



Cambridge International Examinations

Cambridge International Advanced Level

CANDIDATE NAME											
CENTRE NUMBER						CANDIDAT NUMBER	E				
MATHEMATICS										97	709/71
Paper 7 Probabili	ty & Sta	itistics 2	(S2)	1			Oct	obei	r/Nov	embe	er 2017
								1	hour	15 m	inutes
Candidates answe	er on the	e Quest	ion Pa	aper.							
Additional Materia	ıls:	List of F	ormu	lae (MF9))						

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer all the questions.

Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place in the case of angles in degrees, unless a different level of accuracy is specified in the question.

The use of an electronic calculator is expected, where appropriate.

You are reminded of the need for clear presentation in your answers.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is 50.



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(i)	Find a 99% confidence interval for μ , giving your answer correct to 2 decimal places.
TI.	
	manufacturer claims that the machine produces rods with mean length 300 mm.
(11)	Use the confidence interval found in part (i) to comment on this claim.

5	A cc	ontinuous random variable,	X, has probability de	ensity function given by	
			$f(x) = \begin{cases} \frac{1}{4}(x+1) \\ 0 \end{cases}$	$0 \le x \le 2$, otherwise.	
	(i)	Find $E(X)$.			3]
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	(ii)	Find the median of X .		[3	3]
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6

The numbers of barrels of oil, in millions, extracted per day in two oil fields A and B are modelled by

)	Find the mean and variance of the daily income, in millions of dollars, generated by field A . [3]

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with sales total	he past the number of cars sold per day at a showroom has been modelled by a random variable distribution $Po(0.7)$. Following an advertising campaign, it is hoped that the mean number of s per day will increase. In order to test at the 10% significance level whether this is the case, the number of sales during the first 5 days after the campaign is noted. You should assume that a son model is still appropriate.
(i)	Given that the total number of cars sold during the 5 days is 5, carry out the test. [6]

The number of cars sold per day at another showroom has the independent distribution Po(0.6). Assume that the distribution for the first showroom is still Po(0.7).

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8	In order to test the effect of a drug, a researcher monitors the concentration, X , of a certain protein in
	the blood stream of patients. For patients who are not taking the drug the mean value of X is 0.185.
	A random sample of 150 patients taking the drug was selected and the values of X were found. The
	results are summarised below.

$$n = 150$$
 $\Sigma x = 27.0$ $\Sigma x^2 = 5.01$

The researcher wishes to test at the 1% significance level whether the mean concentration of the protein in the blood stream of patients taking the drug is less than 0.185.

(i)	Carry out the test.	[7]

of a Type II error occurring in the test.	
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