

Edexcel GCE
Statistics S1
Gold Level G3
(Question Paper)

All exam papers are issued free to students for education purpose only.
Mr.S.V.Swarnaraja (Marking Examiner, Team Leader & Author)
www.swanash.com, Mobile: +94777304755 , email: swa@swanash.com

Paper Reference(s)

6683/01

Edexcel GCE

Statistics S1

Gold Level G3

Time: 1 hour 30 minutes

Materials required for examination papers

Mathematical Formulae (Green)

Items included with question

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 formulas stored in them.

Instructions to Candidates

Write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Statistics S1), the paper reference (6683), your surname, initials and signature.

Information for Candidates

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

Full marks may be obtained for answers to ALL questions.

There are 8 questions in this question paper. The total mark for this paper is 75.

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.

Suggested grade boundaries for this paper:

A*	A	B	C	D	E
58	51	44	37	30	23

1. Sammy is studying the number of units of gas, g , and the number of units of electricity, e , used in her house each week. A random sample of 10 weeks use was recorded and the data for each week were coded so that $x = \frac{g-60}{4}$ and $y = \frac{e}{10}$. The results for the coded data are summarised below

$$\sum x = 48.0, \quad \sum y = 58.0, \quad S_{xx} = 312.1, \quad S_{yy} = 2.10, \quad S_{xy} = 18.35$$

- (a) Find the equation of the regression line of y on x in the form $y = a + bx$.

Give the values of a and b correct to 3 significant figures.

(4)

- (b) Hence find the equation of the regression line of e on g in the form $e = c + dg$.

Give the values of c and d correct to 2 significant figures.

(4)

- (c) Use your regression equation to estimate the number of units of electricity used in a week when 100 units of gas were used.

(2)

May 2013 (R)

2. (a) State in words the relationship between two events R and S when $P(R \cap S) = 0$.

(1)

The events A and B are independent with $P(A) = \frac{1}{4}$ and $P(A \cup B) = \frac{2}{3}$.

Find

- (b) $P(B)$,

(4)

- (c) $P(A' \cap B)$,

(2)

- (d) $P(B'|A)$.

(2)

January 2012

3. The variable x was measured to the nearest whole number. Forty observations are given in the table below.

x	10 – 15	16 – 18	19 –
Frequency	15	9	16

A histogram was drawn and the bar representing the 10 – 15 class has a width of 2 cm and a height of 5 cm. For the 16 – 18 class find

(a) the width, (1)

(b) the height (2)

of the bar representing this class.

May 2009

4. The time, in minutes, taken to fly from London to Malaga has a normal distribution with mean 150 minutes and standard deviation 10 minutes.

(a) Find the probability that the next flight from London to Malaga takes less than 145 minutes. (3)

The time taken to fly from London to Berlin has a normal distribution with mean 100 minutes and standard deviation d minutes.

Given that 15% of the flights from London to Berlin take longer than 115 minutes,

(b) find the value of the standard deviation d . (4)

The time, X minutes, taken to fly from London to another city has a normal distribution with mean μ minutes.

Given that $P(X < \mu - 15) = 0.35$

(c) find $P(X > \mu + 15 \mid X > \mu - 15)$. (3)

May 2013 (R)

5. The length of time, L hours, that a phone will work before it needs charging is normally distributed with a mean of 100 hours and a standard deviation of 15 hours.

(a) Find $P(L > 127)$. (3)

(b) Find the value of d such that $P(L < d) = 0.10$. (3)

Alice is about to go on a 6 hour journey. Given that it is 127 hours since Alice last charged her phone,

(c) find the probability that her phone will not need charging before her journey is completed. (4)

January 2013

6. In a shopping survey a random sample of 104 teenagers were asked how many hours, to the nearest hour, they spent shopping in the last month. The results are summarised in the table below.

Number of hours	Mid-point	Frequency
0 – 5	2.75	20
6 – 7	6.5	16
8 – 10	9	18
11 – 15	13	25
16 – 25	20.5	15
26 – 50	38	10

A histogram was drawn and the group (8 – 10) hours was represented by a rectangle that was 1.5 cm wide and 3 cm high.

(a) Calculate the width and height of the rectangle representing the group (16 – 25) hours. (3)

(b) Use linear interpolation to estimate the median and interquartile range. (5)

(c) Estimate the mean and standard deviation of the number of hours spent shopping. (4)

(d) State, giving a reason, the skewness of these data. (2)

(e) State, giving a reason, which average and measure of dispersion you would recommend to use to summarise these data. (2)

January 2009

7. The weight, in grams, of beans in a tin is normally distributed with mean μ and standard deviation 7.8.

Given that 10% of tins contain less than 200 g, find

(a) the value of μ , (3)

(b) the percentage of tins that contain more than 225 g of beans. (3)

The machine settings are adjusted so that the weight, in grams, of beans in a tin is normally distributed with mean 205 and standard deviation σ .

(c) Given that 98% of tins contain between 200 g and 210 g find the value of σ . (4)

May 2013

8. (a) Given that $P(A) = a$ and $P(B) = b$ express $P(A \cup B)$ in terms of a and b when

(i) A and B are mutually exclusive,

(ii) A and B are independent.

(2)

Two events R and Q are such that

$$P(R \cap Q) = 0.15, \quad P(Q) = 0.35 \quad \text{and} \quad P(R | Q) = 0.1$$

Find the value of

(b) $P(R \cup Q)$, (1)

(c) $P(R \cap Q)$, (2)

(d) $P(R)$. (2)

May 2009

TOTAL FOR PAPER: 75 MARKS

END