

GCSE Physics B (Twenty First Century Science)
J259/01 Breadth in Physics (Foundation Tier)

Question Set 22

1 Layla charges the battery in her phone every evening.

The energy used to charge the battery is transferred from an energy resource at a power station.

(a) Two examples of energy resources are **fossil fuels** and **wind power**.

(i) Give one **similarity** and one **difference** in the ways these energy resources are used to generate electricity.

Similarity - both natural resources

[2]

Difference - fossil fuels are non-renewable and wind power is renewable

(ii) Another energy resource is the Sun.

Energy is transferred from the energy store in the Sun as radiation.

Explain how the energy is stored in the Sun and how it is converted to radiation.

[2]

Nuclear fusion occurs so hydrogen fuses to helium releasing energy as radiation

(b) Layla notices that her phone charger gets very hot. She thinks this might be dangerous. Her phone also takes a very long time to fully charge.

She decides to buy a new charger.

The table shows information about two phone chargers, **A** and **B**.

| Charger | Total energy transferred in 1 second (mJ) | Energy stored usefully in battery in 1 second (mJ) | Efficiency (%) | Cost to buy (£) |
|---------|---|--|----------------|-----------------|
| A | 195 | 112 | 57 | 12.00 |
| B | 240 | 150 | | 12.00 |

(i) Calculate the efficiency of charger **B**.

Give your answer as a percentage $\text{Efficiency} = (150/240) \times 100 = 62.5\%$

Efficiency = **62.5%** % [3]

(ii) Suggest which charger Layla should buy.

Justify your answer using the data from the table.

[2]

Charger B is more efficient for the same cost

Total Marks for Question Set 22: 9

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