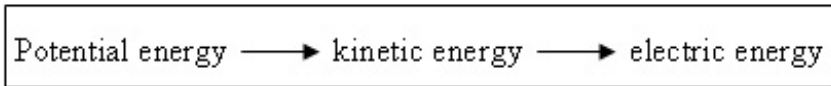


## Chapter 25 Generation of Electricity

Paper 1

Answer **all** questions. Each question is followed by four options, **A**, **B**, **C** and **D**. For each question, choose **one** answer only.

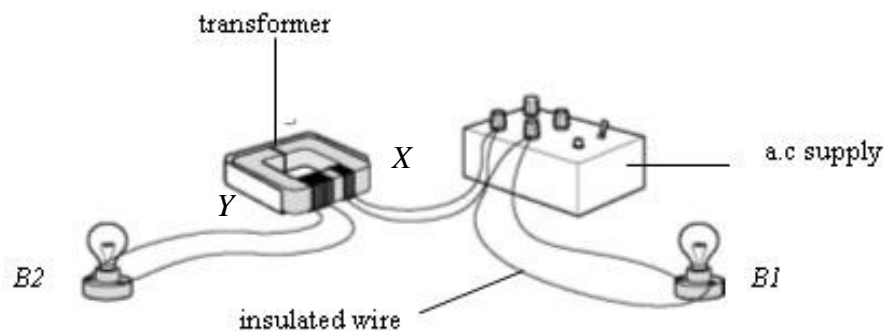
1.



Which of the following types of electric generator shows the change of energy as indicated above?

- A** Diesel electric generator
- B** Thermal electric generator
- C** Gas turbine electric generator
- D** Hydroelectric generator

2.



The apparatus as shown in the figure above is set up. When the a.c. supply is turned on, it is found that the brightness of bulb *B1* is not as bright as that of bulb *B2*. Of the following, which is probably the number of turns in coils *X* and *Y*?

- |          | <i>X</i> | <i>Y</i> |
|----------|----------|----------|
| <b>A</b> | 15       | 25       |
| <b>B</b> | 25       | 15       |
| <b>C</b> | 25       | 25       |
| <b>D</b> | 15       | 15       |

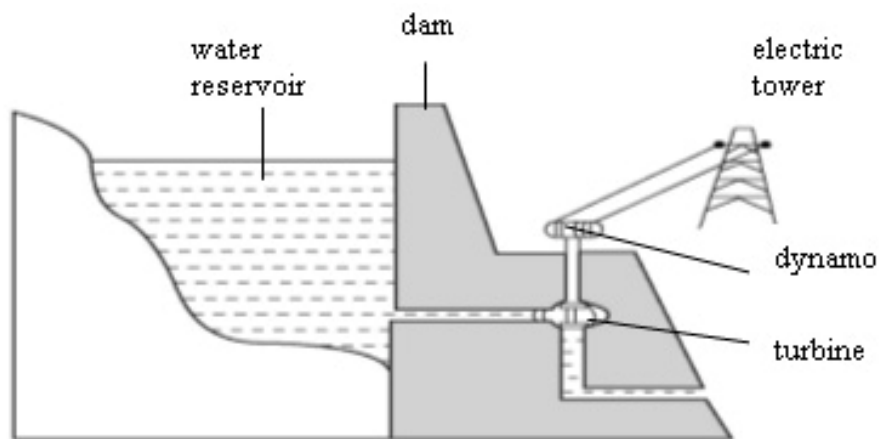
3. Why must an electric wire be sheathed with an insulator?

- I** To save cost
- II** To prevent short circuit
- III** To prevent electric shock

- A** I and II only
- B** I and III only
- C** II and III only
- D** I, II and III

4. What is the function of a step-down transformer?
- A Lowers the voltage of alternating current
  - B Raises the voltage of alternating current
  - C Raises the voltage of direct current
  - D Raises the current flowing through a circuit
5. What is the importance of a switch zone?
- I To change voltage and current
  - II To connect and break a circuit when necessary
  - III To control electrical energy from an electric generator from entering the National Grid Network
- A I and II only
  - B I and III only
  - C II and III only
  - D I, II and III
6. What are the two types of wire found in a cable that connect the substation branches to houses?
- A Live wire and neutral wire
  - B Earth wire and live wire
  - C Neutral wire and earth wire
  - D Live wire and mains wire

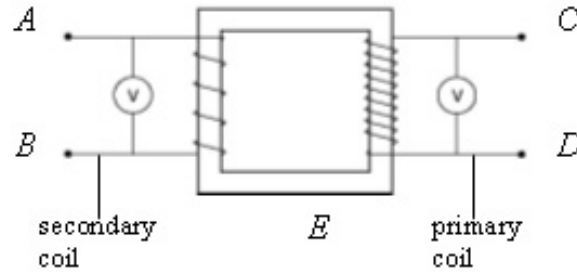
7.



A hydroelectric generator system is shown in the figure above. State the energy change that takes place in this system.

