



STAMFORD COLLEGE
SCHOOL OF BUSINESS, MARKETING AND ACCOUNTING

DIPLOMA IN BUSINESS ADMINISTRATION
(SEMESTER 4)

DBA 201: BUSINESS STATISTICS

Date : 24th April 2007

Time : 9.30am – 12.30pm

Duration: 3 hours

Instructions to Candidates

Answer ALL questions.

Please ensure that this examination paper contains FIVE questions on FOUR printed pages before you start the examination.

Books, papers and other written materials are not allowed to be brought into the examination hall. A candidate who violates the examination rules of Stamford College or commits a malpractice will be disqualified from the examination.

Write your Examination Index Number on each page of your answer booklet.

Note: Formula sheet attached.

Answer all questions.

Question 1

Eighty applicants for a job were assessed as either good or poor for their oral and written communication skills. The resulting assessments are given in the contingency table below:

		Written		Total
		Good	Poor	
Oral	Good	17	21	38
	Poor	12	30	42
Total		29	51	80

- a) From the contingency table, find the probability that a given applicant has;
- i) poor oral communication (2 marks)
 - ii) good written communication (2 marks)
 - iii) good oral communication (2 marks)
 - iii) poor written communication (2 marks)
 - v) good oral and written communication (4 marks)
- b) Find the probabilities that a given applicant has
- i) good oral skills given that they have good written skills (4 marks)
 - ii) poor written skills given that they have good oral skills. (5 marks)

(Total 20 marks)

Question 2

The following data gives the daily production at a factory. The factory works a five day week.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week1	48	52	64	65	54
Week2	51	56	69	71	56
Week3	52	59	73	74	57

- (a). Find the trend by means of a moving average. (6 marks)
- (b). Find the mean seasonal factors using an additive model. (7 marks)
- (c). Plot the time series data and the trend on the same graph and comment on the results. (7 marks)

(Total 20 marks)

Question 3

- (a). Given a normal distribution $X \sim N(300, 49)$, find the probability under the curve in each of the following cases. X is a continuous variable.
- (i). $P(X > 311.5)$ (3 marks)
- (ii). $P(X > 294)$ (3 marks)
- (iii). $P(X < 302)$ (3 marks)
- (iv). $P(X < 290)$ (3 marks)
- (b). Computers consist of a number of components including what is called a memory. These memories, produced by an automatic process, have life length, which is normally distributed with a mean of 500 hours and a standard deviation of 30 hours. If one thousand of these memories are selected at random from the production line, answer the following question:
- (i). How many of the memories would you expect to last for longer than 550 hours? (4 Marks)
- (ii). How many of the memories would you expect to have a life of between 480 and 510 hours? (4 Marks)

(Total 20 marks)

Question 4

A firm of management consultants acquired a computer package, which aims to predict the risk of bankruptcy using ratios taken from company accounts and other sources. The data below shows for new small companies the risk of bankruptcy by type of company.

	Risk of Bankruptcy		
	Low risk	High-risk	Very high risk
Retail	74	30	26
Manufacturing	46	24	20
Service	20	36	24

- (a). Assuming that the data is based on a random sample of small companies, test whether there is a significant relationship between type of company and risk of bankruptcy. (12 marks)

- (b). Some members of staff of the management consultants are suspicious of the computer package used. They prefer to look at the company accounts and from their own judgement of the likelihood of bankruptcy. Combining all types of company they concluded that 50% were very low risk, 30% high risk and 20% very high risk. (8 marks)

(Total 20 marks)

Question 5

- (a). Two competitors rank the eight photographs in a competition as follows:

Photograph	A	B	C	D	E	F	G	H
1 st competitor	2	5	3	6	1	4	7	8
2 nd competitor	4	3	2	6	1	8	5	7

Calculate Spearman's coefficient of rank correlation for the data. (7 marks)

- (b) Applicants from a job with a company are interviewed by two of the personal staff. After the interviews each applicant is awarded mark by each of the interviewers. The marks are given below:

	Candidate							
	A	B	C	D	E	F	G	H
Interviewer 1	22	27	24	17	20	22	16	13
Interviewer 2	28	23	25	14	26	17	20	15

- (i). Calculate, to 2 decimal places, the spearman's rank correlation coefficient between these two sets of marks. (7 marks)
- (ii). Stating your hypotheses and using 5% level of significance, test whether the spearman's rank correlation coefficient is significant. Interpret your result. (6 marks)

(Total 20 marks)

- END OF PAPER -