Seat No.

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OCT-NOV 2025 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Engineering Mechanics

Sub. Code: 108728

Day and Date: Saturday ,31-01-2026 **Total Marks: 60**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Draw neat labelled diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

Q1) Attempt any three from the following questions. **[15]**

a. State & Explain characteristics of Force? **[5]**

b. Write detailed Classification of beams. **[5]**

c. State and explain perpendicular axis theorem. **[5]**

d. State and explain Varignon's theorem. **[5]**

Q2) Attempt any three from the following questions. **[15]**

a. Define Linear motion, Angular Motion, absolute motion, Relative motion & Kinematics? **[5]**

b. Derive an equation for displacement in nth second. **[5]**

c. Define with neat sketch velocity of projectile, Angle of projectile, Horizontal Range, Trajectory, Time of Flight. **[5]**

d. A ball is dropped from the top of a tower 30m high. At the same instant a second ball is thrown upward from the ground with an initial velocity of 15m/sec at what time they will cross? **[5]**

Q3) Attempt any three from the following questions. **[15]**

a. State and explain De Alembert's principle. **[5]**

b. State and explain Impulse momentum Principle. **[5]**

c. A man weighing 750 N stands on the floor of a lift, Determine the pressure exerted on the floor when, i) The lift moves upward with an acceleration of 2.5 m/s^2. **[5]**

d. A ball dropped from height of 2m on a smooth floor. The height of the first bounce is 1.62m. Determine i) coefficient of restitution and ii) Expected height of next bounce. **[5]**

Q4) Attempt any three from the following questions. **[15]**

a. Explain Mechanical properties of Material ? **[5]**

b. Draw Stress strain curve for mild steel ? **[5]**

c. Explain the relation between Elastic constant. **[5]**

d. A steel bar 300mm long 50mm wide & 40mm thick is subjected to a pull of 300KN in the direction of its length. Determine the change in volume E=2x105 N/mm2 and poisons ratio=0.25? **[5]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

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