2020 INHA−BEU DDP Admission Test
Physics Examination

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

○ You can write your solving processes in English or in your native language.

○ Be sure to use SI units (the international system of units) for all physical quantities

○ The point for each question is indicated next to each question number.

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1. [5 points]

How much underlined electrical energy (elektrik enerjisi, электроэнергия) is converted into heat (istilik, тепло) in 1.0 minute by a 50-ohm resistor (rezistor, резистор) carrying 0.2 A of current (cərəyan, ток)?

2. [5 points]

A car moves in a straight line from rest and reaches the velocity (sürət, скорость) of 20 m/s in 1 min. What is the average acceleration (orta təcil, среднее ускорение) of the car in the first 1 min?

3. [5 points]

A car moves from rest with a constant acceleration (sabit təcil, постоянное ускорение) of 5 m/s². How long does it take to travel the distance of 40 m?

4. [5 points]

An ideal gas (ideal qaz, идеальный газ) with a volume (həcmi, Объем) of 2 m³ is heated until its absolute temperature (mütləq temperatur, абсолютная температура) is doubled. If the pressure (təzyiq, давление) of the gas is unchanged during this process, what is the new volume of the gas?

5. [10 points]

A block of wood is placed on the frictionless floor (sürtünməmiş mərtəbə, пол без трения). The bullet (güllə, пуля) 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 (toqquşma, столкновение)?

6. [10 points]

The graph shown below shows the force (qüvvəsi, сила) 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, $x = 10\,\text{m}$.