
UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2012/2013

June 2013

RPG 131 – Applied Quantitative Methods
(Kaedah Kuantitatif Gunaan)

Duration : 3 hours
(Masa: 3 jam)

Please check that this examination paper consists of TEN pages of printed material before you begin the examination.

Sila pastikan bahawa kertas peperiksaan ini mengandungi SEPULUH muka surat yang tercetak sebelum anda memulakan peperiksaan ini.

Students are allowed to answer all questions either in English OR in Bahasa Malaysia.

Pelajar dibenarkan menjawab semua soalan dalam Bahasa Inggeris ATAU Bahasa Malaysia.

Answer **FOUR** questions only.

*Jawab **EMPAT** soalan sahaja.*

In the event of any discrepancies, the English version shall be used.

[Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi Bahasa Inggeris hendaklah diguna pakai].

1. Penang has an overall estimated population of 1,222,000. Out of the whole population, 8,000 are homeless. A survey is to be conducted to determine the quality of high-rise dwellings in Penang. The objective of the survey is to examine the quality of construction and the level of cleanliness of high-rise dwellings in Penang.

The distribution of the population is as follows:

Type of population	Number of students
Population of residents in bungalow	50,000
Population of residents in semi-detached	150,000
Population of residents in terraces	200,000
Population of residents in condominiums	400,000
Population of residents in apartments	414,000
Population of homeless individuals	8,000

Pulau Pinang mempunyai populasi penduduk seramai 1,222,000 orang. Dari jumlah keseluruhan populasi ini, seramai 8,000 orang tidak mempunyai tempat tinggal. Satu kajian akan dijalankan bagi menentukan kualiti perumahan rumah bertingkat di Pulau Pinang. Objektif kajian adalah untuk menentukan kualiti pembinaan dan tahap kebersihan rumah bertingkat di Pulau Pinang.

Taburan populasi adalah seperti berikut:

Jenis populasi	Jumlah pelajar
<i>Populasi penduduk rumah sesebuah</i>	<i>50,000</i>
<i>Populasi penduduk rumah berkembar</i>	<i>150,000</i>
<i>Populasi penduduk rumah teres</i>	<i>200,000</i>
<i>Populasi penduduk rumah kondominium</i>	<i>400,000</i>
<i>Populasi penduduk rumah apartment</i>	<i>414,000</i>
<i>Populasi penduduk tanpa tempat tinggal</i>	<i>8,000</i>

- (a) Who is the population group?
Siapakah kumpulan populasi?
- (1 marks/markah)
- (b) What is the population size for the study?
Apakah saiz populasi kajian?
- (1 marks/markah)
- (c) Where can you obtain the sampling frame?
Dimanakah anda boleh mendapatkan rangka persampelan?
- (2 marks/markah)
- (d) Who is the sample?
Siapakah sampel?
- (2 marks/markah)
- (e) Assuming that the study focuses on a sample size of 10,000 residents, give your suggestion on the number of respondents from each type of housing and justify why you have done so.
- Dengan andaian bahawa saiz sampel bagi kajian ini adalah 10,000 orang penduduk, berikan cadangan anda bagi jumlah responden dari setiap jenis kediaman serta justifikasi bagi pemilihan tersebut.*
- (4 marks/markah)

Figure 1 : Information on students participation in a quiz at HBP
Jadual 1: Maklumat pelajar-pelajar yang menyertai kuiz di PBP

Name Nama	Gender Jantina	CGPA	Interest in quiz Minat terhadap kuiz	Score for technical quiz Skor kuiz teknikal	Score for theoretical quiz Skor kuiz teori	Overall grade Keseluruhan gred
Rick	Male <i>Lelaki</i>	2.1	very interested <i>sangat minat</i>	7	4	good <i>baik</i>
Ah Loi	Male <i>Lelaki</i>	3.2	not interested <i>tidak minat</i>	4	2	average <i>sedehana</i>
Meina	Female <i>Perempuan</i>	3.2	not interested at all <i>Sangat tidak minat</i>	3	3	average <i>sedehana</i>
Siti	Female <i>Perempuan</i>	3.4	no opinion <i>tiada pendapat</i>	7	8	very good <i>sangat baik</i>
Richard	Male <i>Lelaki</i>	2.3	not interested <i>tidak minat</i>	9	9	very good <i>sangat baik</i>
Lizy	Female <i>Perempuan</i>	1.7	very interested <i>sangat minat</i>	did not participate	did not participate	
Rob	Male <i>Lelaki</i>	2.0	not interested <i>tidak minat</i>	4	3	average <i>sedehana</i>
Nala	Female <i>Perempuan</i>	3.6	not interested at all <i>Sangat tidak minat</i>	2	2	poor <i>lemah</i>
Narisa	Female <i>Perempuan</i>	3.1	no opinion <i>tiada pendapat</i>	8	8	very good <i>sangat baik</i>
Sonia	Female <i>Perempuan</i>	2.4	no opinion <i>tiada pendapat</i>	8	9	very good <i>sangat baik</i>
Ricky	Male <i>Lelaki</i>	2.8	not interested <i>tidak minat</i>	3	2	poor <i>lemah</i>
May	Female <i>Perempuan</i>	2.2	very interested <i>sangat minat</i>	4	5	good <i>baik</i>

