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 කல்විට් පොතුත් තරාතරප් පත්තිර(உயர் தர)ப் பரீட்சை, 2023 ඉසව්ව
 General Certificate of Education (Adv. Level) Examination, August 2023

භෞතික විද්‍යාව I
 பொளதிகவியல் I
 Physics I

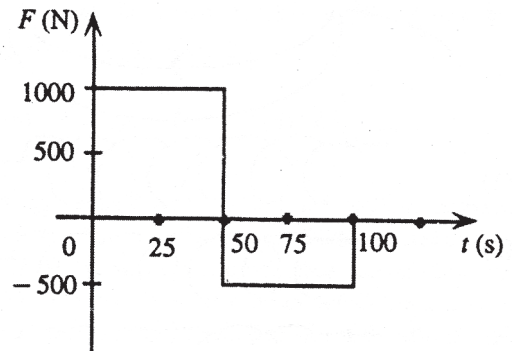
Advanced Level Physics
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PHT6210 2023Th 2021-10-14

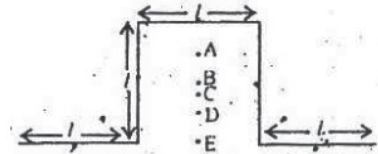
Multiple Choice Questions

1. A system of coplanar forces acts on a rigid body. If the resultant of moments of forces about a certain point on the body is zero, consider the following statements.
- (A) The resultant of the moments of forces about any other point on the body is always zero.
 - (B) The body must be in equilibrium.
 - (C) The resultant force acting on the body must be zero.
- Of the above statements
- (1) all A, B and C are false.
 - (2) only A is true.
 - (3) only B is true.
 - (4) only C is true.
 - (5) only A and B are true.

2. A vehicle of mass 10,000 kg is kept initially at rest on frictionless horizontal rails and a force (F) which varies with time as shown in the graph, acts on this vehicle. Velocity of the vehicle after 100 s is,
- (1) 2.5 ms⁻¹
 - (2) 5 ms⁻¹
 - (3) 7.5 ms⁻¹
 - (4) 10 ms⁻¹
 - (5) 15 ms⁻¹

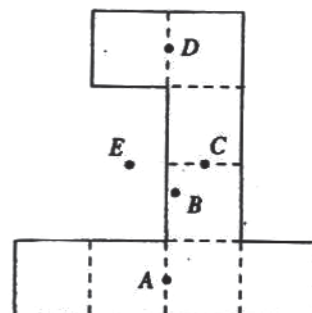


3. A uniform wire is bent as shown in the figure. The centre of gravity of the whole wire is most likely to be found at
- (1) A
 - (2) B
 - (3) C
 - (4) D
 - (5) E

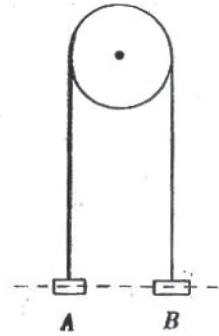


4. The object in the shape shown is cut from a uniform sheet of metal. The centre of gravity of the object is most likely to be found at

- (1) A.
- (2) B.
- (3) C.
- (4) D.
- (5) E.

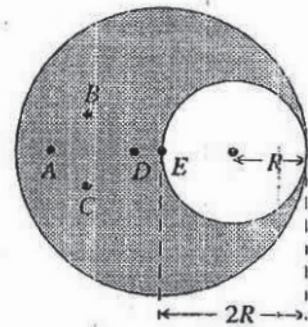


5. Two equal masses A and B are attached to a light inextensible string passing over a smooth light pulley as shown in the diagram. The mass B is moved down, held it stationary and then released it. Which of the following statements is correct for the subsequent motion of B ?



