Brain International School
Vikas Puri, New Delhi

ASSIGNMENT NO. 4

SUBJECT: PHYSICS **CLASS-IX** **NOVEMBER'2026**

CH 7: WORK ENERGY AND SIMPLE MACHINES

Q1. **Choose the correct option:**

i. If a machine lifts a load of 500 N using an effort of 250 N, what is its mechanical advantage?
(a) 0.5 (b) 250 (c) 1 (d) 2

ii. A single fixed pulley is mainly used to:
a) Multiply force b) Change the direction of effort
c) Increase the load d) Reduce the distance moved by effort

Q2. In each of the following questions, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.
b) Both A and R are true, but R is not the correct explanation of the assertion.
c) A is true, but R is false.
d) A is false, but R is true.

(a) **Assertion**: A second-class lever always has a mechanical advantage greater than 1.
Reason: In a second-class lever, the load lies between the fulcrum and the effort.

(b) **Assertion**: The power of a person increases if the same amount of work is done in half the time.
Reason: Power is directly proportional to the time taken to complete the work.

Q3. a) What is lever?
b) Draw a schematic diagram of a lever and mark fulcrum, effort, load, effort arm and load arm on it.

Q4. Analyze how an inclined plane provides mechanical advantage and derive its expression.

Q5. In a lever arrangement the effort arm is 80 cm long and load arm is only 5 cm long. What is the mechanical advantage of the lever?

Q6. A construction worker needs to raise a 300 N load to a height of 4 m. He can either lift it straight up or use a smooth inclined plank that is 12 m long. The mechanical advantage of the incline is MA = L/h.

(i) Calculate the mechanical advantage of the inclined plane.
(ii) What effort is needed to push the load up the incline?
(iii)Is the total work done the same in both cases? Why?

Q7. Which of the following has more power?

a) Ram is flying a force of party looking on an object and pushing it through 50 metre in the direction of course in one minute.
b) Shyam applying a force of 60 Newton on an object pushing it through 60 metre in the direction of force in two minutes. Explain your answer in the actual calculation.