
UNIVERSITI SAINS MALAYSIA

Final Examination
Academic Session 2007/2008

April 2008

JIM 104 – Introduction To Statistics
[Pengantar Statistik]

Duration : 3 hours
[Masa: 3 jam]

Please ensure that this examination paper contains TWENTY SEVEN printed pages before you begin the examination.

Answer ALL questions. You may answer either in Bahasa Malaysia or in English.

Read the instructions carefully before answering.

Each question is worth 100 marks.

[Sila pastikan bahawa kertas peperiksaan ini mengandungi DUA PULUH TUJUH muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]

Jawab SEMUA soalan. Anda dibenarkan menjawab sama ada dalam Bahasa Malaysia atau Bahasa Inggeris.

Baca arahan dengan teliti sebelum anda menjawab soalan.

Setiap soalan diperuntukkan 100 markah.]

1. (a) Twelve batteries were tested to see how many hours they would last. The frequency distribution is given below:

Hours	Frequency
1 – 3	1
4 – 6	4
7 – 9	5
10 – 12	1
13 – 15	1

Find the

- (i) mean
- (ii) median
- (iii) mode
- (iv) standard deviation.

(40 marks)

- (b) The number of trips made by each of six managers is shown below:

2, 4, 5, 6, 8, 9.

- (i) What value corresponds to the 30th percentile?
- (ii) Construct a box plot and comment on the nature of the distribution.

(20 marks)

- (c) The average delivery charge for a refrigerator is RM32. The standard deviation is RM4. Find the minimum percentage of data values that will fall in the range of RM20 to RM44. Use Chebychev's theorem.

(40 marks)

2. (a) At a large factory, the employees were surveyed and classified according to their level of education and smoking habit. The data are shown in the table.

Smoking habit	Educational Level		
	Not High School Graduate	High School Graduate	College Graduate
Smoking	6	14	19
Non-smoking	18	7	25

If an employee is selected at random, find these probabilities.

- (i) The employee smokes, given that he or she graduated from college.
(ii) Given that the employee did not graduate from high school, he or she is a smoker.

(40 marks)

- (b) An automobile license plate consists of 3 letters followed by 4 digits. How many different plates can be made if

- (i) repetitions are allowed?
(ii) repetitions are allowed in the letters but not in the digits?

(40 marks)

- (c) In a survey, 58% adults said they had never heard of the internet. If 20 adults are selected at random, find the probability that exactly 12 will say they never heard of the internet.

(20 marks)

3. (a) A recent study indicated that 29% of the 100 women over age 55 in the study were widows.

- (i) How large a sample must one take to be 90% confident that the estimate is within 0.05 of the true proportion of women over age 55 who are widows?
(ii) If no estimate of the sample proportion is available, how large should the sample be?

(50 marks)