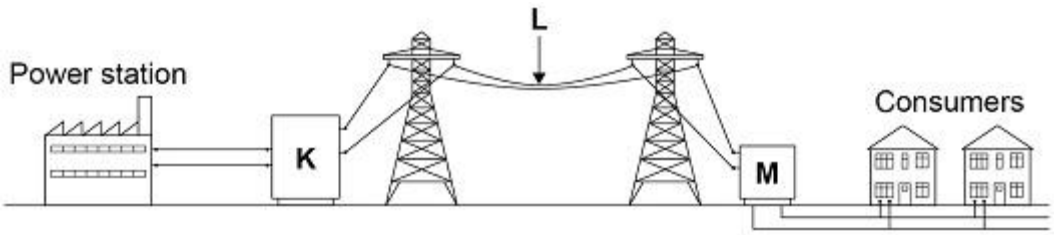
Name of the Student:_____

Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

The diagram below shows how the National Grid connects power stations to consumers.



(a) Name the parts of the National Grid labelled K, L and M.

K = _____

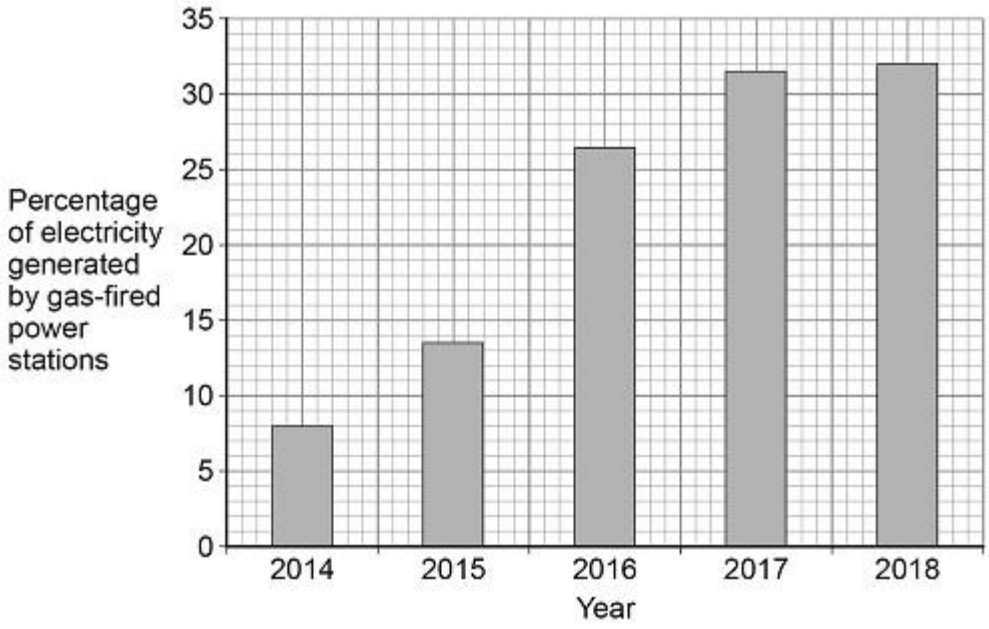
L = _____

M = _____

(3)

Figure 1 shows how the percentage of electricity generated by gas-fired power stations changed in the UK over 5 years.

Figure 1



(b) Calculate how many times greater the percentage of electricity generated by gas-fired power stations was in 2018 than in 2014.

_____

_____

_____

Number of times greater = _____

(2)

(c) Explain **one** environmental effect of generating electricity using a gas-fired power station.

_____

_____

_____

_____

(2)

(d) The UK government wants more electricity to be generated using renewable energy resources.

What is a renewable energy resource?

Tick (✓) **one** box.

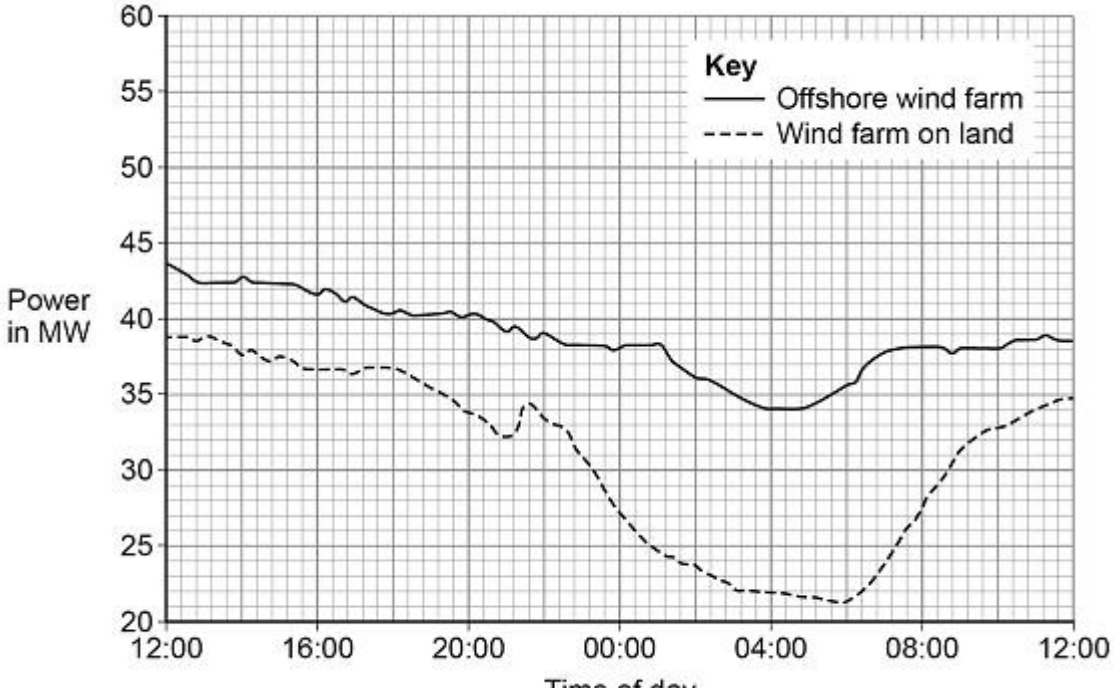
An energy resource that can be burned	☐
An energy resource that can be recycled	☐
An energy resource that can be replenished quickly	☐
An energy resource that can be reused	☐

