Paper Reference(s)

### 6684

## **Edexcel GCE**

# Statistics S2 (New Syllabus)

## Advanced/Advanced Subsidiary

Wednesday 23 January 2002 – Afternoon

Time: 1 hour 30 minutes

#### Materials required for examination

Answer Book (AB16) Graph Paper (ASG2) Mathematical Formulae (Lilac) **Items included with question papers** 

Nil

Candidates may use any calculator EXCEPT those with the facility for symbolic algebra, differentiation and/or integration. Thus candidates may NOT use calculators such as the Texas Instruments TI 89, TI 92, Casio CFX 9970G, Hewlett Packard HP 48G.

#### **Instructions to Candidates**

In the boxes on the answer book, write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Statistics S2), the paper reference (6684), your surname, other name and signature.

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. This paper has 7 questions.

#### **Advice to Candidates**

You must ensure that your answers to parts of questions are clearly labelled. You must show sufficient working to make your methods clear to the Examiner. Answers without working may gain no credit.

(a) a population,	(1)
(b) a statistic.	(1)
(c) Identify the population and the statistic in this situation.	
(d) Explain what you understand by the sampling distribution of this statistic. (2)	(2)
The number of houses sold per week by a firm of estate agents follows a Poiss distribution with mean 2.5. The firm appoints a new salesman and wants to fi out whether or not house sales increase as a result. After the appointment of t salesman, the number of house sales in a randomly chosen 4-week period is 14.	ind the
Stating your hypotheses clearly test, at the 5% level of significance, whether not the new salesman has increased house sales.	or 7)
not the new salesman has increased house sales.	7) The
An airline knows that overall 3% of passengers do not turn up for flights. Tairline decides to adopt a policy of selling more tickets than there are seats or flight. For an aircraft with 196 seats, the airline sold 200 tickets for a particu flight.  (a) Write down a suitable model for the number of passengers who do not turn for this flight after buying a ticket.	The alar
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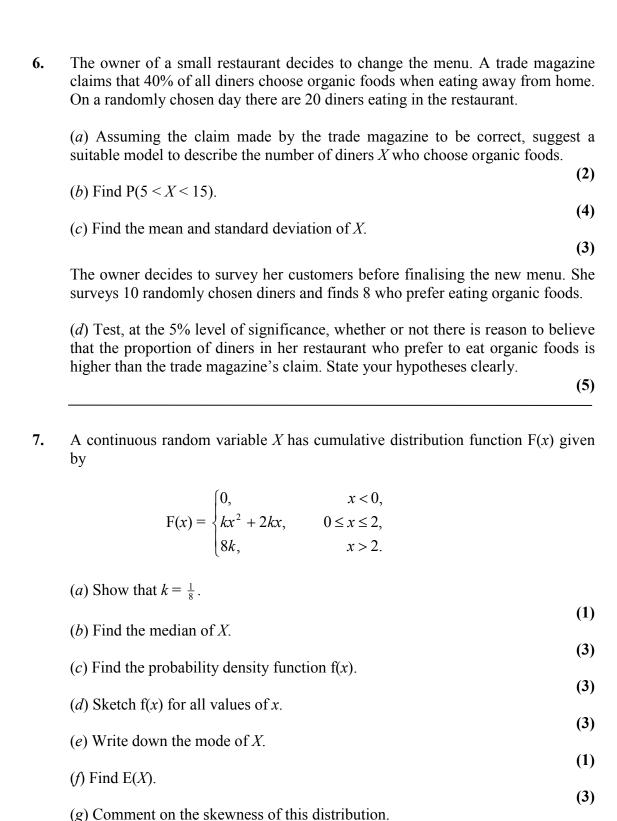
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1.

2.

3.

4.	Jean catches a bus to work every morning. According to the timetable the bus is due at 8 a.m., but Jean knows that the bus can arrive at a random time between five minutes early and 9 minutes late. The random variable <i>X</i> represents the time, in minutes, after 7.55 a.m. when the bus arrives.
	(a) Suggest a suitable model for the distribution of X and specify it fully.
	(2) (b) Calculate the mean time of arrival of the bus.
	(c) Find the cumulative distribution function of $X$ .
	Jean will be late for work if the bus arrives after 8.05 a.m.
	(d) Find the probability that Jean is late for work.
5.	An Internet service provider has a large number of users regularly connecting to its computers. On average only 3 users every hour fail to connect to the Internet at their first attempt.
	(a) Give 2 reasons why a Poisson distribution might be a suitable model for the number of failed connections every hour.
	(2) (b) Find the probability that in a randomly chosen hour
	(i) all Internet users connect at their first attempt,
	(ii) more than 4 users fail to connect at their first attempt.
	(2)
	(c) Write down the distribution of the number of users failing to connect at their first attempt in an 8-hour period.
	(1) (d) Using a suitable approximation, find the probability that 12 or more users fail to connect at their first attempt in a randomly chosen 8-hour period.
	(6)



**END** 

**(2)**