Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Energy (High Demand)

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Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Mark Schemes

Q1.

(a) (i) £190

nb mention idea of cost per J in £ will come to an approx figure full credit given

*allow **1** mark for showing that the energy loss through the roof is ¼ of the total energy loss ie 150 / 600*

2

(ii) £142.50

allow ecf 50 % of their (a)(i) × 1.5 ie their (a)(i) × 0.75

1

(b) transferred to surroundings / atmosphere

or becomes spread out

1

[4]

Q2.

(a) only accept answers in terms of the argument of the nuclear power scientist any **three** from:

- produces a lot of energy for a small mass of fuel **or** is a concentrated energy source
  accept amount for mass
- it is reliable **or** it can generate all of the time
- produces no pollutant gases
  *accept named gas or greenhouse gases do **not** accept no pollution*
- produces only a small volume of (solid) waste
  accept amount for volume
- advances in technology will make fuel reserves last much longer
  accept an argument in terms of supply and demand

3

(b) any **one** from:

- may leak into the ground / environment
- geological changes
  accept earthquakes etc

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- may get into the food chain
  *do **not** accept answers in terms of property prices or 'damages the environment'*

- over time if location not correctly recorded it may be excavated

1

(c) any **three** from:

- overall add no carbon dioxide to the environment
  accept do not add to global warming
  accept they are carbon neutral

- power companies can sell electricity at a higher price
  accept power companies make more profit

- opportunity to grow new type crop
  accept specific examples e.g. growing plants in swamps
  accept extends the life of fossil fuel reserve

- more jobs

- more land cultivated **or** different types of land utilised

3

[7]

Q3.

(a) (i) national grid

1

(ii) increases voltage / potential difference
accept decrease current
accept step-up / boosts the voltage
*do **not** accept increases energy / power / current*
ignore reference to voltage going through

1

(iii) any **two** from:

- reduce current
  ignore increased voltage / pd

- reduces energy loss / power loss (from cables)
  accept reduces heat loss
  *do **not** accept stops energy loss*

- increases efficiency (of distribution)

2

(b) any **one** from:

- produces pollutant gases
  accept produces carbon dioxide / sulfur dioxide / nitrogen oxides
  accept global warming / greenhouse effect / carbon emissions / air pollution / acid rain
  ignore ozone layer

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*do **not** accept carbon monoxide*

- produces solid waste / ash / smoke
  accept global dimming
  ignore produces pollution

1

(c) (i) any **two** from:
any two valid points gains the marks

- using renewable energy
  accept don't use up non-renewable / fossil fuels
  accept named fuels
- non-renewable fuels can be used for other processes
- no pollutant gases produced
  accept the opposite of (b)
  ignore no pollution
- land can still be used for farming
  ignore economic issues

2

(ii) any **two** from:

- cause noise pollution
- cause visual pollution
  accept spoils the landscape
  accept sunlight flicker
- may interfere with TV / radio / mobile phone signals
- need to put in new infrastructure
  accept new roads needed
- not reliable owtte
- dangerous to birds
- lots of concrete needed for the bases
  or
  producing cement is environmentally damaging
  accept reduces house prices
  ignore any references to cost / jobs / number required
  ignore takes up a lot of land
  accept reference to obstruction of shipping etc. if clear reference tooffshore wind farm

2

[9]

Q4.

(a) four calculations correctly shown
200 × 10 – 1800 = £200

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100 × 10 – 2400 = –£1400
50 × 10 – 600 = –£100
20 × 10 – 75 = 125

*accept four final answers only **or** obvious rejection of solar water heater and underfloor heating, with other two calculations completed*
any 1 complete calculation correctly
*shown **or** showing each saving × 10 of all four calculations = 1 mark*
*answers in terms of savings as a percentage of installation cost **may** score savings mark only*

2

hot water boiler

correct answers only

1

(b) less electricity / energy to be generated / needed from power stations

accept less demand

1

reduction in (fossil) fuels being burnt

accept correctly named fuel

accept answer in terms of:
fewer light bulbs required because they last longer (1 mark)
less energy used / fuels burnt in production / transport etc. (1 mark)

ignore reference to CO_2 or global warming

ignore reference to conservation of energy

1

[5]

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