(1)

(e) An offshore wind farm is a group of wind turbines that are placed out at sea.

Figure 2 shows the power output of an offshore wind farm compared with a wind farm on land for a 24-hour period.

Figure 2



Give **two** advantages of the offshore wind farm compared with the wind farm on land.

Use information from **Figure 2**.

1 _____

_____

2 _____

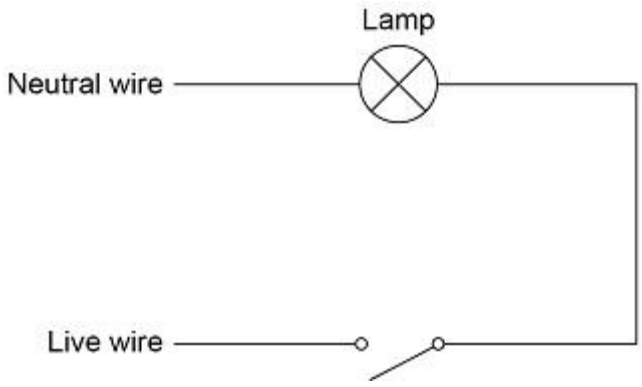
_____

(2)

(Total 10 marks)

Q2.

The diagram shows part of a lighting circuit in a house.



(a) What is the frequency of the ac mains electricity supply in the UK?

Tick (✓) **one** box.

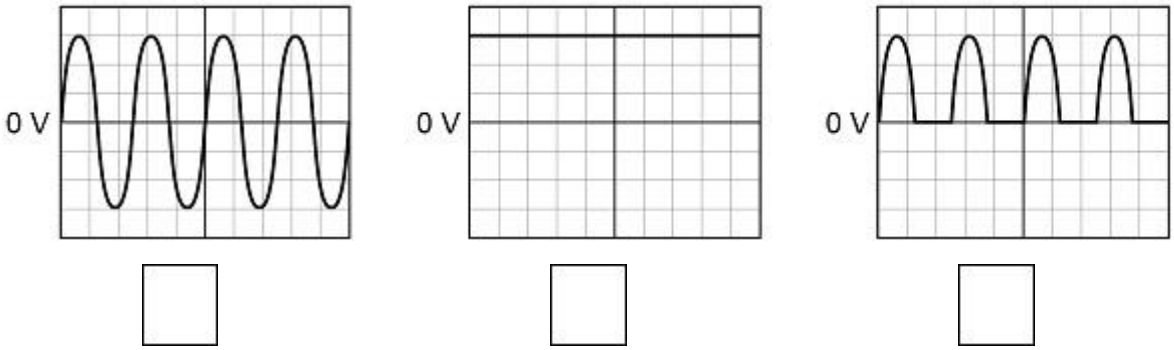
20 Hz ☐ 50 Hz ☐ 60 Hz ☐ 100 Hz ☐

(1)

(b) The mains electricity supply has an alternating potential difference.

Which diagram shows an alternating potential difference?

Tick (✓) **one** box.



☐ ☐ ☐

(1)

(c) The potential difference across the lamp is 230 V.

The current in the lamp is 0.020 A.

Calculate the power output of the lamp.

Use the equation:

power = potential difference × current

_____

_____

_____

Power = _____ W

(2)

(d) The potential difference across the lamp is 230 V.

Calculate the energy transferred by the lamp when 180 C of charge flows through the lamp.

Use the equation:

energy transferred = charge flow × potential difference

_____

_____

_____

Energy transferred = _____ J

(2)

(e) An electrician needs to replace the light switch in the diagram above.

Describe the possible hazard and the risk to the electrician of changing the light switch.

Hazard

_____

_____

Risk

_____

_____

(2)
(Total 8 marks)