D) Moment of the couple

5 **Write Down static equilibrium Equations for 2D & 3D both.** **[2]**

6. **Draw FBD for following system.** **[3]**



7. Calculate Moment of inertia of a hollow rectangular section as shown in the below figure about *X-X* axis. **[5]**

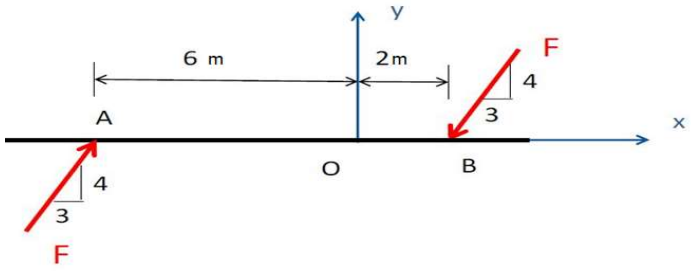


8. Given the pair of forces F, each with a magnitude of 100 N:

a) Determine the total moment about point O **[2]**

b) Determine the total moment about point A **[2]**

c) Is the moment caused by the couple the same for any point on the system? **[1]**



9. a) Draw FBD for below system. **[2]**

b) Determine the reactions of support at A and B. **[5]**