

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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Sample Assessment Materials for first teaching September 2018

(Time: 1 hour 30 minutes)

Paper Reference **WST02/01**

Mathematics

International Advanced Subsidiary/Advanced Level
Statistics S2

You must have:

Mathematical Formulae and Statistical Tables, calculator

Total Marks

Candidates may use any calculator permitted by Pearson regulations. 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).
- **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.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 7 questions in this question paper. 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.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

Turn over ►

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Question 1 continued

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Question 1 continued

Lined area for writing the answer to Question 1.

(Total for Question 1 is 16 marks)

- $$F(x) = \begin{cases} 0 & x < 1 \\ \frac{1}{5}(x-1) & 1 \leq x \leq 6 \\ 1 & x > 6 \end{cases}$$

- (a) Find $P(X > 4)$ (2)
- (b) Write down the value of $P(X \neq 4)$ (1)
- (c) Find the probability density function of X , specifying it for all values of x (2)
- (d) Write down the value of $E(X)$ (1)
- (e) Find $\text{Var}(X)$ (2)
- (f) Hence or otherwise find $E(3X^2 + 1)$ (3)

Question 2 continued

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Lined area for writing the answer to Question 2 continued.

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(Total for Question 2 is 11 marks)

$$(a) \text{ a statistic,} \tag{1}$$

(b) a sampling distribution. (1)

(c) Find the mean and the variance of the number of screws in the packets stored at the factory. (3)

(d) List all the possible samples. (2)

(e) Find the sampling distribution of \bar{Y} (4)

Question 3 continued

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Question 3 continued

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(Total for Question 3 is 11 marks)

Question 4 continued

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(Total for Question 4 is 7 marks)

Q4

- $$f(x) = \begin{cases} k(x^2 + a) & -1 < x \leq 2 \\ 3k & 2 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

Given that $E(X) = \frac{17}{12}$

- (8)

- (1)

Question 5 continued

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Question 5 continued

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Question 5 continued

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Q5

(Total for Question 5 is 9 marks)

- (d) find the minimum value of n for which the outcome of the test is that the teachers' belief is rejected.
- (3)**

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Question 6 continued

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Question 6 continued

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Question 6 continued

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(Total for Question 6 is 13 marks)

Q6

- The probability of obtaining a pass by randomly guessing the answer to each question should not exceed 0.0228

Use a normal approximation to work out the greatest number of questions that could be used.

(8)

Question 7 continued

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TOTAL FOR PAPER IS 75 MARKS