

CONFIDENTIAL

**UTM**
UNIVERSITI TEKNOLOGI MALAYSIA**SCHOOL OF COMPUTING**
Faculty of Engineering**UNIVERSITI TEKNOLOGI MALAYSIA****FINAL EXAMINATION****SEMESTER II 2021/2022****SUBJECT CODE : SCS1 2143/SECI 2143****SUBJECT NAME : PROBABILITY & STATISTICAL DATA ANALYSIS****YEAR/COURSE :****TIME :****DATE : 14TH JULY 2022**

INSTRUCTIONS TO THE STUDENTS:

1. Please answer ALL the questions in the answer sheet form.
2. Fill in your particular in the answer sheet.
3. Do calculations in 3 decimal places.

NAME	
MATRIC NO.	
SECTION	
LECTURER	

(This question paper consist of 3 pages, including this pages)

QUESTION 3**[20 MARKS]**

- a) A survey was conducted to investigate the number of parcel distribution in a company Courier ABC. The survey was distributed into five different departments. To test the hypothesis that the number of parcel per hour is equal among these five departments, a simple random sample of 100 records are identified. Given the hypotheses as below,

$$H_0: p_1 = p_2 = p_3 = p_4 = p_5$$

H_A : At least one of the p , is not equal.

- i. If the resulting of χ^2 value were 16 parcel per hour, what conclusion would you reach when using a test with significance level, $\alpha = 0.01$? (2 marks)
 - ii. What conclusion would be appropriate at significance level, $\alpha = 0.05$ if the resulting of χ^2 value were 18? (2 marks)
 - iii. If there were only four departments rather than five, what would you conclude if χ^2 value were 19 and a test with $\alpha = 0.025$ was used? (2 marks)
- b) A presidential of staff's club hired a public relations firm to conduct a poll to see whether he faces a gender gap with his staff. That is, he wants to know whether gender is related to how a voter feels about him as a president. The poll asked 800 men and 750 women how they felt about the president. The responses are shown in Table 2. Perform a chi-square test to determine whether this president faces a gender gap. Use $\alpha = 0.05$

Table 2: Presidential survey's response

	Strongly support president	Strongly oppose president	Undecided
Men	325	151	324
Women	258	241	251

(14 marks)

QUESTION 4**[15 MARKS]**

School of Computing did a survey on feelings of stress and work satisfaction among their staff. The data in Table 3 represents x = score on a measure of how stressed they were feeling with a scale (1: very happy ~ 20:very unhappy) and y = score on a measure of how satisfied they felt with their work with a scale (1: unsatisfied ~ 10: very satisfied).

Table 3: Score on the survey of the School of Computing's staff

x	12	19	10	14	8	5	15	7	11
y	4	1	5	6	8	9	4	8	6

Based on data given, answer the following questions:

- Identify which correlation coefficient type that suitable to be used for the data represented in Table 3? Justify your answer. (2 marks)
- Calculate the value of the correlation coefficient, r between x and y . (11 marks)
- Based on your value of the correlation coefficient, r obtained in (4-b), make a conclusion on the relationship between the score of stress level and the score of work satisfaction. (2 marks)