BAHIR DAR UNIVERSITY
BAHIR DAR INSTITUTE OF TECHNOLOGY (BIT)
FACULTY OF CIVIL & WATER RESOURCES ENGINEERING

Course: Engineering Mechanics-I-(Statics) (CEng2061)
Exam Type: Mid Exam
Exam Weight: 20%
Students' Admission: Regular
Degree Program: SANS and Pre-Engineering

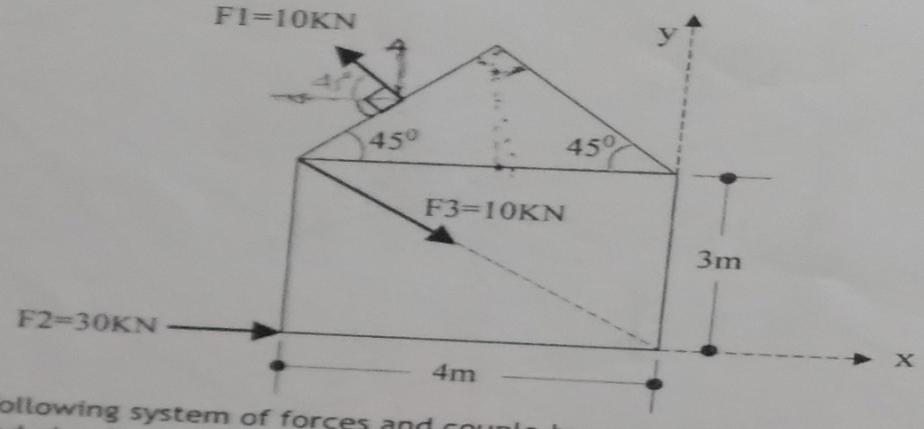
Exam Date: April 16,
Time Allocated: 2 Hrs
Semester: I
Acad. Year: 2021/202
Year of Study: 2nd

Name: [redacted] ID: [redacted] Sec: [redacted] Sign [redacted]

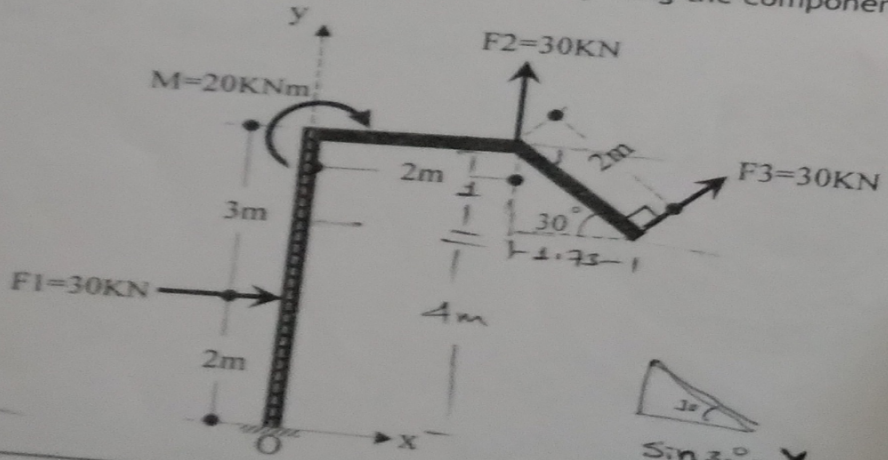
Instructions:

- Attempt all questions
- Show your steps clearly.

1. For the system of forces applied on the body given below. Determine:
   A. The components of each force along the given co-ordinate system.
   B. The magnitude of the resultant 'R' of all forces.
   C. The angle between the resultant force and the positive X- & Y-axis.
   D. The unit vector in the direction of the resultant, R.



2. Replace the following system of forces and couple by an equivalent force-couple system at point O. And also find the y-intercept over which the line of action of the resultant force R passes through. [Hint: begin by computing the component of each force]



Sin 30° = Y/2

Cos 30° = x/2

x=

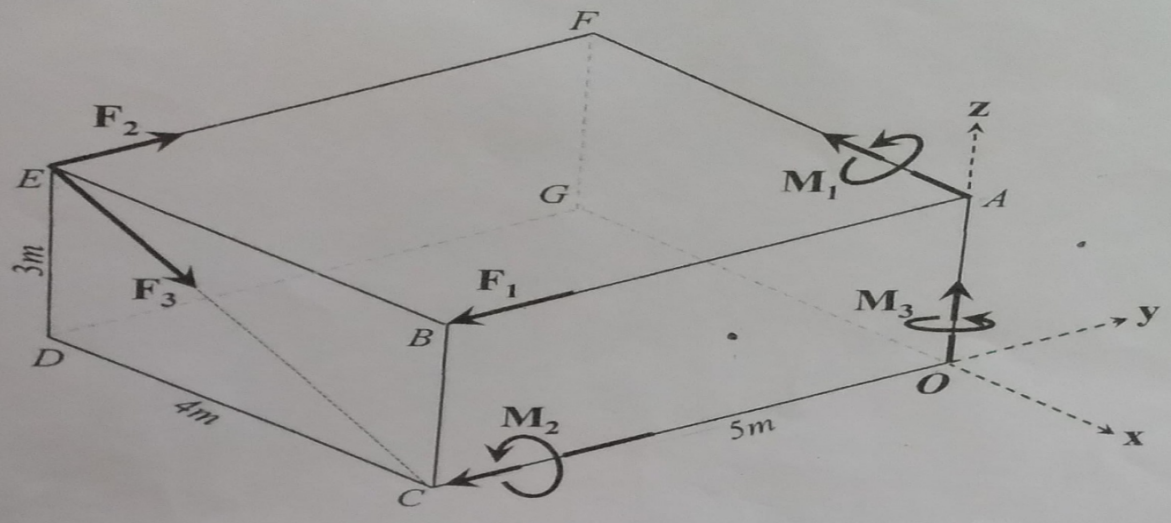
Bahir Dar Institute of Technology
Faculty of Civil and Water Resources Engineering

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3. For the block shown below three forces and three couples are applied. Determine:
   A. The resultant force and resultant moment at point O.
   B. The projection of the resultant force R along line EC
   C. The wrench resultant and the point on the y-z plane through which the resul force of the wrench passes.
   D. Whether the wrench is positive or negative



F1 =
F2 =
F3 =
M1 =
M2 = 1
M3 = 8

C-E
(0+4)i +5+6j +(0-3)k
4i+0j-3k

≈ Good Luck ≈

Sorry for the missed Data on question number 3Just you can take any number and follow the procedure