

Name of the Student: _____

Max. Marks : 22 Marks

Time : 22 Minutes

Q1.

Figure 11 shows part of the UK National Grid system for the supply of electricity to homes.

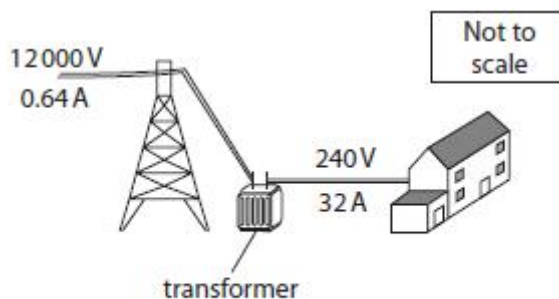


Figure 11

Explain why the National Grid uses high voltages with small currents to transfer electricity from power stations.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q2.

Figure 6 shows part of the UK National Grid system for the supply of electricity to homes.

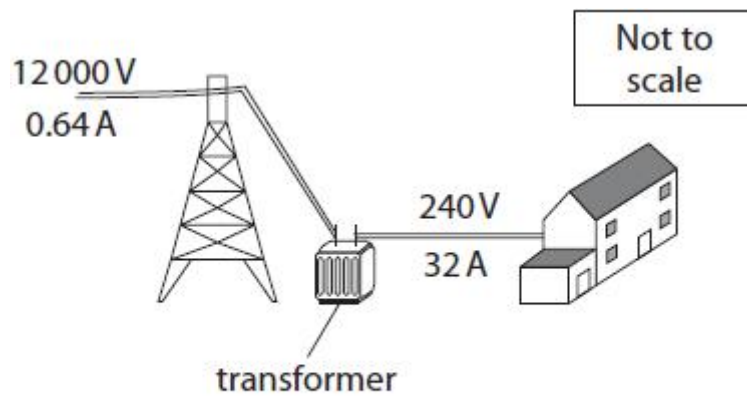


Figure 6

Explain why the National Grid uses high voltages with small currents to transfer electricity from power stations.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q3.

Complete the following sentences using one of the phrases from the box below.

efficiency is reduced
the national grid
a power station
heat loss is reduced
a transformer

(i) Electrical power is generated at

(1)

.....

(ii) Electricity is transmitted over long distances by transmission lines that are part of

(1)

.....

(iii) Electricity is transmitted at high voltages so that

(1)

.....

(Total for question = 3 marks)

Q4.

Complete the following sentences using one of the phrases from the box below.

efficiency is reduced
the national grid
a power station
heat loss is reduced
a transformer

(i) Electrical power is generated at

(1)

.....

(ii) Electricity is transmitted over long distances by transmission lines that are part of

(1)

.....

(iii) Electricity is transmitted at high voltages so that

(1)

.....

(Total for question = 3 marks)

Q5.

In a small transformer

- the primary voltage is 230 V
- the primary current is 0.020 A
- the secondary voltage is 5.0 V

Calculate the secondary current.

Use the equation

$$I_s = \frac{V_p \times I_p}{V_s}$$

(2)

secondary current = A

(Total for question = 2 marks)

Q6.

In a small transformer

- the primary voltage is 230 V
- the primary current is 0.020 A
- the secondary voltage is 5.0 V

Calculate the secondary current.

Use the equation

$$I_s = \frac{V_p \times I_p}{V_s}$$

(2)

secondary current = A

(Total for question = 2 marks)

Q7.

* The first public power station was built in the centre of New York.

It used generators to supply direct current at 110 V. The cables had to go underground and they could only supply nearby shops and offices.

The electricity was mainly used for electric light.

The development of alternating current generators led to major changes in the way electricity is transmitted and used.

Compare the modern National Grid system with the early system in New York.

(6)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Q8.

Which statement is true for transformers?

(1)

- ☐ **A** Transformers can only step-up voltages.
- ☐ **B** Transformers can only step-down voltages.
- ☐ **C** Transformers can work with direct current.
- ☐ **D** Transformers have primary and secondary coils.

(Total for question = 1 mark)

Q9.

Which statement is true for transformers?

(1)

- ☐ **A** Transformers can only step-up voltages.
- ☐ **B** Transformers can only step-down voltages.
- ☐ **C** Transformers can work with direct current.
- ☐ **D** Transformers have primary and secondary coils.

(Total for question = 1 mark)