2. The average minimum monthly temperature, x degrees Fahrenheit (°F), and the average maximum monthly temperature, y degrees Fahrenheit (°F), in Kolkata were recorded for 12 months.

Some of the summary statistics are given below.

$$\sum x = 862 \quad \sum x^2 = 62\,802 \quad S_{yy} = 413.67 \quad S_{xy} = 512.67 \quad n = 12$$

(a) (i) Calculate the mean of the 12 values of the average **minimum** monthly temperature.

(ii) Show that the standard deviation of the 12 values of the average **minimum** monthly temperature is 8.57°F to 3 significant figures.

(3)

(b) Calculate the product moment correlation coefficient between x and y

(3)

For comparative purposes with a UK city, it was necessary to convert the temperatures from degrees Fahrenheit (°F) to degrees Celsius (°C).

The formula used was

$$c = \frac{5}{9}(f - 32)$$

where f is the temperature in °F and c is the temperature in °C

(c) Use this formula and the values from part (a) to calculate, in °C, the mean and the standard deviation of the 12 values of the average **minimum** monthly temperature in Kolkata.
Give your answers to 3 significant figures.

(4)

Given that

- u is the equivalent temperature in °C of x
- v is the equivalent temperature in °C of y

(d) state, giving a reason, the product moment correlation coefficient between u and v

(2)

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Question 2 continued

(Total for Question 2 is 12 marks)