APPENDIX 1

PAT - 1

PRE – TEST QUESTIONS

Please fill the following personal details:	Date:

Name _____

Age_____ Gender: Male ☐ Female ☐

Class _____ School_____

Total marks : 25   Time : 1 hour

Section A: Multiple Choice Questions (10 marks)

Choose the correct option for each question. Each question carries 1 marks.

1. What is the SI unit of work?

    a) Joule

    b) Watt

    c) Newton

    d) Pascal

2. If a force acts on a body and the body moves in the direction of the force, the work done by the force is:

    a) Positive

    b) Zero

    c) Negative

    d) Cannot be determined

3. The work done to lift an object of mass 5 kg to a height of 2 meters is:

    a) 10 Joules

    b) 20 Joules

    c) 50 Joules

    d) 100 Joules

4. Which of the following energy forms is associated with motion?

   a) Kinetic energy

   b) Potential energy

   c) Chemical energy

   d) Thermal energy

5. If an object's velocity is doubled, the kinetic energy:

   a) Increases by a factor of 2

   b) Increases by a factor of 4

   c) Decreases by a factor of 2

   d) Remains constant

6. What is the SI unit of work?

   a) Watt

   b) Joule

   c) Newton

   d) Meter

7. Which of the following is NOT a form of energy?

   a) Kinetic energy

   b) Potential energy

   c) Work done

   d) Force

8. Which of the following is the formula for calculating kinetic energy?

   a) $KE = \frac{1}{2}mv^2$

   b) KE=mgh

   c) KE=F x d

   d) $KE = \frac{1}{2}m$

9. If no work is done on an object, its kinetic energy cannot change. (True/False)

10. Work is done when the force and the displacement are in the same direction. (True/False)

Section B: Short Answer Questions (10 marks)

Answer the following questions. Each question carries 2 marks.

11. What is the difference between work and energy? Explain with examples.

12. A person pushes a car with a constant force of 100 N for 10 meters in the direction of the force. How much work is done by the person?

13. Define work done.

14. What is the relationship between force, displacement, and work?

15. What is the difference between kinetic energy and potential energy? Give one example of each in real life.

Section C: Long Answer Questions (5 marks)

16. A ball of mass 0.5 kg is dropped from a height of 5 meters. Calculate:

a) The potential energy of the ball before it is dropped.

b) The kinetic energy of the ball just before it hits the ground.

(Use $g = 9.8$ m/s²)

PAT - 2

POST – TEST QUESTIONS

Please fill the following personal details: Date:

Name _____

Age_____ Gender: Male ☐   Female ☐

Class _____ School_____

Total marks : 25   Time : 1 hour

Section A: Multiple Choice Questions (10 marks)

Choose the correct option for each question. Each question carries 2 marks.

1. Which of the following is the SI unit of energy?

   a) Newton

   b) Watt

   c) Joule

   d) Meter

2. What happens to the potential energy of an object as it is raised to a greater height?

   a) It decreases

   b) It stays the same

   c) It increases

   d) It becomes kinetic energy

3. A 5 kg object moves with a velocity of 3 m/s. What is the kinetic energy of the object?

   a) 7.5 J

   b) 15 J

   c) 22.5 J

   d) 30 J

4. The work-energy theorem states that the work done on an object is equal to:

a) Its change in potential energy

b) It's change in kinetic energy

c) Its change in momentum

d) The force applied

5. The energy stored in a stretched spring is known as:

a) Gravitational potential energy

b) Kinetic energy

c) Elastic potential energy

d) Chemical energy

6. If a force of 10 N acts on an object for a distance of 5 meters, the work done is:

a) 50 J

b) 5 J

c) 15 J

d) 25 J

7. What is the SI unit of power?

a) Newton

b) Joule

c) Watt

d) Pascal

8. A machine has an efficiency of 80%. This means that:

a) 80% of the input energy is converted to useful work

b) 80% of the input energy is lost

c) 80% of the output energy is wasted

d) The input energy is equal to output energy

9. If the velocity of an object is doubled, its kinetic energy becomes:

a) Half

b) Double

c) Four times

d) Unchanged

10. Which of the following is an example of energy conversion?

   a) A car moving on a flat road

   b) A battery supplying energy to a fan

   c) A person climbing stairs

   d) A light bulb producing light from electrical energy

Section B: Short Answer Questions (10 marks)

Answer the following questions. Each question carries 2 marks

11. What is the difference between work done and power?

12. A car of mass 1500 kg is moving at a speed of 30 m/s. Calculate its kinetic energy.

13. A 100 kg object is lifted 10 meters vertically. Calculate the work done against gravity.

14. Define mechanical energy and explain how it is conserved in an ideal system.

15. A spring with a spring constant of 500 N/m is compressed by 0.2 meters. What is the potential energy stored in the spring?

Section C: Long Answer Questions (5 marks)

16. A spring has a spring constant of 300 N/m. If it is compressed by 0.5 meters, calculate the potential energy stored in the spring.