(f) What are the scale categories of the following variables?
Apakah kategori skala pembolehubah-pembolehubah berikut?

- Gender/*Jantina*
- CGPA
- Interest in quiz / *Minat mengenai kuiz*
- Score for technical quiz/ *Skor kuiz teknikal*
- Grade /*Gred*

(5 marks/*markah*)

(g) Which is the independent variable
Yang manakah pembolehubah tidak bergantung

(i) Draw a graph showing the relationship between running speed and height of jump

Lakarkan graf perhubungan antara kelajuan berlari dan ketinggian lompatan.

(ii) Draw the “line of best fit”

Lakarkan garisan “line of best fit”

(iii) What is the correlation value between running speed and height of jump?

Berapakah nilai korelasi antara kelajuan berlari dan ketinggian lompatan?

(iv) What conclusion can you make of the relationship?

Apakah yang boleh disimpulkan mengenai perhubungan ini?

(5 marks/*markah*)

- (h) A group of 40 students worked on painting murals. The table below indicates the number of days they spend on creating the murals and the number of murals completed.

Sekumpulan 40 orang pelajar bekerja menyiapkan lukisan mural. Jadual di bawah menunjukkan jumlah hari yang terlibat serta bilangan mural yang disiapkan.

Number of murals completed <i>Jumlah mural yang siap</i>	Number of days spend on creating the murals <i>Jumlah hari yang terlibat dalam menyiapkan mural</i>
7	4
14	7
17	9
19	15
24	16
25	19
27	20

- (i) What is the value of the "intercept"?
Apakah nilai intersep?
- (ii) What is the value of the "regression coefficient"?
Apakah nilai koefisien regresi?
- (iii) How many flags would they have completed if they spend 35 days working?
Berapa benderakah yang dapat disiapkan dalam tempoh 35 hari?
- (iv) How would you describe the relationship between both variables?
Bagaimana anda simpulkan hubungan di antara kedua-dua pembolehubah?

(5 marks/markah)

Formula

Pearson Product Moment (r)/ *Formula Kaedah (r)* =
$$\frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}}$$

$$y = a + bx$$

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

$$b = \frac{N\sum xy - (\sum x)(\sum y)}{N\sum x^2 - (\sum x)^2}$$

2. (a) Cost-Benefit Analysis is a quantitative approach that has been widely used in the decision making process. Briefly explain the definition of Cost-Benefit Analysis with emphasis on the difference between Cost and Benefit.

Analisis Kos-Faedah adalah pendekatan kuantitatif yang telah digunakan secara meluas dalam proses membuat keputusan. Jelaskan secara ringkas takrif Analisis Kos-Faedah dengan menekankan perbezaan antara kos dan faedah.

(5 marks/markah)

- (b) Describe in detail the steps involved in conducting a Cost-Benefit Analysis using your own examples.

Jelaskan secara terperinci langkah-langkah dalam menjalankan Analisis Kos-Faedah dengan menggunakan contoh sendiri.

