UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014

COURSE NAME : STATISTICS

COURSE CODE : BIT 11603

PROGRAMME : 1 BIT

EXAMINATION DATE : JUNE 2014

DURATION : 2 HOURS AND 30 MINUTES

INSTRUCTION : ANSWER **FIVE (5)** QUESTIONS **ONLY**

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

Q1 (a) State **FIVE (5)** advantages of using SPSS package as compared to Microsoft Excel. (You may use the Statistics Project that you had experienced in this course to support your answer).

(10 marks)

(b) Interpret the following SPSS output in Figure **Q1(b)** from a mock examination English SPM 2007/08 to recommend which school is better in terms of English Language.

Data Items	School A	School B
N	100	45
Mean	45.7	65.2
Variance	3.50	5.68
Highest Mark	87	90
Lowest Mark	12	3

FIGURE Q1(b)

(5 marks)

(c) Ali wanted to study the characteristics of the young mothers and their kids in taking new powdered milk. Suggest **TWO (2)** sampling methods and **ONE (1)** data collection tool for his study.

(5 marks)

Q2   (a)   Determine a 99% confidence interval for the corresponding population mean based on Figure **Q2(a)**.

> Sixty-five randomly selected players in Malaysia League Football who buys sports goods were asked how much they usually spend on branded T-shirts per year. The sample produced a mean of RM500 and a standard deviation of RM200 for such annual expenses.

FIGURE Q2(a)

(10 marks)

(b)   United Kingdom is a multi-religion country. According to a survey conducted by a private firm in 2011, 44% of people aged 18 to 30 years said that religion is very important to them. Suppose this result is based on a sample of 1000 people aged 18 to 30 years.

(i)   Determine the point estimate of the corresponding population proportion.

(2 marks)

(ii)   Find, with a 95% confidence level, the percentage of all people aged 18 to 30 years who will say that religion is very important to them.

(5 marks)

(iii)   Compute any margin of error of this estimate.

(3 marks)

Q3   (a)   Produce the steps of Hypothesis Testing that Mr. Zong has to carry for scenario in Figure **Q3(a)**.

> Mr. Zong is an engineer in a factory that produced ball bearings for a locomotive industry. He is required to check whether the sample of 25 ball bearings with the mean sample 0.5018 inch is accepted or not within the standard specified. Given the diameter of the ball bearings has a population average of 0.503 inch and a population standard deviation of 0.004 inch.

FIGURE Q3(a)

(10 marks)

(b)   Explain what is meant by Type I error? Give an example.

(2 marks)

(c)   According to ACB theory the number of color strains pink, white and red in a certain flower is in the ratio of 2:3:5. For 100 plants in Taman Negara, Pahang the data was obtained in **Table 1**:

Color	Pink	White	Red	Total
Number of plants	20	62	18	100

Table 1: Number of plants for different color strains

Are the differences between the observed and expected frequencies significant, at 1% level?

(8 marks)

Q4   (a)   State **ONE(1)** application of a probability distribution function in Economic Ordered Quantity?

(2 marks)

(b)   Using the First principle, prove the Economic Ordered Quantity formula.

(9 marks)

(c) Bunga Raya Sdn. Bhd specializes in supplying fresh cookies to the main cities high-end markets in this country. In order to maintain sales, this company wants to reduce its inventory cost by determining the optimal number of 'additional staff' to obtain per order. The annual demand is 1000 workers, the ordering cost is RM10 per order, and the average carrying cost per unit per year is RM0.50. Using those data, compute

(i) the optimal number of units per order

(4 marks)

(ii) the total annual inventory cost

(5 marks)

Q5 (a) In how many ways 2 red books, 3 blue books and 4 white books can be chosen from a trolley containing 4 red books, 6 blue books and 5 white books in Tunku Aminah Library?

(7 marks)

(b) Based on scenario in Figure **Q5(b)**, determine the best possible combination of tables and chairs to manufacture in order to reach the maximum profit **using graphical method**.

> Ahmad Kayu Jati Sdn Bhd produces special tables and chairs for handicapped patients in Malaysia. The production process for each is similar in that both require a certain number of hours of carpentry work and a certain labour hours to paint and varnish. Each table takes 4 hours of carpentry and 2 hours paint and varnish. Each chair requires 3 hours carpentry and 1 hour paint and varnish. During the current economic production period, 240 hours of carpentry time are available and 100 hours in painting and varnishing time are available. Each table sold yields a profit of RM7 ; each chair gave Ahmad a profit of RM5.

FIGURE Q5(b)

(9 marks)

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(c)   Find the sample size if you are given this data: α is 0.05, σ is 0.45 and $(1-\beta)$ is 0.75

(4 marks)

Q6   (a)   Draw a tree diagram of getting **at least one** odd number after three different consecutive rolls of a dice.

(6 marks)

(b)   Find the probability of getting all heads in eight flips of an unbiased coin using a Binomial probability distribution formula.

(6 marks)

(c)   On average, a non-working wife receives 8.5 telemarketing phone calls per week. Find the probability that a randomly selected house wife receives exactly 5 telemarketing phone calls during a given week using the Poisson probability distribution formula.

(8 marks)

-END OF QUESTION-