AAFAQ ACADEMY – KASUR

Paper: Physics **Chapter (4)1** **Class: F.Sc. Part – I**

WORK AND ENERGY

Name: _____ Roll No: (in words) _____

EVENING GROUP

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.	The work done in holding a mass of 50 kg at a height of 2 m above the ground is	$0J$	$25J$	$100J$	$980J$
2.	A $1 \bullet 0kg$ mass has a K.E of $1J$ when its speed is	$0 \bullet 45m \bullet s^{-1}$	$1 \bullet 0m \bullet s^{-1}$	$1 \bullet 4m \bullet s^{-1}$	$4 \bullet 4m \bullet s^{-1}$
3.	A bullet of mass $10 \bullet 0g$ hits a target and penetrates $2 \bullet 0cm$ into it. If the average resistance offered by the target is $100N$, then the velocity with which the bullet hits the target is	$10 \bullet 0m \bullet s^{-1}$	$10\sqrt{2}m \bullet s^{-1}$	$20 \bullet 0m \bullet s^{-1}$	$20\sqrt{2}m \bullet s^{-1}$
4.	A force $\vec{F} = 5\hat{i} + 6\hat{j} - 4\hat{k}$ acting on a body, produces displacement $\vec{S} = 6\hat{i} + 5\hat{k}$. Work done by the force is	10 units	18 units	11 units	15 units
5.	The tidal energy is due to the gravitational pull of	Sun	Moon	Mars	Stars
6.	The unit of power SI (watt) is equivalent to	$kg \bullet m^2 \bullet s^{-3}$	$kg \bullet m \bullet s^{-2}$	$kg \bullet m^2 \bullet s^{-2}$	None of these
7.	The sources of geothermal energy is	The fusion in sun	The radioactive decay in the Earth's interior	The rotation of Earth around sun	The rotation of Earth round its own axis
8.	If speed of body is increased by three times, its K.E. increased by	Three times	Two times	Six times	None of these
9.	If moon's radius is $1600km$ and g on its surface is $1 \bullet 6m \bullet s^{-2}$, then the escape velocity on the moon is	$1600m \bullet s^{-1}$	$506m \bullet s^{-1}$	$50 \bullet 6m \bullet s^{-1}$	$2263m \bullet s^{-1}$
10.	Absolute gravitational P.E. is independent of	G	M	g	m
11.	Work done in gravitational field	Along a closed path is zero	Independent of the path followed	Depends of the path followed	Both (A) and (B)

SUBJECTIVE TYPE

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

SECTION II (SHORT QUESTIONS)

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

i. In which case is more work done? When a $50kg$ bag of books is lifted through $20cm$, or when a crate of $50kg$ is pushed through $2m$ across the floor with a force of $50N$?

ii. Name and shortly describe two methods to convert biomass in to fuel.

iii. When a rocket re-enters the atmosphere, its nose cone becomes very hot. Where this heat energy does comes from?

iv. Derive relation between SI and commercial units of energy.

v. State and prove work – energy principle.

vi. A girl drops a cup from a certain height, which breaks into pieces. What energy changes are involved?

vii. A 70 kg man runs up a long flight of stairs in 4S. The vertical height of the stairs is 4.5m. Calculate his power output in watts.

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

i. Define conservative field. Prove that work done in conservative field is independent of the path. (5)

ii. If 100 m^3 of water is pumped from a reservoir into a tank, 10 m higher than the reservoir, in 20 minutes. If density of water is 1000 kg m^{-3} find **(a)** The increase in P.E. **(b)** The power delivered by the pump. (3)

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SECTION – III (Practical)

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

i. What is simple pendulum?

ii. Why simple pendulum is suspended such that bob is very close to the floor?

iii. What is second's pendulum? Give its frequency.

4. (b) Write procedure to verify law of isochronisms of the simple pendulum. (3)

4. (c) Answer the following questions on the basis of graph drawn between force (F) and displacement (d). (4)

i. What you conclude from the graph?

ii. Find the area of the graph. What you infer from the area of the graph?

Good Luck

Ch. Khalid Mahmood Ashraf

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