- A Electrical energy  $\longrightarrow$  potential energy  $\longrightarrow$  kinetic energy
- B Potential energy  $\longrightarrow$  electrical energy  $\longrightarrow$  kinetic energy
- C Potential energy  $\longrightarrow$  kinetic energy  $\longrightarrow$  electrical energy
- D Kinetic energy  $\longrightarrow$  potential energy  $\longrightarrow$  electrical energy

8.



The figure above shows a transformer. The transformer output power is connected to terminals

- A A and C
- B A and B
- C D and E
- D C and D

9.

- K* - Switch zone
- L* - Local substation
- M* - Step-up transformer station
- N* - National grid network
- O* - Mains entry substation (step-down transformer)

The above steps are necessary in an electrical energy distribution system. Which of the following shows the right sequence?

- A  $N \rightarrow M \rightarrow K \rightarrow O \rightarrow L$
- B  $M \rightarrow O \rightarrow L \rightarrow N \rightarrow K$
- C  $M \rightarrow K \rightarrow N \rightarrow O \rightarrow L$
- D  $N \rightarrow O \rightarrow L \rightarrow K \rightarrow M$

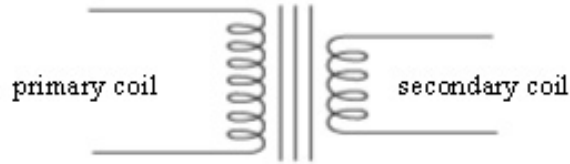
10. A fuse is always connected to the

- A live wire
- B neutral wire
- C earth wire
- D ordinary wire

11. In a thermal electric generator, what energy change occurs?

- A Kinetic energy  $\longrightarrow$  electrical energy
- B Chemical energy  $\longrightarrow$  heat energy  $\longrightarrow$  kinetic energy  $\longrightarrow$  electrical energy
- C Chemical energy  $\longrightarrow$  kinetic energy  $\longrightarrow$  electrical energy
- D Potential energy  $\longrightarrow$  kinetic energy  $\longrightarrow$  electrical energy

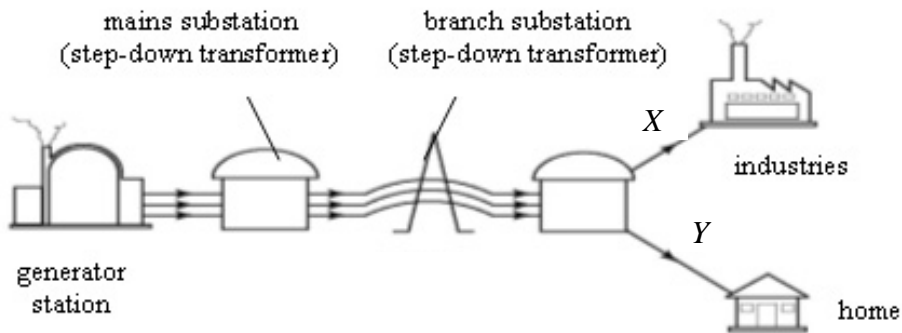
12.



The figure above shows the symbol of a transformer. Which of the following statements is **true** about the transformer?

- A It is a step-down transformer.
- B Its secondary coil has more turns than its primary coil.
- C The current that flows in it is direct current.
- D Input power enters through the secondary coil.

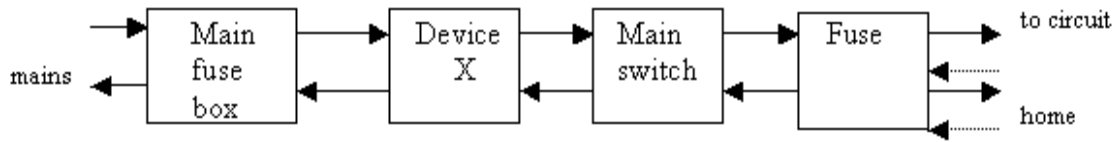
13.



The figure above shows a part of an electricity distribution system beginning from a generator station. Which of the following is probably the quantity of electrical energy sent through cables X and Y?

- |   | X      | Y     |
|---|--------|-------|
| A | 33 kV  | 11 kV |
| B | 415 V  | 240 V |
| C | 240 V  | 415 V |
| D | 132 kV | 240kV |

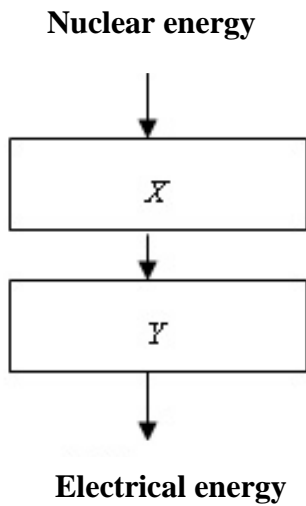
14.



The figure above shows a home electrical wiring system. Device X is used to

- A measure the electrical energy used
- B cut off the circuit when excessive current flows through it
- C control the current supply to all parts of the circuit
- D protect the fuses so that they do not melt

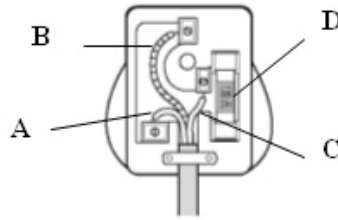
15.



