

Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						6	6	8	4	/	0	1	Signature	

Paper Reference(s)

6684/01

Edexcel GCE

Statistics S2

Advanced/Advanced Subsidiary

Tuesday 19 January 2010 – Morning

Time: 1 hour 30 minutes

Examiner's use only

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Team Leader's use only

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Materials required for examination

Mathematical Formulae (Pink or Green)

Items included with question papers

Nil

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 to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper.

Answer ALL the questions.

You must write your answer to each question in the space following the question.

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 for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.

Full marks may be obtained for answers to ALL questions.

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 7 questions in this question paper. The total mark for this paper is 75.

There are 24 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

You should show sufficient working to make your methods clear to the Examiner.

Answers without working may not gain full credit.

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(2)

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$$F(x) = \begin{cases} 0, & x < -2 \\ \frac{x+2}{6}, & -2 \leq x \leq 4 \\ 1, & x > 4 \end{cases}$$

- (a) Find $P(X < 0)$. (2)
- (b) Find the probability density function $f(x)$ of X . (3)
- (c) Write down the name of the distribution of X . (1)
- (d) Find the mean and the variance of X . (3)
- (e) Write down the value of $P(X = 1)$. (1)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- (a) Find the probability that it will work continuously for 5 hours without a breakdown. (3)

(b) the robot will break down at least once,

(3)

- (c) there are exactly 2 breakdowns. (2)

(d) Write down the probability that the robot will break down in the following 8 hour period. Give a reason for your answer. (2)

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- $$f(x) = \begin{cases} k(x^2 - 2x + 2) & 0 < x \leq 3 \\ 3k & 3 < x \leq 4 \\ 0 & \text{otherwise} \end{cases}$$

(a) Show that $k = \frac{1}{9}$ (4)

- (b) Find the cumulative distribution function $F(x)$. (6)

- (c) Find the mean of X . (3)

- (d) Show that the median of X lies between $x=2.6$ and $x=2.7$ (4)

[illegible]

- Find the probability that

- (3)**

(b) Using a suitable approximation, estimate the probability that more than 50 customers arrive for breakfast next Tuesday.

(6)



Leave
blank**Question 6 continued****Q6****(Total 10 marks)**

- (b) List all the possible samples. (2)
- (c) Find the sampling distribution of the mean value of the samples. (6)

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