AAFAQ ACADEMY – KASUR

Paper: Physics **Chapter (4)** **Class: F.Sc. Part – I**
WORK AND ENERGY

Name: _____ Roll No: (in words) _____

OBJECTIVE TYPE

Total Marks: 11 **Paper Code: _____** **Total Time: 10 Minutes**

NOTE: Write your **Roll No.** in space provided. Using lead pencil will result in loss of marks.

Q.No.1: You have four choices for each objective type question as A,B,C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Sr. No.	QUESTION	A	B	C	D
1.	If a tunnel is bored through the centre of the Earth and a pebble is dropped in it, then it	Performs SHM	Drops to the other side of the Earth	Stopped at the centre of the Earth	Sticks to the side of the bore
2.	The K.E. required to project a body of mass m from Earth's surface to infinity	mgR	$2mgR$	$mgR/2$	None of these
3.	Ultimate source of energy is	Air	Water	Sun	All of these
4.	Absolute P.E. with increasing distance from the centre of the Earth	Increases	Decreases	Decreases then increases	Remains same
5.	Energy stored in the water of dam is	Electric P.E.	Kinetic energy	Gravitational P.E.	Elastic P.E.
6.	Solar cells are made from	Nickel	Cobalt	Plastic	None of these
7.	Which field is non – conservative?	Gravitational field	Magnetic field	Electric field	None of these
8.	Under the influence of force, an object of a mass $4kg$ accelerates from $3 \bullet 0m \bullet s^{-1}$ to $6 \bullet 0m \bullet s^{-1}$ in $8 \bullet 0s$. How much work was done on the object during this time?	$27J$	$54J$	$72J$	$96J$
9.	A mass is lifted to a height in $10s$. Now if the same mass is lifted to the same height in $20s$, then work done in two cases are in the ratio	1:2	2:1	1:1	4:1
10.	Which energy source is renewable?	Coal	Natural gas	Sunlight	Oil
11.	A gas filled balloon possess	Chemical energy	Electrical energy	Heat energy	Potential energy

SUBJECTIVE TYPE

Total Marks: 18 **Time Allowed: 0 Hours 50 Minutes**

SECTION – I (SHORT QUESTIONS)

2. Attempt any FIVE questions. **(5×2=10)Marks**

i. Find the work done in kilo – joules when a mass of 10 kg is lifted through a vertical height of 10 m.

ii. A person holds a bag of groceries while standing still, talking to a friend. A car is stationary with its engine is running. From the stand point of work, how are these two situations similar?

iii. A body has 1 J of potential energy. What does it mean?

iv. A force F acts through a distance L. The force is then increased to $3F$, and then acts to a further distance of $2L$. Draw the work diagram to the scale.

v. Prove that Prove that $P = \vec{F} \bullet \vec{v}$.

vi. A ball of mass m is held at a height h_1 above the table. The table top is at height h_2 above the floor. One student says that the ball has potential energy mgh_1 but another says that it is $mg(h_1 + h_2)$. Who is correct?

vii. When a rocket re – enters the atmosphere, its nose cone becomes very hot. Where does this heat energy come from?

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

i. Describe in detail the inter conversion of potential energy and kinetic energy. (5)

ii. A $1000kg$ automobile at the top of an incline $10m$ high and $100m$ long is released and rolls down the hill. What is its speed at the incline if the average retarding force due to friction is $480N$? (3)

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MORNING GROUP

SECTION – III (Practical)

4.   (a) Write answer of TWO questions.   (2×2=4)

i.   Where will the value of g greatest at (a) Karachi, (b) Kasur, (c) Kalam?

ii.   What is an ideal simple pendulum?

iii. Differentiate between g and G.

4.   (b) Write procedure to verify that time period of simple pendulum is independent of the mass of the bob of the simple pendulum.   (3)

4.   (c) Answer the following questions on the basis of graph drawn between (X) and (Y). (4)

i.   Find the area of the graph.

ii.   Find value of X corresponding to $Y = 60mm$.

Good Luck

Ch. Khalid Mahmood Ashraf