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Faculty of Engineering

TIM STIM OULW OLIM UNIVERSITI TEKNOLOGI MALAYSIA SAIM SAIM SAIM FINAL EXAMINATION

SEMESTER II 2021/2022

TIM SUTM SUBJECT CODE : SCSI 2143/SECI 2143

IN SAIN SAIN **SUBJECT NAME** : PROBABILITY & STATISTICAL DATA ANALYSIS OULW OLLW OLL SALM SALM SALI

YEAR/COURSE

TIME

OUTH OUTH OUTH : 14TH JULY 2022 TIM PUTM

INSTRUCTIONS TO THE STUDENTS:

SAIM SAIM 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. **OUTM**

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31 3 2	cular in the answer sheet.	I SULL	Ų.
3. Do calculations	in 3 decimal places.	SALW SALW SALN	OUTM OF
NAME 6	JULY SULLY	I SULL	ħ.
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nis question paper co	onsist of 3 pages, including	g this pages)	PAIN (9)

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QUESTION 3 [20 MARKS]

A survey was conducted to investigate the number of parcel distribution in a company a) 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_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)
- 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

$\alpha = 0.05$		(0) >	(0) >	
DUTM	QUIM	Table 2: Preside	ential survey's res	ponse SUTM
SUIM SUIM	MIN	Strongly support president	Strongly oppose president	Undecided
OULW OULW	Men	325	151	324
(2) Dr.	Women	258	241	251
TITM	9 2	TITM	(9) 92	TITM

(14 marks)

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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 \sim 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
У	4 _M	UIN I	5	11TI 6 6	8	9	TIM 45 U	8	6
ased on	data give	en, answei	r the follo	wing que	stions:	O LIM O		5 1	TIM O

Based on data given, answer the following questions:

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- Identify which correlation coefficient type that suitable to be used for the data represented a) O UTA in Table 3? Justify your answer. (2 marks)
- Calculate the value of the correlation coefficient, r between x and y.

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(11 marks)

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c) 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. SULW SULW SALW SALW (2 marks) **OUTM**

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