

LOVELY PROFESSIONAL UNIVERSITY

Academic Task: CA-3

School: Computer Science Engineering

Faculty of: Mechanical Engineering Department

Name of the faculty: Sanchit Singla

Course Code: MEC107

Course Title: Basic Engineering Mechanics

Term: 20212

Max. Marks: 30

Date of Allotment: April 30, 2021

Date of Submission: May 06, 2021

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 A stone is thrown vertically upwards with a velocity 20m/s from the top of a tower 25m high. Make Calculation for the following parameters:

- (i) The maximum height to which the stone will rise in its flights
- (ii) Velocity of the stone during the downward travel at a point in the same level as the point of projection
- (iii) Time required for the stone to reach the ground.

Question-2 An elevator whose floor to ceiling height is 2.75m starts ascending with constant upward acceleration of 1.2m/s^2 . Two seconds after the start, a loose bolt drops from the ceiling towards the floor of the elevator. Calculate:

- Time taken by the bolt to reach the elevator floor.
- Displacement of the bolt during that time
- The distance travelled by the bolt during the same time.

Question-3 An aircraft flying at a height of 800m with uniform horizontal velocity of 360km/hr releases a bomb which hits a target on the ground. Find (a) the time required for the bomb to reach the target, (b) the horizontal distance of the aircraft from the target when the bomb was released (c) direction and velocity with which the bomb hits the target.

Question-4 Find the magnitude and nature of the forces in members AC, AD, DB, CE, CF and FD by section method.

