

EXAMINATION AND EVALUATION DIVISION
DEPARTMENT OF POLYTECHNIC EDUCATION
(MINISTRY OF HIGHER EDUCATION)

COMMERCE DEPARTMENT

FINAL EXAMINATION
DECEMBER 2011 SESSION

PB101: STATISTICS

DATE : 30 APRIL 2012 (MONDAY)
DURATION : 2 HOURS (2.30 PM - 4.30 PM)

This paper consists of **SIX (6)** pages including the front page.
Structured (4 questions – Answer **ALL** question)

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DO NOT OPEN THIS QUESTIONS BOOKLET UNTIL
INSTRUCTED BY THE CHIEF INVIGILATOR

(CLO stated at the end of each question is referred to the learning outcome of the topic assessed. The CLO stated is only for lecturer's reference. Student can ignore the CLO stated)

Instruction:

This section consists of 4 (**FOUR**) structured questions. Answer **ALL** questions.

QUESTION 1

- (a) List down **THREE** types of graphical method to present the data. (3 marks)
- (b) Define frequency distribution. (2 marks)
- (c) State **TWO (2)** category of quantitative data. (2 marks)
- (d) The regional transport authority is concerned about the speed of motorbikes ridden by college students on a section of the road. The following data shows the speed of 45 riders (speed in km/hr).

15	38	69	69	32	52	18	61	45
49	52	47	38	56	57	18	29	52
55	61	56	46	58	55	58	42	62
64	44	62	39	29	42	49	48	55
31	48	39	58	48	47	68	48	49

- (i) Determine the number of classes, k . (2 marks)
- (ii) Find the data range. (2 marks)
- (iii) Determine the class width, C . (2 marks)
- (iv) Fill in the missing items using the raw data given.

Class interval	Class boundaries	Frequency	Relative frequency	Mid point
15 – 24				
25 – 34				
35 – 44				
45 – 54				
55 – 64				
65 - 74				

(5 marks)

- (v) Construct a less than cumulative frequency and draw a less than ogive for the given data. (7 marks)

QUESTION 2

- (a) Give the definition of mean. (2 marks)
- (b) List the **THREE (3)** steps to calculate median for an ungrouped data. (3 marks)
- (c) Below is the data collected in a study regarding the orders of *baju kurung* at Seri Indah Boutique during the *Aidilfitri* festival in the year 2004. Calculate the mean, mode and median (using empirical rule).

Class	Number of orders
10-19	85
20-29	120
30-39	225
40-49	135
50-59	105
60-69	30
Total	700

(16 marks)

- (d) Give **TWO (2)** advantages and **TWO (2)** disadvantages of using mean as a measurement of central tendency. (4 marks)

QUESTION 3

Murni Bakery produces cake which requires three main raw materials. The following table contains information on prices and quantities required for each raw material.

Raw Material	Price per kg (RM)		Quantity (kg)	
	2009	2010	2009	2010
Sugar	1.50	2.00	400	450
Flour	1.00	1.30	2000	2500
Cocoa	15.00	20.00	60	70

- (a) Briefly explain the definition of price index. (1 mark)
- (b) Using 2009 as the base year to calculate the:
- (i) Laspeyres' price index for 2010 and comment on your answer. (7 marks)
 - (ii) Paasche's price index for 2010 and comment on your answer. (7 marks)
 - (iii) Marshall-Edgeworth's price index for 2010 and explain its meaning. (8 marks)
- (c) State an overall conclusion from the indexes that were calculated in (b). (2 marks)

QUESTION 4

The following table shows the age and systolic blood pressure of six randomly selected subjects.

Subject	Age, x	Pressure, y
A	43	128
B	48	120
C	56	135
D	61	143
E	67	141
F	70	152

- (a) State the type of data used to calculate a Coefficient of Correlation. (1 mark)
- (b) Compute the Pearson's Coefficient of Correlation for the data above. (16 marks)
- (c) Determine the least squares regression equation for the above data. (8 marks)

FORMULA

$$k = 1 + 3.3 \log_{10} n$$

Range = Highest Observed Value – Lowest Observed Value

$$l = \frac{\text{range}}{k}$$

$$\bar{x} = \frac{\sum fixi}{\sum fi}$$

$$\tilde{x} = Lm + \left[\frac{\frac{\sum fi}{2} - \sum fm - 1}{fm} \right] C$$

$$\hat{x} = Lb + \left(\frac{\Delta 1}{\Delta 1 + \Delta 2} \right) C$$

$$\hat{x} = \bar{x} - 3(\bar{x} - \tilde{x})$$

$$Q_1 = Lb + \left(\frac{\frac{N}{4} - \sum fBQ_1}{fQ_1} \right) C$$

$$Q_3 = Lb + \left(\frac{\frac{3N}{4} - \sum fBQ_3}{fQ_3} \right) C$$

$$D_k = Lb + \left(\frac{k \left(\frac{N}{10} \right) - \sum fBDk}{fDk} \right) C$$

$$P_k = Lb + \left(\frac{k \left(\frac{N}{100} \right) - \sum fBPk}{fPk} \right) C$$

$$\text{Mean Deviation} = \frac{1}{\sum fi} [\sum f|x - \bar{x}|]$$

$$I = \frac{P_t}{P_o} \times 100$$

$$I = \frac{\sum P_t}{\sum P_o} \times 100$$

$$I = \frac{1}{n} \sum \left(\frac{P_t}{P_o} \times 100 \right)$$

$$I = \frac{\sum (P_t W)}{\sum (P_o W)} \times 100$$

$$IL = \frac{\sum (P_t Q_o)}{\sum (P_o Q_o)} \times 100$$

$$IP = \frac{\sum (P_t Q_t)}{\sum (P_o Q_t)} \times 100$$

$$IF = \sqrt{\left(\frac{\sum P_t Q_o}{\sum P_o Q_o} \right) \times \left(\frac{\sum P_t Q_t}{\sum P_o Q_t} \right)}$$

$$IM = \frac{\sum P_t (Q_o + Q_t)}{\sum P_o (Q_o + Q_t)} \times 100$$

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

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

$$y = a + bx : b = \frac{n \sum xy - (\sum x)(\sum y)}{n \sum x^2 - (\sum x)^2}$$

$$: a = \frac{\sum y}{n} - b \frac{\sum x}{n}$$