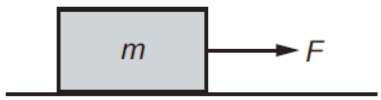
1. Nov/2021/Paper_11/No.11

The diagram shows a block of mass *m* pulled in a straight line along a horizontal surface by a force *F*.



The block moves a distance *d* in time *t*. The average speed at which the block moves is *v*.

Which two quantities must be known to calculate the work done?

A *F* and *d** **B** *F* and *m** **C** *F* and *t** **D** *F* and *v*

2. Nov/2021/Paper_12/No.12

A 60 kg ice-skater, travelling initially at 3.0 m / s, glides across a horizontal icy surface. The skater brakes and comes to rest after 5.0 m.

The work done against the braking force is the change in the kinetic energy of the skater.

What is the braking force?

A 18 N **B** 27 N **C** 54 N **D** 108 N

3. Nov/2021/Paper_12/No.13

Which equation is used to find the efficiency of an energy transfer?

A $\text{efficiency} = \dfrac{\text{useful energy output}}{\text{total energy input}}$

B $\text{efficiency} = \dfrac{\text{total energy input}}{\text{useful energy output}}$

C $\text{efficiency} = \dfrac{\text{energy converted to the required form}}{\text{total power input}}$

D efficiency = (energy converted to the required form) × (total energy input)

4. Nov/2021/Paper_21/No.4

In a coal-fired power station, coal is burnt and electrical energy is produced.

(a) State the form of energy in the coal that is transferred to electrical energy.

..... [1]

(b) **(i)** State the principle of the conservation of energy.

.....

.....

.....

..... [2]

(ii) The quantity of electrical energy produced by the power station is much less than the quantity of energy in the coal that is burnt to generate the electricity.

Explain why this is so.

.....

.....

.....

..... [2]

(c) State **one** environmental consequence of generating electricity in coal-fired power stations.

.....

..... [1]

[Total: 6]

5. June/2021/Paper_11/No.13

The work done by a force F on a body is calculated by multiplying F by a quantity q.

What is q?

A the distance travelled in the direction of the force

B the distance travelled perpendicular to the direction of the force

C the velocity in the direction of the force

D the velocity in the direction perpendicular to the force

6. June/2021/Paper_11/No.14

Some solar panels have a total area of 12 m^2.

Each 1.0 m^2 of the panels receives 0.85 kJ of energy from the Sun in 1.0 s.

The efficiency of the panels is 16%.

How much power do they produce?

A 1.6 kW **B** 2.2 kW **C** 64 kW **D** 160 kW

7. June/2021/Paper_12/No.15

The work done by a force F on a body is calculated by multiplying F by a quantity q.

What is q?

A the distance travelled in the direction of the force

B the distance travelled perpendicular to the direction of the force

C the velocity in the direction of the force

D the velocity in the direction perpendicular to the force

8. June/2021/Paper_12/No.16

A girl lifts an object of mass 1.0 kg from the floor and puts it on a ledge 2.0 m above the floor.

How much potential energy is gained by the object?

[gravitational field strength g = 10 N / kg]

A 2.0 J **B** 5.0 J **C** 10 J **D** 20 J