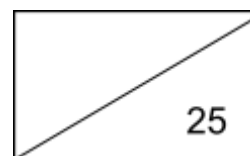


TOPICAL REVIEW 9

Chapter 9: Application of Forces and
Transfer of Energy

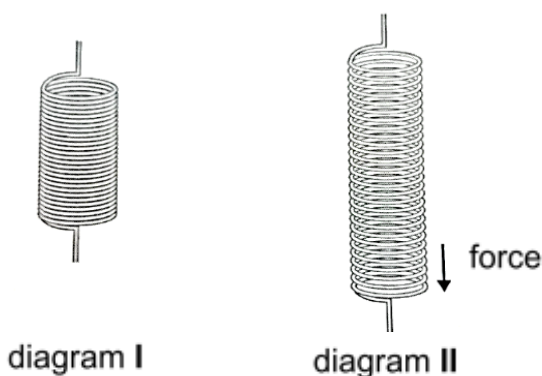


Name: _____ Class: _____ Date: _____

Section A: Multiple-Choice Questions (MCQs) – 6 marks

1	2	3	4	5	6

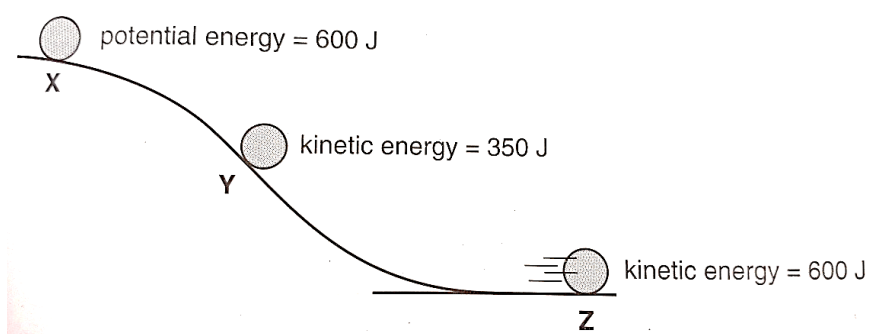
- 1 The diagram I below shows a spring before a force is applied.



When a force is applied, the spring is stretched as shown in diagram II. Which of the following conclusions can be made about a force from diagrams I and II?

- A** A force can change the density of the spring.
- B** A force can change the mass of the spring.
- C** A force can change the motion of the spring.
- D** A force can change the size of the spring.
- 2 A block of wood has a mass of 15 kg on Earth. What is its mass when it is placed in a planet which it experiences half of the Earth's gravitational force?
- A** 7.5 kg
- B** 15 kg
- C** 30 kg
- D** 45 kg

- 3 Which of the following does **not** involve gravitational force?
- A a parachutist descending towards the ground
 - B a rocket taking off from its base on Earth
 - C a satellite orbiting around the earth
 - D rise and fall in sea level
- 4 Which of the examples shows that work is not done?
- A dragging a load across a floor
 - B kicking a ball away
 - C leaning against a concrete wall
 - D throwing an object up in the air
- 5 Which of the following statement about work done on an object is **not** correct?
- A There is work done if the object is being carried up the stairs.
 - B The object must move in the direction of the force acted on it.
 - C The SI unit of work done is Nm.
 - D When the object remains stationary, there is no work done on the object.
- 6 The diagram below shows a ball rolling down a slope from point **X** to a horizontal surface at point **Z**.



The slope and the horizontal surface are frictionless. What would be the total amount of energy at point **Y** during its journey?

- A 0 J
- B 250 J
- C 350 J
- D 600 J

Section B: Structured Questions – 19 marks

1 State the effect of forces in the following situations.

(a) Hitting a tennis ball during the games.

..... [1]

(b) Punch a pillow.

..... [1]

(c) Using a bottle opener to open the cap on the bottle.

..... [1]

(d) Pushing a trolley after loading goods onto it

..... [1]

2 A student wrote *‘The weight of a table is 60 kg. However, the mass of the table depends on where it is – high up in the mountains or at sea level.’*

(a) *‘The weight of a table is 60 kg.’*

Identify the mistake in the above sentence and then rephrase it.
Explain why the sentence is wrong.

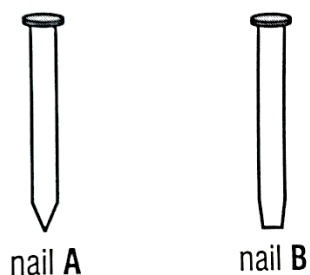
.....
.....
..... [1]

(b) *‘...However, the mass of the table depends on where it is – high up in the mountains or at sea level.’*

Identify the mistake in the above sentence and then rephrase it.
Explain why the sentence is wrong.

.....
.....
..... [1]

- 3 Study nail **A** and nail **B** as shown below.



