UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2011/12

COURSE NAME	:	PRODUCTION FORECASTING
COURSE CODE	:	BPC 33003
PROGRAMME	:	3 BPB
EXAMINATION DATE	:	JANUARY 2012
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **FOUR (4)** QUESTION ONLY OUT OF FIVE (5) QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 Mr. Syamsul, owner of Modern Office Equipment, is concerned about freight costs and clerical costs incurred on mall orders. In an effort to reduce expenditures in this area, he has decided to introduce a discount policy rewarding orders over RM40 in the hope that this will cause customers to consolidate a number of small orders into large orders.

The following data show the amounts per transaction for a sample of 28 customers:

10, 15, 20, 25, 15, 17, 41, 50, 5, 9, 12, 14, 35, 18, 19, 17, 28, 29, 11, 11, 43, 54, 7, 8, 16, 13, 37, 18.

(a) Compute the sample mean

(4 marks)

(b) Compute the sample standard deviation

(4 marks)

(c) Compute the sample variance

(4 marks)

(d) Determine whether the mean of the distribution increase, decrease or remain unaffected if the policy is successful.

(4 marks)

(e) If the policy is successful, will the standard deviation of the distribution increase, decrease or remain unaffected?

(4 marks)

(f) Forecast the amount of the next customer's order based on the data given as above.

(5 marks)

Q2 Mr. Hafiz, maintenance supervisor for the Putra LRT, would like to determine whether there is a positive relationship between the annual maintenance cost of a LRT coach and its age. If a relationship exists, Mr. Hafiz feels that he can do a better job of predicting the annual LRT coach maintenance budget. He collects the data shown in Table Q2.

Table Q2

LRT Coach	Maintenance Cost (RM) Y	Age (years) X
1	859	8
2	682	5
3	471	3
4	708	9
5	1094	11
6	224	2
7	320	1
8	651	8
9	1049	12

(a) Plot a scatter diagram.

(9 marks)

(b) Identify the kind of relationship exists between these two variables.

(4 marks)

(c) Compute the correlation coefficient.

(12 marks)

Q3 The number of accidents in the Azwan Chemical Industries is given in Table Q3 below.

Table Q3

Year	Accidents	Year	Accidents
1998	2413	2005	2362
1999	2407	2006	2334
2000	2403	2007	2362
2001	2396	2008	2336
2002	2403	2009	2344
2003	2443	2010	2384
2004	2371	2011	2244

(a) Compute the first differences for these data. Plot the original data and the difference data as a time series.

(15 marks)

(b) Plot the original data and the difference data as a time series.

(10 marks)

Q4 Lotfi Supply Chains Company uses an inventory management method to determine the monthly demands for various products. The demand values for the last 12 months of each product have been recorded and are available for future forecasting. The demand values for the 12 months of 2011 for one electrical fixture are presented in Table Q4.

Table Q4

Month	Demand
January	205
February	251
March	304
April	284
May	352
June	300
July	241
August	284
September	312
October	289
November	385
December	256

(a) Forecast the demand for January 2012 using the exponential smoothing with a smoothing constant of 0.5 and an initial value of 205.

(20 marks)

(b) Plot the original data and the difference data as a time series.

(5 marks)

Q5 TV4 is considering cutting back on its TV advertising in favor of business videos to be given to its customers. This action is being considered after TV4 CEO read a recent article in the Business Review. One thing the CEO would like to investigate before taking this action is the history of TV advertising in Malaysia, especially the trend cycle. Table Q5 contains the total RM spent on Malaysia TV advertising, in millions.

Table Q5

Year	Y	Year	Y
1994	11424	2003	26891
1995	12811	2004	29073
1996	14566	2005	28189
1997	16542	2006	30450
1998	19670	2007	31698
1999	20770	2008	35435
2000	22585	2009	37828
2001	23904	2010	42484
2002	25686	2011	44580

(a) Plot the time series of Malaysia TV advertising expenditures.

(10 marks)

(b) Fit a linear trend to the advertising data and plot the fitted line on the time series graph.

(7 marks)

(c) Compute the forecast TV advertising for 2013

(5 marks)

(d) Explain whether there will be a cyclical component in TV advertising based on the results in Q5(b).

(3 marks)

END OF QUESTION PAPER