LOVELY PROFESSIONAL UNIVERSITY

Academic Task: CA-1

School: Computer Science Engineering **Faculty of:** Mechanical Engineering Department

Name of the faculty: Sanchit Singla

Course Code: MEC107 **Course Title:** Basic Engineering Mechanics

Term: 20211 **Max. Marks:** 30

Date of Allotment: February 17, 2020 **Date of Submission:** February 23, 2020

Important Guidelines:

1. All questions in this Academic Task are compulsory.

2. It is mandatory to attempt all questions of the assignment in your own handwriting on A4 size sheets/pages with a blue colour ink pen. Any other mode of attempt (typed or printed codes or table) except hand written/drawn will not be accepted/considered as valid submission(s) under any circumstances.

3. Every attempted sheet/page should carry clear details of student such as Name, Registration number, Roll number, Question number and Page number. The page numbers should be written clearly on the bottom of every attempted sheet in a prescribed format as: for page 1; **Page 1 of 4**, for page 2; **Page 2 of 4**, for page 3; **Page 3 of 4** and for page 4; **Page 4 of 4**, in case your assignment/document is of 4 pages.

4. After attempting the answer(s), student needs to take photograph of each of these answer sheets/pages and needs to convert the **jpeg** format images into a sequential single **pdf** format document (can be done with many free online available converters).

5. This PDF file should be uploaded onto the UMS interface on or before the last date of the submission.

6. Refrain from indulging into plagiarism as copy cases will be marked zero.

Evaluation Criterion: Rubrics on different parameters

Question-1 Two forces are applied at point B of beam AB. Determine the magnitude and direction of their resultant. Figure:1

Question-2 A trolley that moves along a horizontal beam is acted upon by two forces. Determine the magnitude and direction of the force P do that reluctant is a vertical force of 2500N. Figure:2

Question-3 The force P is applied to the lever which controls the auger of a snow blower. Determine the magnitude and direction of the smallest force P which has a 2.20 N-m clockwise moment about A. Figure:3

Question-4 A gardener uses a 60-N wheelbarrow to transport a 250-N bag of fertilizer. What force must she exert on each handle? Figure:4

Question-5 The gardener of question 4 wishes to transport a second 250-N bag of fertilizer at the same time as the first one. Determine the maximum allowable horizontal distance from the axle *A* of the wheelbarrow to the center of gravity of the second bag if she can hold only 75 N with each arm. Figure:4

Question-6 What is the value of P in the system shown in Fig to cause the motion to impend? Assume the pulley is smooth and coefficient of friction between the other contact surfaces is 0.2. Figure:5

