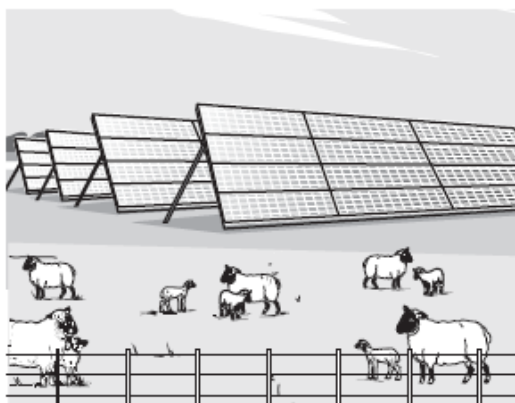


GCSE Physics B (Twenty First Century Science)
J259/04 Depth in physics (Higher Tier)

Question Set 7

1

Solar farms are large power stations made up from many photovoltaic (PV) panels. They have become very common in Britain.



- (a) A large solar farm in England has a total area of $216\,000\text{ m}^2$ covered by PV panels.

Every square metre of the solar panels receives about 1000 W of power from the Sun during each day.

The panels have an efficiency of energy transfer of 15%.

Calculate the daily average electrical power produced by the solar farm.

Give your answer in MW ($1\text{ MW} = 1\,000\,000\text{ W}$).

Average electrical power = MW [3]

- (b)* Many people are not in favour of solar farms.

Jane

Solar farms are ugly and take up such a lot of space. Their output power is very small. A gas-burning power station can provide 1000 MW all day and night, the whole year long, and in any weather.

I'm told that extracting and purifying the material for the PV panels is very polluting, so it's not as green as people say.



Discuss what Jane has said about solar farms and gas-burning power stations. [6]

Total Marks for Question Set 7: 9

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