

Indian Maritime University  
(A Central University, Govt of India)  
Sep/Oct/25 SE  
Programme Name: B Tech (Marine Engineering)  
Semester: II

Subject Code: UG11T4204  
Subject Name: ENGINEERING MECHANICS

Date: 12-09-2025 Max Marks: 70  
Duration: 03 Hrs Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.  
(ii) Options, if any, are specified in respective section.

**Section A**

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. In ideal machines, mechanical advantage is \_\_\_\_\_ velocity ratio  
(a) equal to  
(b) less than  
(c) greater than  
(d) No Relation

2. The periodic time of one oscillation for a simple pendulum is (where  $l =$  length of the pendulum.)

- (a)  $\frac{1}{2\pi} \sqrt{\frac{l}{g}}$   
(b)  $\frac{1}{2\pi} \sqrt{l}$   
(c)  $2\pi \sqrt{\frac{l}{g}}$   
(d)  $2\pi \sqrt{l}$

3. The torque acting on a body of moment of inertia (I) and angular acceleration ( $\alpha$ ) is

- (a)  $I\alpha$   
(b)  $I\alpha^2$   
(c)  $0.5 I\alpha$   
(d)  $0.5 I\alpha^2$
4. The point, through which the whole weight of the body acts, irrespective of its position, is known as  
(a) moment of inertia  
(b) centre of gravity  
(c) centre of percussion  
(d) centre of mass
5. Which axial force is determined while analyzing a truss?  
(a) compressive force  
(b) tensile force  
(c) both (a) and (b)  
(d) none of the above
6. The frequency of vibration in case of simple harmonic motion  
(a) means the number of cycles per second  
(b) represents time taken by the particle for one complete oscillation  
(c) depends upon its amplitude  
(d) is directly proportional to its beat
7. The velocity ratio of a simple wheel and axle with D and d as the diameters of effort wheel and load axle is  
(a)  $D + d$   
(b)  $D - d$   
(c)  $D \times d$   
(d)  $D/d$
8. If a body is in equilibrium. We may conclude that  
(a) No force is acting on the body  
(b) The resultant of all the forces acting on it is zero  
(c) The moments of the forces about any point is zero

