



















(iii) the **total** resistance of the lamps as connected in the picture above.

resistance = .....  $\Omega$

[3]

(iv) the **total** energy transformed by the three lamps in kilowatt hour when operated for 12 hours.

energy = ..... kW h

[2]

(c) One of the lamps is replaced by another lamp that also operates at 12 V but has a smaller resistance than 8.0  $\Omega$ . State and explain how its brightness will compare with one of the other two remaining lamps.

.....  
.....  
.....  
.....

[2]

[Total 13 marks]

9. State Kirchhoff's first law.

.....  
.....  
.....

[Total 2 marks]