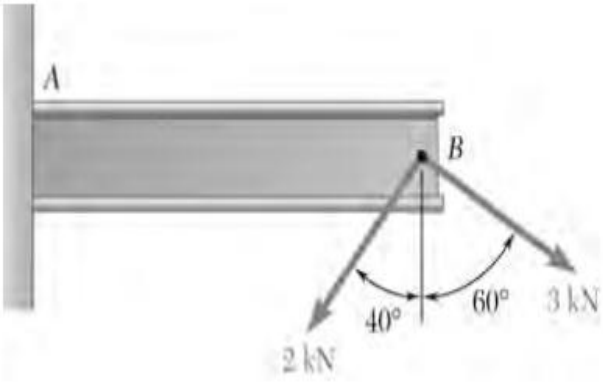

Figure: 1

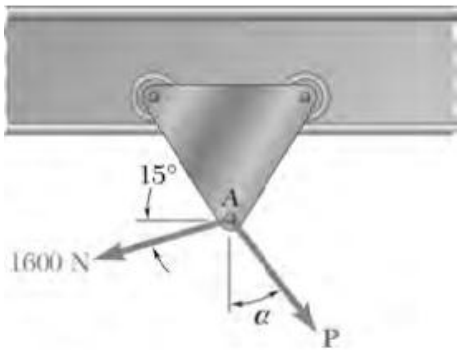

Figure: 2

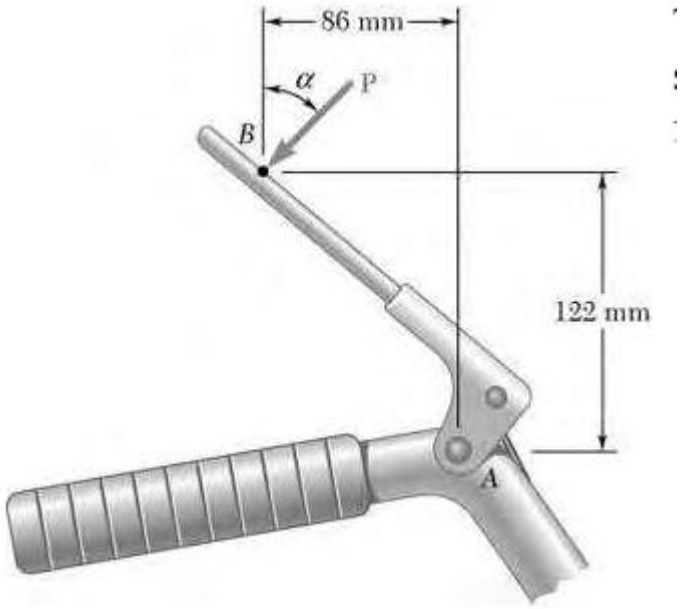

Figure:3

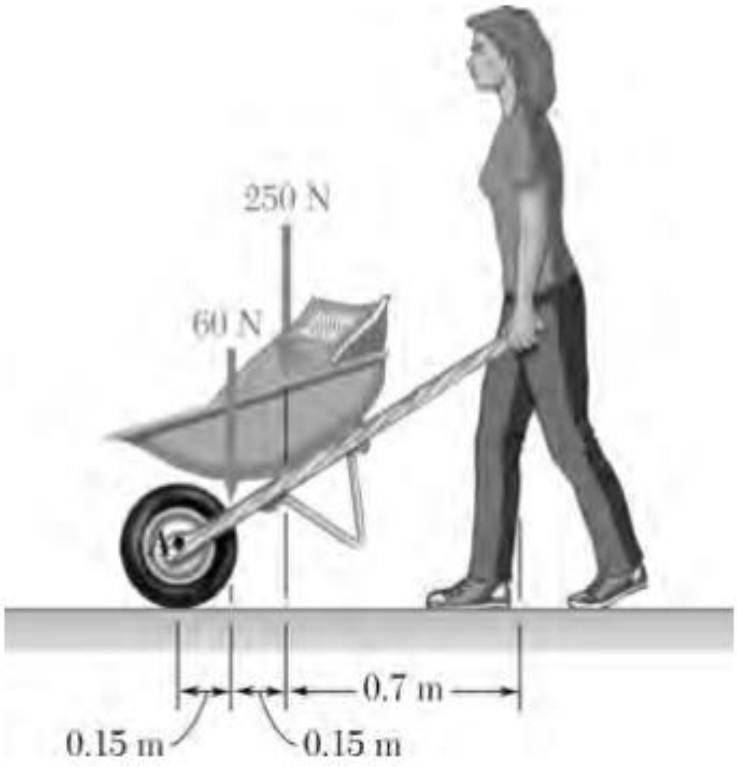

Figure:4

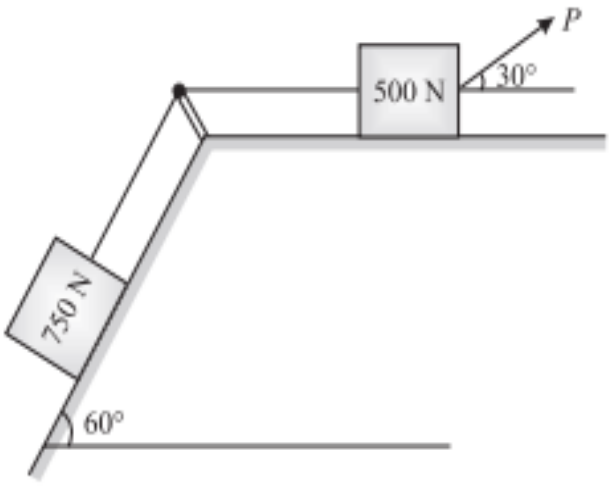

Figure: 5