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 Duration: (60min)
 9/3/2020

Seat No.

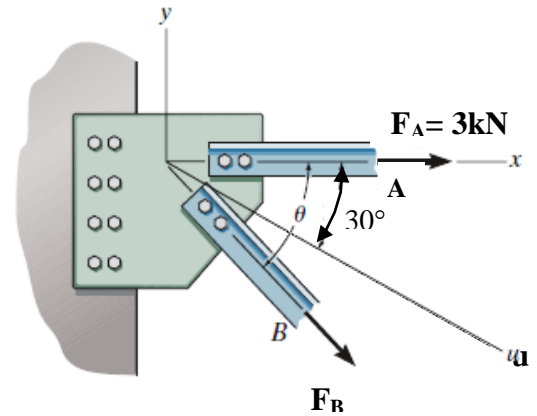
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Hashemite University
Faculty of Engineering/ Civil Eng. Department
Statics (110401211)

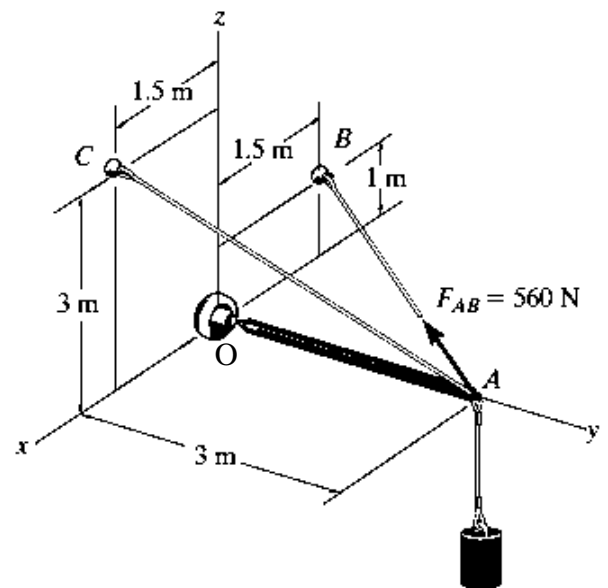
1st semester - 2019/2020

1st Exam

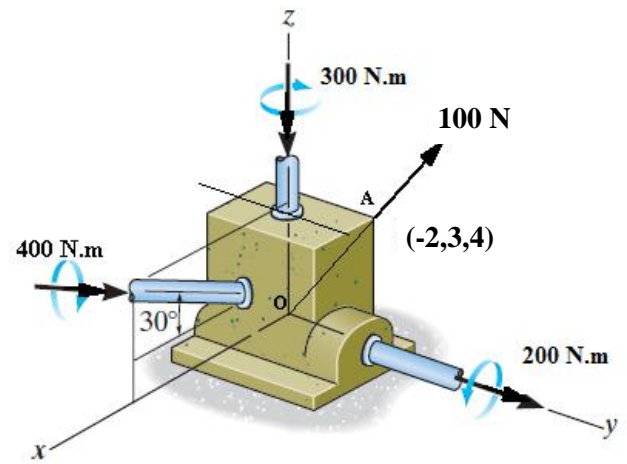
Q.1(5 points) If the resultant force is required to act along the positive u axis and have a magnitude of 5 kN, determine the required **magnitude of F_B** and its **direction θ** .



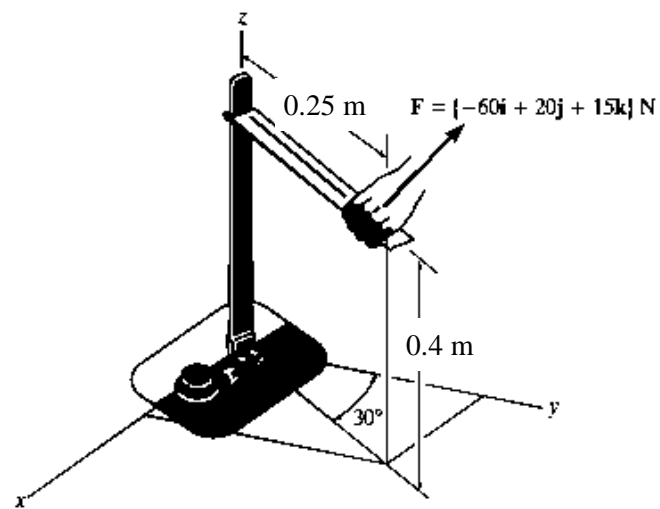
Q.2 (5 points) Determine the angle between AB and AC. Determine the magnitude of the projection of F_{AB} along rod AO. **Express F_{AB} as Cartesian vector**



Q.3 (5 points) Determine the resultant force and resultant moment at point O. Express the results as Cartesian vectors. What is the magnitude and direction of the resultant moment at O.



Q.4 (5 points) If the force $\mathbf{F} (-60\mathbf{i} + 20\mathbf{j} + 15\mathbf{k})$ is applied to the handle, determine the component of the moment created about the z axis of the valve.



Q.5 (5 points) If the stretch in spring AB is 0.5 m, what is the initial length of the spring AB and what is the force in spring AC