The masses of both nails are the same. When the same force is applied to them,

- (a) Which nail can penetrate the wall easier?

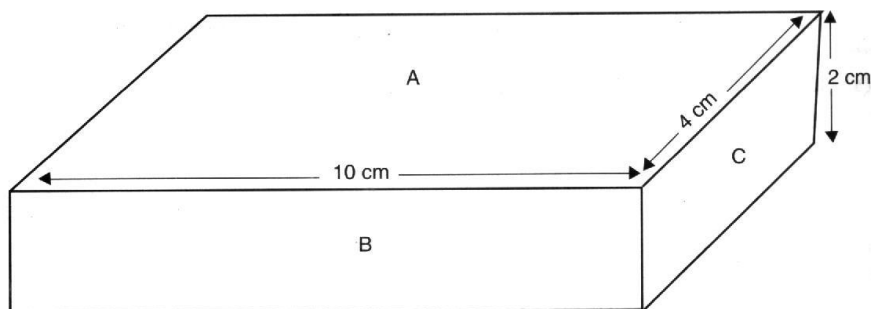
..... [1]

- (b) Explain your answer.

.....

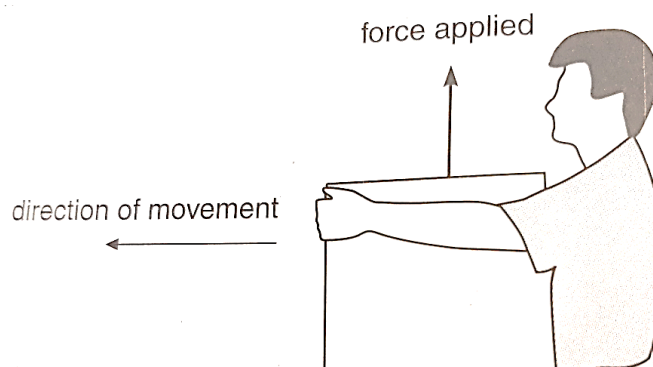
 [2]

- 4 The diagram bellows shows a box with a weight of 100 N. Calculate the maximum pressure that the box will exert on the ground.



Pressure = N/cm² [2]

- 5 The diagram below shows a man holding a carton walking in a horizontal direction.



- (a) Is there work done on the carton?

..... [1]

- (b) Explain your answer.

.....
 [1]

- 6 Study the two figures given below.



Figure 6a

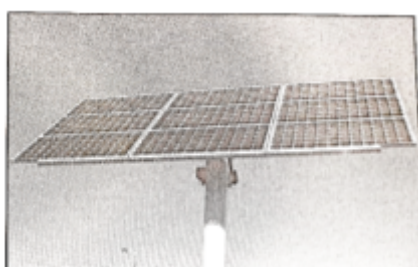


Figure 6b

These figures show the important technologies in our surroundings.

- (a) State the sources of energy in each of technologies shown above.

- (i) **Figure 6a:**

..... [1]

- (ii) **Figure 6b:**

..... [1]

- (b) (i) What is the advantage of these two energy sources over the energy source of fossil fuels?

..... [1]

- (ii) List a negative impact on the environment when using the technology in **Figure 6a**.

..... [1]

- (c) State the principle energy transformation in both technologies.

- (i) **Figure 6a:**

..... [1]

- (ii) **Figure 6b:**

..... [1]

Success Criteria (Pls tick accordingly)

Section A	
Qn	I can ...
1	recognise that the interactions between two or more objects, result in a transfer of energy which can/may cause changes (by application of force) to the size and/or shape of an object
2	compare weight and mass
3	show an understanding that a force can be a contact force (e.g., friction) or non-contact force, (e.g., magnetic force, gravitational force)
4	identify that work is done is an example of energy transfer that occurs when an object moves in the direction of a force
5	identify that work is done is an example of energy transfer that occurs when an object moves in the direction of a force
6	recognise that energy cannot be created nor destroyed, it is conserved when it is transferred (from one object to another) and/or converted (from one form to another)

☐☐☐☐☐☐

Section B	
Qn	I can ...
1	recognise that the interactions between two or more objects, result in a transfer of energy which can/may cause changes (by application of force) to the • state of rest or motion of an object • turning effects in objects (e.g., spanners, levers to open tins) • size and/or shape of an object
2	compare weight and mass
3	show an appreciation of some daily life phenomena associated with pressure (e.g., high-heeled shoes, cutting edge of a knife)
4	investigate pressure using the formula, $\text{pressure} = \text{force}/\text{area}$
5	identify that work is done is an example of energy transfer that occurs when an object moves in the direction of a force
6	show an appreciation of the uses of various sources of energy (e.g., fossil fuels, solar, hydroelectric, wind energy, geothermal energy, biofuels and nuclear energy) and their impact on the environment

☐☐☐☐☐☐

