

Question 18 (5 marks)

Resistor Colour Code Chart

<i>Colour</i>	<i>Value</i>	<i>Multiplying factor</i>	<i>Tolerance</i>
Black	0	1	–
Brown	1	10	1%
Red	2	100	2%
Orange	3	1 000	–
Yellow	4	10 000	–
Green	5	100 000	0.5%
Blue	6	1 000 000	0.25%
Violet	7	–	0.1%
Grey	8	–	–
White	9	–	–
Gold	–	0.1	5%
Silver	–	0.01	10%

- (a) Use the Resistor Colour Code Chart to find the colour code of the resistor. 2

<i>Value</i>	<i>Tolerance</i>	<i>Band 1</i>	<i>Band 2</i>	<i>Band 3</i>	<i>Band 4</i>
680	1%	Blue	grey	Brown	Brown

- (b) Determine the maximum value of the following resistor, showing all working. 3

<i>Band 1</i>	<i>Band 2</i>	<i>Band 3</i>	<i>Band 4</i>
Red	Black	Blue	Gold

$$\begin{aligned}
 & 20,000,000 \Omega \text{ with } 5\% \text{ tolerance} \\
 & \frac{5}{100} \times 20,000,000 = 1,000,000 \text{ tolerance} \\
 & = \frac{1,000,000}{2} + 20,000,000 \\
 & = 20,500,000 \Omega \text{ maximum} \\
 & = 20.5 \text{ M}\Omega \text{ maximum}
 \end{aligned}$$