2. A company has 800 employees.

The manager of the company is going to take a sample of 80 employees.

(a) Explain how this sample can be taken using systematic sampling.

(3)

The company has offices in London, Edinburgh and Cardiff. The table shows the number of employees in each city.

City	London	Edinburgh	Cardiff
Number of employees	430	250	120

The president of the company is going to take a sample of 100 employees to determine the average time employees spend in front of a computer each week.

(b) Explain how this sample can be taken using stratified sampling.

(3)

(c) Explain an advantage of using stratified sampling rather than simple random sampling.

(1)

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5. A dance studio has 800 dancers of which

452 are beginners
251 are intermediates
97 are professionals

(a) Explain in detail how a stratified sample of size 50 could be taken.

(3)

(b) State an advantage of stratified sampling rather than simple random sampling in this situation.

(1)

Independent random samples of 80 beginners and 60 intermediates are chosen. Each of these dancers is given an assessment score, x, based on the quality of their dancing. The results are summarised in the table below.

	$\bar{x}$	s^2	n
Beginners	31.7	57.3	80
Intermediates	36.9	38.1	60

The studio manager believes that the mean score of intermediates is more than 3 points greater than the mean score of beginners.

(c) Stating your hypotheses clearly and using a 5% level of significance, test whether or not these data support the studio manager's belief.

(7)

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3. A company wants to survey its employees' attitudes to work. The company's workforce is located at three offices. The number of employees at each location is summarised in the table below.

Office location	Number of employees
Bristol	856
Dudley	429
Glasgow	1215

Each employee is located at only one office.

A personnel assistant plans to survey the first 50 employees who arrive for work at the Bristol office on a Monday morning.

(a) Give two reasons why this survey is likely to lead to a biased response.

(2)

A personnel manager has access to the company's information system that holds details of each employee including their place of work.

The manager decides to take a stratified sample of 150 employees.

(b) Describe how to choose employees for this stratified sample.

(3)

(c) Explain an advantage of using a stratified sample rather than a quota sample.

(1)

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1. The names of the 400 employees of a company are listed alphabetically in a book.

The chairperson of the company wishes to select a sample of 8 employees.

The chairperson numbers the employees from 001 to 400

(a) Describe how the list of numbers can be used to select a systematic sample of 8 employees.

(2)

(b) State one disadvantage of systematic sampling in this case.

(1)

(c) Write down the probability that the sample includes both the first name (employee 001) and the last name (employee 400) in the list.

(1)

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