(20 marks/markah)

3. Describe the following sampling methods and their suitability in the use of appropriate research methods:
- (a) Non-probability sampling methods
 - (i) Convenience sampling
 - (ii) Quota sampling
 - (iii) Snowball sampling
 - (b) Probability sampling methods
 - (i) Simple random sampling
 - (ii) Systematic sampling

Huraikan kaedah sampling berikut dan nyatakan kesesuaian kegunaan kaedah tersebut di dalam penyelidikan yang tepat:

- (a) *Kaedah sampling bukan kemungkinan*
 - (i) *Sampling mudah*
 - (ii) *Sampling kuota*
 - (iii) *Sampling gumpalan*
- (b) *Kaedah sampling kemungkinan*
 - (i) *Simple random sampling*
 - (ii) *Sampling sistematik*

(25 marks/markah)

4. Think of one good research topic and discuss in detail the following items:
- (a) Introduction and objective
 - (b) Literature review
 - (c) Methodology
 - (d) Sampling method
 - (e) Analysis

Fikirkan satu topik penyelidikan yang bagus dan bincangkan secara terperinci berdasarkan kepada:

- (a) *Pengenalan dan objektif*
- (b) *Kajian literatur*
- (c) *Metodologi*
- (d) *Kaedah sampling*
- (e) *Analisis*

(25 marks/markah)

5. (a) Many variables can be used to determine housing affordability, including household income, household expenditures and housing prices. Nevertheless, owning a house can be difficult, especially for low-income individuals in Malaysia. The objective of this research is to examine the level of affordability and other variables that affect low-cost homeownership amongst the low-income group in Kuala Lumpur. The affordability of homeownership for an individual is generally determined by income. If this income is sufficient to pay for a house buy other essential necessities and obtain services in a market, then a home is affordable for that individual. The sample for this research comprises 300 individuals who own a low-cost house managed by the Kuala Lumpur City Hall in Kuala Lumpur. The systematic sampling technique was utilized to generate this sample. This research utilizes binary logistic regression as its analytical tool. The findings indicate that low-income earners can afford to own a low-cost house in Kuala Lumpur. The main variables that affect the ability of the low-income group to own a low-cost house include household income, household expenditures, occupation, education level, whether household members work and monthly payment for housing.

Based on the abstract above, give the definition of abstract and identify the important terminology involved in it.

Banyak pembolehubah yang boleh menentukan kemampuan perumahan, termasuk pendapatan isi rumah, perbelanjaan isi rumah dan harga rumah. Walaubagaimanapun, memiliki sebuah rumah boleh menjadi sukar, terutama bagi golongan berpendapatan rendah di Malaysia. Objektif kajian ini adalah untuk mengkaji tahap kemampuan dan pembolehubah lain yang mempengaruhi pemilikan rumah kos rendah dalam kalangan golongan berpendapatan rendah di Kuala Lumpur. Kemampuan pemilikan rumah bagi seorang individu secara umumnya ditentukan oleh pendapatan. Jika pendapatan beliau mencukupi untuk membayar rumah, membeli barang keperluan penting yang lain, dan mendapatkan perkhidmatan di pasaran, maka mereka mampu untuk memiliki rumah. Sampel kajian ini terdiri daripada 300 individu yang memiliki sebuah rumah kos rendah yang diuruskan oleh Dewan Bandaraya Kuala Lumpur. Teknik persampelan sistematik telah digunakan untuk mendapatkan sampel kajian. Kajian ini menggunakan binari regresi logistik sebagai alat analitikal. Dapatan kajian menunjukkan bahawa golongan berpendapatan rendah mampu untuk memiliki rumah kos rendah di Kuala Lumpur. Pembolehubah utama yang mempengaruhi keupayaan golongan berpendapatan rendah untuk memiliki rumah kos rendah ialah pendapatan isi rumah, perbelanjaan isi rumah, jenis pekerjaan, tahap pendidikan, ahli isi rumah yang bekerja dan bayaran bulanan untuk perumahan.

Berdasarkan abstrak di atas, berikan definisi abstrak dan kenalpasti terminologi penting yang terlibat di dalamnya.

(7 marks/markah)

(b) Explain the following terminology and give examples.

Terangkan terminologi berikut dan berikan contohnya.

(18 marks/markah)

Number Nombor	Terminology Terminologi	Explanation Penerangan	Example Contoh
1	Dependent Variable <i>Pembolehubah Bersandar</i>		
2	Subject <i>Subjek</i>		
3	Cluster Sampling <i>Persampelan Kluster</i>		
4	Double Sampling <i>Persampelan Berganda</i>		
5	Purposive Sampling <i>Persampelan Purposive</i>		
6	Stratified Random Sampling <i>Persampelan Rawak Berstrata</i>		
7	Discrete Variables <i>Pembolehubah Diskret</i>		
8	Basic Associational Approach <i>Pendekatan Asas Bersekutu</i>		
9	Applied Research <i>Penyelidikan Gunaan</i>		