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Surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Statistics S2

Advanced/Advanced Subsidiary

Thursday 27 October 2016 – Morning

Time: 1 hour 30 minutes

Paper Reference

WST02/01

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

- (a) Test the insurance company's claim at the 10% level of significance. State your hypotheses clearly.

A new random sample of 90 customers is taken. A test is carried out using these 90 customers, to see if the percentage of customers who have had a mobile phone stolen in the last year is more than 5%

- (b) Using a suitable approximation and a 10% level of significance, find the critical region for this test.

(4)

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Question 1 continued

Lined area for writing the answer to Question 1.



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Question 1 continued

Lined area for writing the answer to Question 1.

Q1

(Total 10 marks)



- $$F(t) = \begin{cases} 0 & t < 8 \\ \frac{1}{96}(74t - \frac{5}{2}t^2 + k) & 8 \leq t \leq 12 \\ 1 & t > 12 \end{cases}$$

- A battery is selected at random. Given that its lifetime is at least 9 hours,

- (f) find the probability that its lifetime is no more than 11 hours. (4)

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Question 2 continued



Question 2 continued

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Q2

(Total 14 marks)

Turn over



- (d) Calculate the variance of the total number of points scored on the first question by a random sample of 20 students. (3)

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Question 3 continued

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Question 3 continued

Lined area for writing the answer to Question 3.



Q3

(Total 10 marks)

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Question 4 continued

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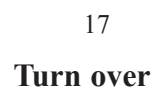
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(Total 10 marks)

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5. A string of length 40 cm is cut into 2 pieces at a random point.
The continuous random variable L represents the length of the longer piece of string.
- (a) Write down the distribution of L (2)
- (b) Find the probability that the length of the longer piece of string is 28 cm to the nearest cm (2)

Each piece of string is used to form the perimeter of a square.

- (c) Calculate the probability that the area of the larger square is less than 64 cm^2 (3)
- (d) Calculate the probability that the difference in area between the two squares is greater than 81 cm^2 (4)

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Question 5 continued

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Question 5 continued

Lined area for writing the answer to Question 5.



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Question 5 continued

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Q5

(Total 11 marks)



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- (2)

- (2)

(c) (i) Justify the use of a normal approximation.

- (ii) Find the value of λ .

(8)

Question 6 continued

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Question 6 continued

Lined area for writing the answer to Question 6 continued.



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Question 6 continued

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Q6

(Total 12 marks)



- (a) Find the sampling distribution of S (5)

(b) Find the smallest possible value of n (3)

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Question 7 continued

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103

TOTAL FOR PAPER: 75 MARKS

28

