

2020 IUT Admission Test(SOCIE)  
**Physics Examination(Sample)**

<Essay Types> Applicants should write detailed solving process. If there is no solution, you will receive 0 points regardless of the correct answer.

- The point for each question is indicated next to each question number.
- Be sure to use SI units (the international system of units) for all physical quantities.

1. [10 points]

How much electrical energy is converted into heat in 1.0 minute by a 50-ohm resistor carrying 0.2 A of current?

2. [10 points]

A vehicle moves in a straight line from rest and reaches the velocity of 20 m/s in 1 min. What is the average acceleration of the vehicle in the first 1 min?

3. [10 points]

A car moves from rest with a constant acceleration of  $5 \text{ m/s}^2$ . How long does it take to travel the distance of 40 m?

4. [20 points]

A rod of 5 cm long is imaged by a convex lens whose focal length is 5 cm. Find the size of the image when the distance between the rod and the lens is 10 cm.

5. [20 points]

A block of wood is placed on the frictionless floor. The bullet with a mass of 1 kg is horizontally fired into the block of wood. The bullet embeds in the wood block, and they slides together with the speed of 2 m/s. If the initial speed of fired bullet is 10 m/s, what is the mass of the wood block before collision?



6. [30 points]

The graph shown below illustrates the force acting on a 0.5-kg object when it moves along a horizontal position,  $x$  from 0 to 10 m. If the initial speed at  $x = 0$  is 4.0 m/s, determine the speed of the object when it reaches the final position,  $x = 10 \text{ m}$ .