The figure above shows the main energy change when a nuclear generator produces electrical energy. Which of the following shows the energies indicated by X and Y?

- |   | X                | Y                |
|---|------------------|------------------|
| A | Kinetic energy   | Heat energy      |
| B | Heat energy      | Potential energy |
| C | Potential energy | Kinetic energy   |
| D | Heat energy      | Kinetic energy   |

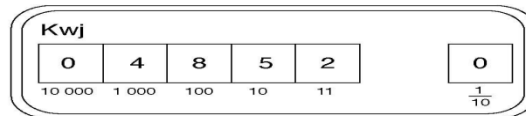
16.



The figure above shows the structure of a 3-pin plug. Which of the parts labelled **A**, **B**, **C** or **D** is the earth wire?

17. What is the main cause of short circuit?
- A** Neutral wire is disconnected
  - B** Earth wire is disconnected
  - C** Live wire touches the neutral wire
  - D** Neutral wire touches the earth wire

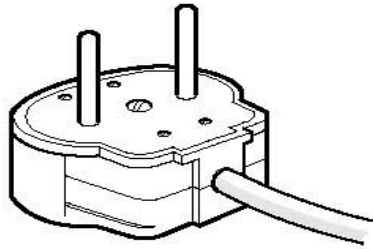
18.



The figure above shows the final reading for the month of March on the meter of a student's house. Calculate the cost of electrical energy for the month of March if one kilowatt-hour costs 23 sen and the meter reading at the beginning of March is 3120.0 units.

- A** RM400.50
- B** RM398.36
- C** RM292.92
- D** RM201.02

19.



The plug in the figure above is found to be less suitable for use as a 3-pin plug. Choose the reasons why.

- I** It does not have a live wire
- II** Its neutral wire is easily burnt
- III** Excessive current cannot flow back to the Earth

- A** III only
- B** I and II only
- C** II and III only
- D** I, II and III

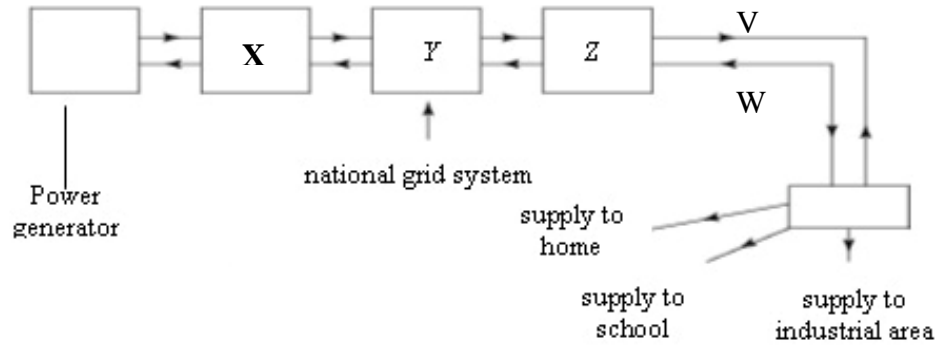
20. What is the **advantage** of using a National Grid Network?

- I** Wastage is avoided
- II** Supply of electrical energy can be planned
- III** Supply of electrical energy is not disrupted even if one of the generator stations is damaged

- A** I and II only
- B** I and III only
- C** II and III only
- D** I, II and III

Paper 2

Answer the question.



The figure above shows a series of electricity supply from the power generator to the consumers.

- (a) Name the wire labelled *V* and *W*.
  - (i) *V* : \_\_\_\_\_
  - (ii) *W* : \_\_\_\_\_
- (b) *X*, *Y* and *Z* are devices carrying out certain functions. Name *X*, *Y* and *Z*.
  - (i) *X* : \_\_\_\_\_
  - (ii) *Y* : \_\_\_\_\_
  - (iii) *Z* : \_\_\_\_\_
- (c) State the voltage produced after *X*.  
\_\_\_\_\_
- (d) What is the use of *Z*?  
\_\_\_\_\_
- (e) Why must the voltage produced be higher after *X*?  
\_\_\_\_\_



**Answers:**

**Paper 1**

1	<b>D</b>	11	<b>B</b>
2	<b>A</b>	12	<b>A</b>
3	<b>C</b>	13	<b>B</b>
4	<b>A</b>	14	<b>A</b>
5	<b>C</b>	15	<b>D</b>
6	<b>A</b>	16	<b>B</b>
7	<b>C</b>	17	<b>C</b>
8	<b>B</b>	18	<b>B</b>
9	<b>C</b>	19	<b>A</b>
10	<b>A</b>	20	<b>D</b>

**Paper 2**

- (a) (i) Live wire
- (ii) Neutral wire
- (b) (i) Step-up transformer
- (ii) Switch zone
- (iii) Step-down transformer
- (c) 132 kV
- (d) To reduce the voltage of alternating current
- (e) So that the energy that is lost through heat can be reduced when the current is small