7 **(a)** On Fig. 7.1, sketch the temperature characteristic of a negative temperature coefficient (n.t.c.) thermistor. Label the axes with quantity and unit.

Fig. 7.1

[2]

(b) An n.t.c. thermistor and a resistor are connected as shown in Fig. 7.2.

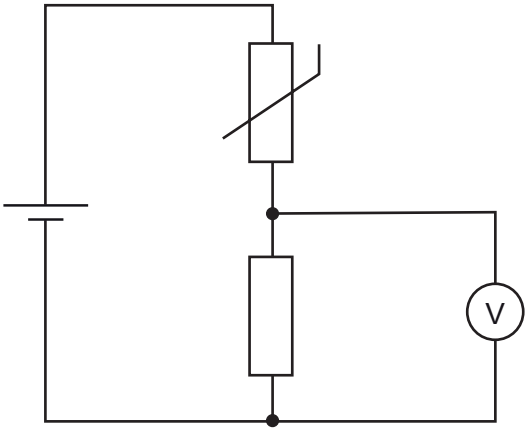

Fig. 7.2

The temperature of the thermistor is increased.

State and explain the change, if any, to the reading on the voltmeter.

.....

.....

..... [2]

(c) The variation with the fractional change in length $\Delta x/x$ of the fractional change in resistance $\Delta R/R$ for a strain gauge is shown in Fig. 7.3.

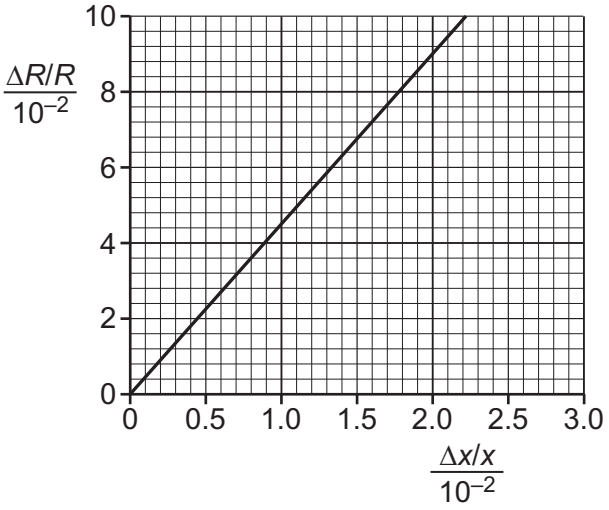

Fig. 7.3

The unstrained resistance of the gauge is 120 Ω. Calculate the new resistance of the gauge when it is extended to a strain of 0.020.

resistance = ... Ω [3]

[Total: 7]