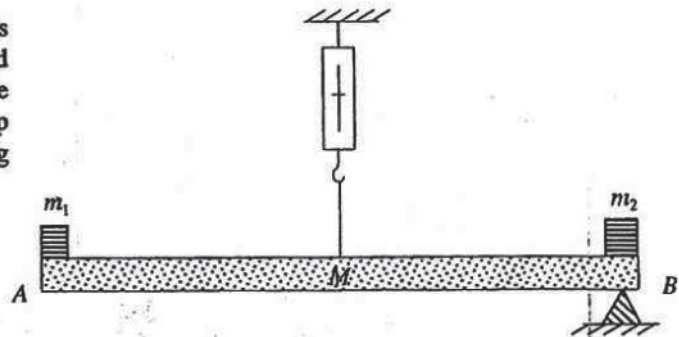
- (1) B will move back to the original position.
- (2) B will start to oscillate up and down and come to rest.
- (3) B will stay stationary.
- (4) B will start to move downwards.
- (5) B will start to move upwards.

6. A uniform circular plate of radius $2R$ has a circular hole of radius R cut out of it as shown in the figure. The centre of gravity of the plate with the hole is most likely to be found at



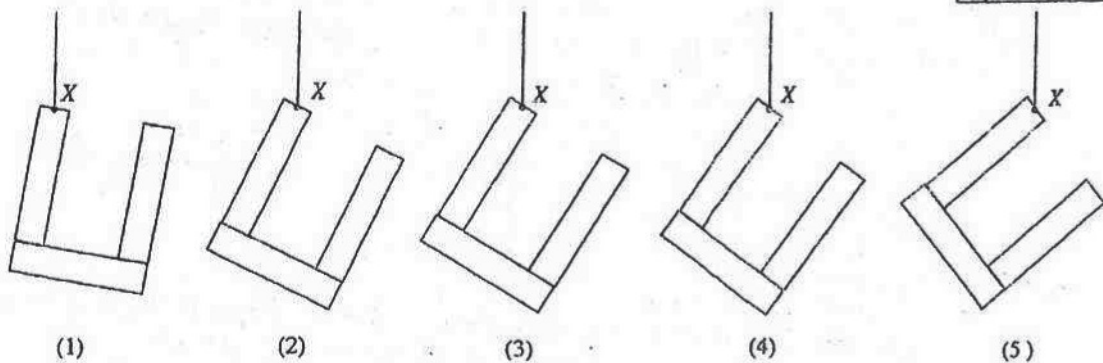
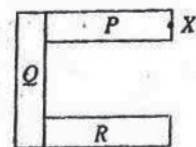
- (1) A
- (2) B
- (3) C
- (4) D
- (5) E

7. A uniform bar of mass M is suspended from its midpoint by a spring balance. Two masses m_1 , and m_2 ($m_2 > m_1$) are placed at the two ends of the bar. A wedge supports the bar at the end B to keep it horizontally as shown in the figure. The reading of the spring balance is

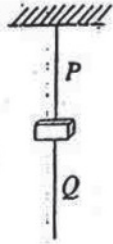


- (1) 0
- (2) $m_1 g$
- (3) $(M + m_1)g$
- (4) $(M + 2m_1)g$
- (5) $(M + m_1 + m_2)g$

8. A frame is made by joining three uniform rods P , Q and R having identical geometrical dimensions as shown in the figure. Rods P and R are of the same mass, but the rod Q is twice as heavy as P or R . When the frame is suspended freely from the point X , its equilibrium position is most likely to be



9. A metal block is hung from a support by a string P as shown in the figure. An identical piece of string Q is attached underneath the block.



Consider the following statements,

- (A) If Q is taut the tension in P is greater than that of Q .
- (B) If Q is pulled with slowly increasing tension, then P has a tendency to break before Q .
- (C) If Q is pulled with a jerk, then Q has a tendency to break before P .

Of the above statements,

- (1) only (A) is true.
- (2) only (A) and (B) are true.
- (3) only (A) and (C) are true.
- (4) only (B) and (C) are true.
- (5) all (A), (B) and (C) are true.

10. A block rests on an inclined plane whose angle of inclination (θ) to the horizontal can be varied, which of the following graphs best represents the variation of the frictional force F between the block and the plane with θ ?

