

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Wednesday 23 January 2019

Afternoon (Time: 1 hour 30 minutes)

Paper Reference **WST02/01**

Statistics S2

Advanced/Advanced Subsidiary

You must have:

Mathematical Formulae and Statistical Tables (Blue)

Total Marks

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B). Coloured pencils and highlighter pens must not be used.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Values from the statistical tables should be quoted in full. When a calculator is used, the answer should be given to an appropriate degree of accuracy.

Information

- The total mark for this paper is 75.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Pearson

- (3)

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Question 1 continued

Q1

(Total 7 marks)



- (d) Find the probability that exactly 2 employees arrive at the drinks dispenser in exactly 4 of the 6 non-overlapping 10-minute intervals between 10am and 11am one morning. **(4)**

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Question 2 continued

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(Total 12 marks)



3. Figure 1 shows an accurate graph of the cumulative distribution function, $F(x)$, for the continuous random variable X



Figure 1

- (a) Find $P(3 < X < 7)$

(2)

The probability density function of X is given by

$$f(x) = \begin{cases} a & 2 \leq x < 4 \\ b & 4 \leq x < 6 \\ c & 6 \leq x \leq 8 \\ 0 & \text{otherwise} \end{cases}$$

where a , b and c are constants.

- (b) Find the value of a , the value of b and the value of c

(3)

- (c) Find $E(X)$

(3)

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Question 3 continued

Q3

(Total 8 marks)



- You may assume that 35% is the true proportion of customers who pay by credit card. **(4)**

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Question 4 continued

Q4

(Total 9 marks)



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- $$\text{(iii) } E(Y^2) \tag{3}$$

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Question 5 continued

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Question 5 continued

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Question 5 continued

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(Total 13 marks)

Q5



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- (d) the correct probability. (2)

[illegible]

Question 6 continued

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Question 6 continued

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(Total 12 marks)

Turn over



$$f(x) = \begin{cases} c(x+3) & -3 \leq x < 0 \\ \frac{5}{36}(3-x) & 0 \leq x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

(a) Show that $c = \frac{1}{12}$ (3)

(ii) Explain why the mode of $X = 0$

(3)

(c) Find the cumulative distribution function of X , for all values of x (4)

(d) Find, to 3 significant figures, the value of d such that $P(X > d \mid X > 0) = \frac{2}{5}$ (4)

Question 7 continued

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Question 7 continued

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Q7

(Total 14 marks)

TOTAL FOR PAPER: 75 MARKS

END

