Assignment 6

Unit 8 - Week 6

Assignment instructions:

- Read the question carefully.
- Write your answer in the space provided.
- Show all your working.
- Submit your assignment by the due date.

Question 1:

A plane leaves at 21:00 GMT; its speed is constant at 90 km/h. The distance between the starting point and the destination is 180 km. At what time will the plane reach the destination?

Question 2:

A car travels from town A to town B at a constant speed of 60 km/h. The distance between the two towns is 120 km. How long will it take the car to reach town B?

Question 3:

The temperature in a room is 20°C. A heater is turned on, and the temperature begins to rise at a rate of 0.5°C per minute. What will be the temperature in the room after 20 minutes?

Question 4:

A cylindrical tank with a radius of 5 meters and a height of 10 meters is completely filled with water. If 300 liters of water are drained from the tank, what will be the new height of the water level?

Question 5:

A rectangular prism has a length of 10 cm, a width of 5 cm, and a height of 3 cm. What is the volume of the rectangular prism?

Question 6:

A solution contains 20% acid. If 50 mL of the solution is added to 150 mL of water, what is the new concentration of acid in the solution?

Question 7:

A pendulum is 1.2 meters long. The time period of the pendulum is 2 seconds. What is the acceleration due to gravity (g)?

Question 8:

A block of mass 5 kg is initially at rest on a frictionless horizontal surface. A force of 10 N is applied to the block for 2 seconds. What is the final velocity of the block?

Question 9:

A spring with a natural length of 20 cm is stretched to a length of 30 cm. If a force of 10 N is applied to stretch the spring further, what is the additional force needed to stretch the spring to a length of 35 cm?

Question 10:

A bolt is 10 mm in diameter. If the bolt is tightened to a torque of 5 Nm, what is the force exerted on the bolt's surface by the nut?

Common data for Questions 4 and 5

- The base area of the tank is 50 square meters.
- The density of water is 1000 kg/m³.
- The gravitational acceleration is 9.8 m/s².
- The acceleration due to gravity is 9.8 m/s².

- The time period of the pendulum is 2 seconds.
- The length of the pendulum is 1.2 meters.
- The mass of the block is 5 kg.
- The mass of the bolt is unknown.
- The diameter of the bolt is 10 mm.
- The torque applied to the bolt is 5 Nm.

As the spring's stiffness increases, the resistance to heat transfer decreases and increases. The respiratory heat transfer coefficient increases.

- a. False
- b. False
- c. True
- d. False
- e. True

In applying the solution and contractions, the respiratory heat transfer increases the temperature regulatory system by the force of gravity for all practical purposes. The temperature of the respiratory system is used to obtain the properties of the fluid. The fluid temperature in the respiratory system is the equivalent of (a) temperature and (b) temperature and temperature of the brain.

- a. False
- b. False
- c. False
- d. True
- e. False

The respiratory system is the master gland, which enables us to control the two transport phenomena: oxygen and energy transfer. The temperature of the respiratory system is the true condition of flux and blood transfer as it acts as a temperature of the fluid. The respiratory system must be able to meet the target temperature with zero effort.

- a. False
- b. False
- c. False
- d. True
- e. False

The respiratory system is an important regulatory system for managing the body. The respiratory system can maintain the blood's temperature and the subsequent driving conditions can only be met with hairpin (b) and thermoregulation of the brain.

- a. False
- b. True
- c. False
- d. False
- e. False