Skills for Computing

03 September 2019

Examination Paper

Answer ALL questions.

Clearly cross out surplus answers.

Time: 2 hours

The maximum mark for this paper is 50.

Any reference material brought into the examination room must be handed to the invigilator before the start of the examination.
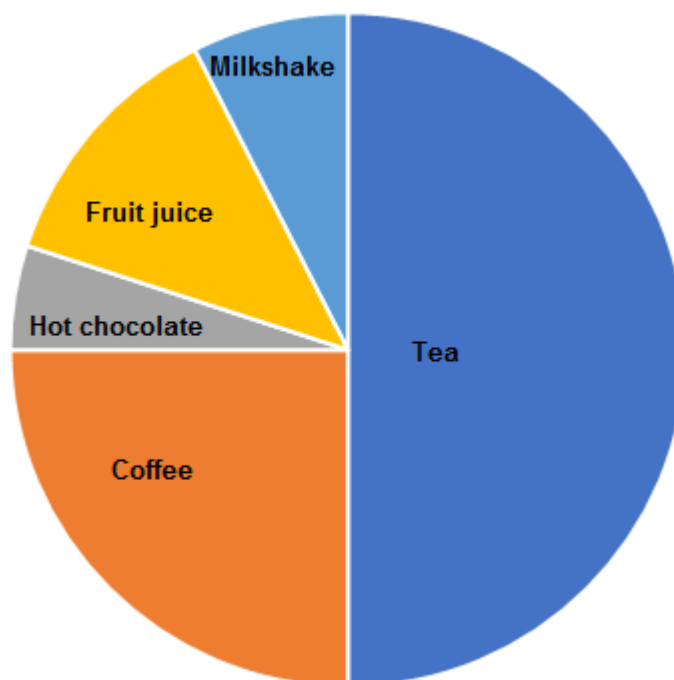
Graph paper will be provided by the centre.

A formula sheet is provided at the end of the question paper.

Candidates are allowed to bring in a scientific calculator for this module.

Marks

Question 1

A café records the number of different types of drink that were sold on one day. The data is used to construct the following pie chart.

a)	What type of drink did the café sell the most of?	**1**
b)	What type of drink did the café sell the least of?	**1**
c)	What fraction of drinks sold were tea?	**1**
d)	How many teas were sold by the cafe if the total number of drinks sold were ONE HUNDRED AND EIGHTY (180)? SHOW YOUR WORKING.	**2**
e)	What fraction of drinks sold were coffee?	**1**
f)	How many coffees were sold by the cafe if the total number of drinks sold were ONE HUNDRED AND EIGHTY (180)? SHOW YOUR WORKING.	**2**
g)	Is the data recorded scientific? Explain your answer.	**2**

Total 10 Marks

Skills for Computing

© NCC Education Limited 2019

Question 2

A teacher records the marks that seven students are awarded in a maths test and a physics test. The results are recorded in the table.

Student	A	B	C	D	E	F	G
Maths test score	41	63	45	31	72	85	58
Physics test score	52	65	41	43	74	71	67

a) Is this data continuous **or** discrete? **1**

b) Rank the results **and** calculate the Spearman rank correlation coefficient for this data. Give your answer to two decimal places. **7**

c) Comment on the value of the Spearman rank correlation coefficient found in (b). **2**

Total 10 Marks

Question 3

The height and weight of a random sample of six adults is recorded.

Height (cm) (x)	Weight (kg) (y)
151	48
154	49
162	51
163	69
171	66
183	80

a) Is the data quantitative **or** qualitative? Briefly explain your answer. **2**

b) Calculate the mean height. **2**

c) Construct a scatter plot of the data using graph paper. You should plot *Height (cm)* on the horizontal axis **and** *Weight (kg)* on the vertical axis. You should give your scatter plot an appropriate title **and** label both the horizontal **and** vertical axes. **6**

Total 10 Marks

Question 4

The management team of a hotel chain is developing a strategy to improve levels of customer satisfaction. It has been decided to apply the TASC framework to the problem.

a) State what the first phase of the TASC cycle is called **and** explain what it involves. Give an example of one of the tools you could use during the first phase of the TASC cycle.   3

b) State what the second phase of the TASC cycle is called **and** explain what this phase involves.   2

c) How could the second phase of the TASC cycle be applied to this particular problem?   1

d) State the name of the third phase of the TASC cycle **and** explain what this phase involves.   2

e) Phase SIX (6) of the TASC cycle is called *Evaluate*. Explain what this involves **and** give an example of a question you might ask.   2

Total 10 Marks

Question 5

a) Give TWO (2) reasons why referencing is important.   2

b) The following entries form part of a reference list.   2

   Pendleton, M. *Study Skills*, London, Thames Press

    Jones, B, (2015). *Mathematics and Computing*, New York, G & G Publishing

    Identify TWO (2) errors in this reference.

c) What does *lifelong learning* mean?   2

d) Give an example of a skill that you have improved during your study of this module. Explain briefly how you have made this improvement. Explain how you know this skill has improved (you may wish to discuss success criteria).   4

Total 10 Marks

End of paper

1. Percentage points of the normal distribution
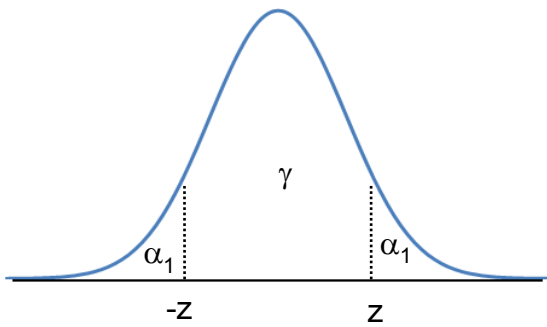
α_1	15.87%	15%	5.00%	2.50%	2.28%	1.00%	0.50%
γ	68.27%	70.00%	90.00%	95.00%	95.45%	98.00%	99.00%
z	1.0000	1.0364	1.6449	1.9600	2.0000	2.3263	2.5758

2. Formulae

Spearman's Rank Correlation (with no ties)

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

The Pearson Correlation Function

$$R = r = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{\sqrt{(n \sum x_i^2 - (\sum x_i)^2)(n \sum y_i^2 - (\sum y_i)^2)}}$$

Simple Linear Regression

$\hat{y} = m x_i + c$ is the least SSE straight line where:

$$m = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sum (x_i - \bar{x})^2} \qquad m = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{n \sum x_i^2 - (\sum x_i)^2}$$

$$c = \bar{y} - m\bar{x}$$

The Coefficient of Determination

$$R^2 = r^2 = \frac{\sum (\hat{y} - \bar{y})^2}{\sum (y - \bar{y})^2}$$