SES4U Lab Activity: *Wien's Law*

The light from three stars is analyzed. For each star, instruments measure the intensity (brightness) of light at various wavelengths (colours). The results are summarized below:

STAR *A*

Wavelength (nm)	*Intensity*
0	0
100	10
200	25
300	35
400	45
500	50
600	44
700	38
800	31
900	24
1000	20
1100	18
1200	16
1300	14
1400	13
1500	12
1600	11
1700	10
1800	10
1900	9
2000	9

STAR *B*

Wavelength (nm)	*Intensity*
0	0
100	10
200	60
300	100
400	90
500	80
600	72
700	64
800	58
900	53
1000	50
1100	45
1200	40
1300	36
1400	34
1500	32
1600	30
1700	28
1800	26
1900	24
2000	20

STAR *C*

Wavelength (nm)	*Intensity*
0	0
100	2
200	4
300	5
400	6
500	7
600	8
700	8
800	9
900	9
1000	10
1100	10
1200	9
1300	9
1400	8
1500	7
1600	7
1700	6
1800	6
1900	5
2000	5

1. Use the data above to graph on a piece of graph paper, the three data sets of wavelength (x-axis) vs. Intensity (y-axis. Ensure that on graph has all three curves. (5 Marks) [C]

2. Examine the three curves and answer the following:
   a. List the stars in order of hottest to coolest. (3 Marks) [T]
   b. For *STAR A*, what is the wavelength of light at its maximum emission (λ_{max})? (2 Marks) [T]
   c. Use Wein's Law to determine the temperature, T, in Kelvin of STAR A, B & C. (3 Marks) [T]
3. On a separate sheet or on the same graph, sketch a curve of data that might represent a star that is even cooler than the all three of the above stars. (3 Marks) [C]