Question 14 **(14 marks)**

The table below shows the number of sprinkler systems installed by a local reticulation business over the past four years.

Year	Season	n	Number of systems	Seasonal mean	Number of systems as a percentage of the seasonal mean	Seasonally adjusted figures
2017	Summer	1	**A**	14	71.4	10.4
	Autumn	2	18		**B**	15.7
	Winter	3	11		78.6	14.7
	Spring	4	17		121.4	14.7
2018	Summer	5	15	**C**	105.3	15.7
	Autumn	6	16		112.3	14.0
	Winter	7	11		77.2	14.7
	Spring	8	15		105.3	13.0
2019	Summer	9	13	11.75	110.6	13.6
	Autumn	10	12		102.1	10.5
	Winter	11	8		68.1	10.7
	Spring	12	14		119.1	12.1
2020	Summer	13	16	—	—	—
	Autumn	14	15		—	—

(a) Calculate the value of **A**, **B** and **C**. (3 marks)

(b) Complete the table showing the seasonal index for each season. (2 marks)

Season	Summer	Autumn	Winter	Spring
Seasonal index	95.8	114.3		

(c) Show how the seasonally adjusted figure of 13.6 for Summer 2019 was calculated.
(2 marks)

(d) During which season could more employees be given annual holidays with least disruption to sprinkler installations? Use mathematical evidence to support your answer.
(2 marks)

(e) Determine the least-squares line using the seasonally adjusted figures. (1 mark)

(f) Using your line from part (e), estimate the number of sprinkler systems that will be installed in Summer 2021. (2 marks)

(g) Comment on the long-term prospects of the business. (2 marks)