# 2022 IUT Admission Test(SOCIE)

<Multiple choice Types> There is only one correct answer per each question. Mark your answer choice on the OMR answer sheet.

For each correct answer, you will get the points indicated next to each question number.

No penalty point is applied to an incorrect answer.

1. [4 points]

The graph shown below illustrates the force acting on an object when it moves along a horizontal line. How much work is done on the object as it moves from 0 m to 4 m.
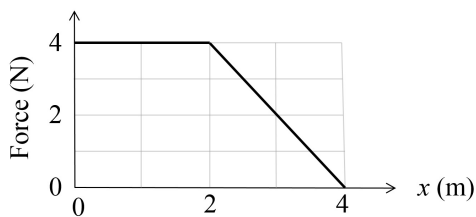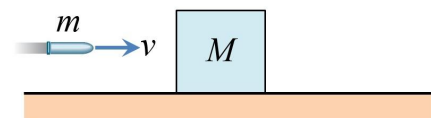

8 J   10 J   12 J
14 J   16 J

2. [5 points]

Following figure shows a rod of length $L = 1.0$ m that is forced to move at a constant speed $v = 5.0$ m/s along horizontal rails. The rod and rails form a conducting loop. Assume that the rod has resistance 4 Ω; the rest of the loop has no resistance. Between the rails, there is a uniform magnetic field of magnitude $B = 2.0$ T. Find the current induced in the loop.
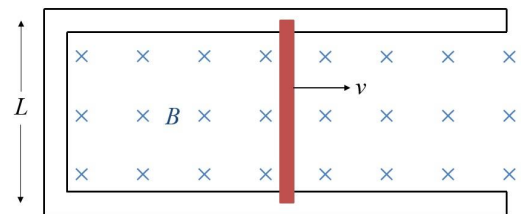
2.0 A   2.5 A   3.0 A
4.0 A   5.0 A

3. [6 points]

A wood block of mass $M = 4.8$ kg is placed on the frictionless floor. A bullet of mass $m = 0.20$ kg is horizontally fired into the wood block. After the collision, the bullet is embedded in the wood block, and they slides together. If the initial speed of the fired bullet is $v = 100$ m/s, what is the speed of the wood block embedded with the bullet after the collision?

2.0 m/s   2.4 m/s   3.0 m/s
4.0 m/s   4.5 m/s