Tilak Maharashtra Vidyapeeth

Diploma in Engineering

SUB: Applied Mechanics

Assignment No: I

(Write any five)

1) State and prove parallelogram law of forces with examples
2) A train changes its speed uniformly from 100 to 50 km/hr in a distance of 500m. What is its deceleration?
3) A bar or 200 mm Kong and 20mm diameter is stretched by 0.7mm by an axial pull of 22KN. Calculate the stress strain and modulus of elasticity of the bar.
4) The velocity of certain weight lifting machine is 20m/s. Determine the effort required to lift a load of 100N if the efficiency of the machine is 25%.
5) 1500 liters of water was lifted to a height of 6 m & delivered at velocity of 4m/s. What is the energy possessed by water?
6) A body of mass 20kg falls freely under gravity. Find its impulsive force after 19.2 sec. and momentum also.
7) A body starts from rest with a constant acceleration of 0.5 m/s² after what time its velocity be 2.5m/sec and how much distance will it travel during the time?
8) A copper wire of length 500mm is subjected to an axial pull of 5.5 KN. Find the minimum if E=100 N/mm².

Assignment No: II

(Write any five)

1) State and explain law of transmissibility of forces.
2) Explain different systems of forces.
3) Explain Varignon's principle.
4) Explain different types of loads on beam & frame.
5) Explain different structural support.
6) Explain centroid of fundamental lamina.
7) Explain Newton's law of forces.
8) State and explain Law of conservation of momentum.
Assignment No: III

(Write any five)

1) Find the position of centroid of an unequal angle section 100mm x 60mm x 10mm.
2) A body weighing 1500N is resting on a rough horizontal plane a pull of 300N applied at 30° up with respect to horizontal just moves the body. Find the coefficient of friction
3) A body of weight 400N is resting on a horizontal plane. Find the coefficient of friction. If a force of 120N is required to move the body.
4) Find the momentum of the train moving at 80 km/hr. if its weight is 4000KN.
5) A body of mass 10 kg falls freely under gravity. Find its momentum after 4 seconds.
6) A boat weighs 5000N including its occupant. The wind force of 400N acts on the boat. The resistance to motion of water is 150N. Find the acceleration of the boat
7) A ball of mass 2 kg moving at 10m/s. strikes another stationary ball of mass 5kg. If the first ball rebounds with a velocity of 4 m/s... find the velocity of the other ball.
8) Find the velocity of the car after 5 sec and the distance travelled in 5sec, if its initial velocity is 10m/s and uniform acceleration is 0.5m/sec²