

'The Swelling Sahara'

$$\text{a) } S = 9,200,000 \times r^t$$

$$9,930,000 = 9,200,000 \times r^{50}$$

$$\ln \frac{993}{920} = 50 \ln r$$

$$= e^{\frac{-220}{50}}$$

$$r = 1.0015 \quad (1)$$

Therefore S increases by 0.15% each year.

[5 marks]

$$\text{b) } S = 9,200,000 \times 1.0015^{100} = 10,700,000 \text{ km}^2$$

[1 mark]