**M1.**          (a)     (i)      grid

*accept any way of indicating correct answer*

**1**

(ii)     increases voltage

*accept any way of indicating correct answer*

**1**

(iii)     230 V

*accept any way of indicating correct answer*

**1**

(iv)    reduce

*accept any way of indicating correct answer*

**1**

(b)     (i)      increases the temperature

*accept make it hotter / heat goes into the air*

*accept convection currents*

*accept sensible comment eg sound energy / it buzzes*

*ignore pollutes the air*

**1**

(ii)     less than 100%

**1**

**[6]**

**M2.**          transformer **X** reduces the current through the transmission cables

*accept increases p.d. across the cables*

**1**

this reduces the energy loss from the cables

**1**

which increases the efficiency of the distribution system

**1**

transformer **Y** is essential as it reduces the p.d. to a safe
working value for consumers

**1**

**[4]**

**M3.**          (i)      reduces

*for 1 mark*

**1**

(ii)     less heat/energy/power wasted (in power lines)

*for 1 mark*

**1**

(iii)     for safety

*for 1 mark*

**1**

**[3]**

**M4.**          (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*

*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]**