Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 3_Conservation Of Energy

Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

The International Space Station (ISS) has several solar panels called wings.

(a) The wings convert energy from the Sun into a form useful in the ISS.

(1)

- ☒ **A** transverse and electromagnetic
- ☒ **B** electromagnetic but not transverse
- ☒ **C** transverse but not electromagnetic
- ☒ **D** neither transverse nor electromagnetic

(b) In one second, the useful energy available from one wing is 34.3 kJ.
The energy incident on the wing from the Sun is five times this amount.

What is the percentage efficiency of the wing?

(3)

efficiency = ... %

(c) A wing is in direct sunlight.
The ISS is not receiving energy from the wing.
The temperature of the wing remains constant.

Explain why the temperature of the wing remains constant in these conditions.

(2)

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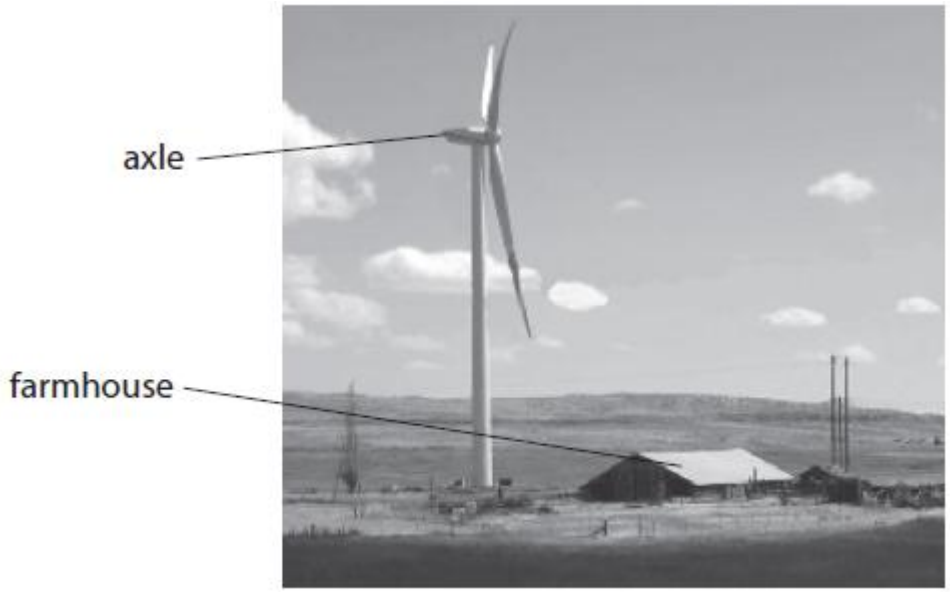
Q2.

(a) A wind generator is used as the source of energy for a remote farmhouse.



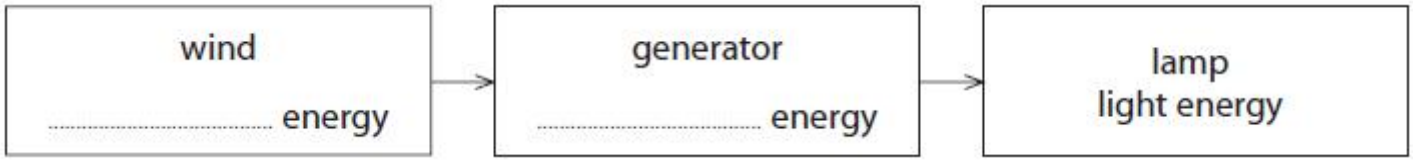
(i) Complete the sentence by putting a cross (☒) in the box next to your answer.
If the farmhouse is about 7 m high, the height of the axle of the generator is

(1)

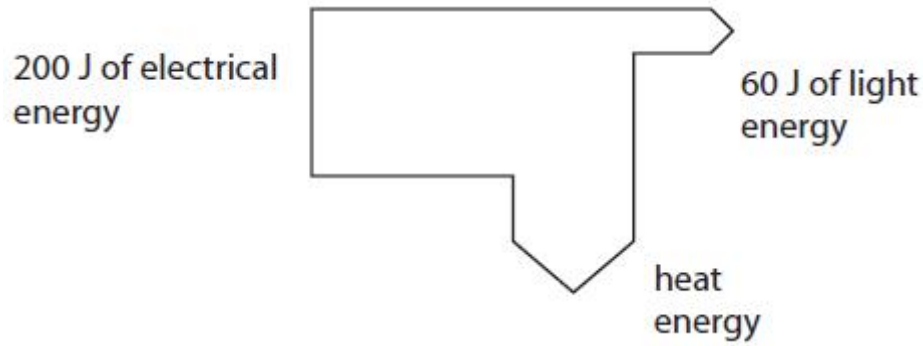
- ☒ **A** 20 m
- ☒ **B** 50 m
- ☒ **C** 100 m
- ☒ **D** 150 m

(ii) Complete the flow chart to show the energy transfers that take place from the wind to light a lamp.

(2)



(b) A student produced a diagram to show energy changes in a lamp.



(i) Calculate the amount of heat energy produced by the lamp.

(1)

heat energy =.....J

(ii) Calculate the efficiency of the lamp.

(2)

efficiency =.....

(iii) When the lamp is first switched on, it heats up.
It then reaches a constant temperature.
Explain why the temperature of the lamp remains constant.

(2)

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(c) A wind power system costs £6000 to install.
It saves £250 each year.

Calculate the payback time.

(2)

payback time =.....

(Total for Question = 10 marks)

Q3.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

(i) In a controlled chain reaction of uranium-235, which of these could cause a uranium-235 nucleus to undergo fission?

(1)

- ☐ **A** an alpha particle
- ☐ **B** a beta particle
- ☐ **C** a neutron
- ☐ **D** a proton

(ii) The kinetic energy of one of the particles released in a fission reaction is 1.2 × 10–11 J.

The mass of the particle is 1.4×10^{-25} kg.
Calculate the velocity of the particle.

(3)

velocity of the particle = ... m/s

(Total for question = 4 marks)