

Lesson Plan - WORK AND ENERGY

Topic : WORK AND TYPES OF WORK , NUMERICALS

No. of periods: 2(35MIN EACH)

S.	Learning Objective	Activities	TLM/	Content	Mode of	Reflection
1	Students will be able to - Define and write the expression for work - Understand and analyze the various life examples under different types of work -Comprehend and evaluate the amount of work done by doing numerical related to it.	Students will perform few activities- a) By falling pen (b)Pressing of a football (c)Pushing of a table etc. Activity 11.1-11.4 (GROUP ACTIVITY) Students will try to solve numerical s.	Ref. NCERT text book .	Define work, its SI unit and its nature. -Derivation of its expression $W=f \times s$ -Define 1 J -Types of work done(positive, negative or zero work) -In order to explain the dependence of types of work done on the angle between F & s; few examples will be discussed Following examples will be discussed:a) By falling pen (b)Pressing of a football (c)Pushing of a table etc. -How much work is done by a force of 1N in moving an object through a distance of 1m in the direction of force?	Oral questionnaire- 1.Define 1J. 2.Explain different type of work done. 3. Write 3 examples for 3 types of work. 4.When do we say that work is done. 5.What is the expression for work done? 6.What is the expression for force in terms of acceleration? 7.Derivation for work	Student will recapitulate the concept by writing at least 1 example for each type of work done on their own.

TOPIC- KINETIC ENERGY AND POTENTIAL ENERGY

No. of periods: 2

S.	Learning Objective	Activities	TLM/	Concept	Mode of	Reflection
2	Students will be able to : - Comprehend the concept of kinetic energy along with its SI unit. -Derive the expression of K.E. using 3rd equation of motion. -Comprehend the concept of potential energy along with its SI unit. -Derive the expression of P.E.	Activities 11.6- 11.12 Discussion method - Following questions will be asked: -What is energy? -What is its SI unit? -How many types of energy you have heard .	NCERT Textbook .	-Define kinetic energy along with SI unit & type of quantity. -Derivation of expression of kinetic energy $KE = W = F \times s = ma \times s$ But $v^2 = u^2 + 2as$ $v^2 = 0 + 2as$ $as = v^2/2$ $KE = W = ma \times s = m v^2/2$ of a body depends: (1) Mass of body (2) Velocity of body -Define potential energy along with SI unit & type of quantity. -Derivation of expression of potential energy $PE = W = F \times s = m a s$ $PE = mgh$ -PE depends upon: Mass of body Height at which the object is placed.	Exit Question: Q- Derive an expression for kinetic energy. Q-Derive an expression for Potential energy.	Students will try to complete Activity-11.15 and solve numerical by themselves in pairs. Q-Certain force acting on a 20Kg mass changes its velocity from 5m/s to 2m/s. Calculate the work done by the force. Q-A 5Kg ball is thrown upwards with a speed of 10m/s. (i) Find the PE when it reaches the highest point. (ii) Calculate the maximum height attained by it. Q-Differentiate
Week: 1		Topic : LAW OF CONSERVATION OF ENERGY				No. of periods: 2

S. N o.	Learning Objective	Activities	TLM/ Reso urces	Concept	Mode of assessment	Reflection
3	Students will be able to illustrate and derive the law of mechanical energy in case of a falling body.	i. Individual activity - What is kinetic energy - What is potential energy? -What are their expressio ns?.	NCERT textb ook	- Define mechanical energy, its SI unit and its nature. - Define law of conservation of mechanical energy. kinetic energy along with SI unit & type of quantity.	Exit Question: Q- The potential energy of a freely object decreases progressively. Does this violate the law of conservation of energy? Why?	Students will answer the following 1.What is kinetic energy and potential energy at the highest point of the building? 2.What is kinetic energy and potential energy at the lowest point of the building?
Topic : POWER				No. of periods: 2		
S.	Learning Objective	Activities	TLM/	Concept	Mode of	Reflection

4	Students will be able to : -Define the power of a body, its SI unit and its nature. -Derive the expression of power for a body in motion. -Derive the expression of power of a body in terms of force and velocity	Activity- 11.16 will be done by students in pairs.	Ref. NCERT textbook	Explanation will be done by teacher on - Define power of a body -Power of a body = rate of work done -Power = work done/ time taken -SI unit of power is Watt(W) -Define 1W -Derivation of its expression $p = w/t = mgh / t$ (as the motion of the body is along y axis) -Commercial unit of electrical energy 1Kilo-watt-hour=1 unit=1Kwx1Hr=1000J/sx3600s=3.6x10 ⁶ J	Exit Question: Q- What is power? Q-When to use the kinetic energy formula in place of work done? Q-When to use the potential energy formula in place of work done? Q- What will be formula of power in terms of force and velocity?	Activity- 11.17 will be done by students and will solve the numerical -Two girls do the same work in 5 minutes and 10 minutes resp. which of these two has more power and why?