

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL, EXAMINATION (TAKE HOME) SEMESTER II SESSION 2019/2020

COURSE NAME	\$ STATISTICS FOR REAL ESTATE
	MANAGEMENT

COURSE CODE : BPE 15102

PROGRAMME CODE : BPD

EXAMINATION DATE : JULY 2020

DURATION : 24 HOURS

INSTRUCTION

: ANSWER ALL QUESTIONS OPEN BOOK EXAMINATION

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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Q1 A large manufacturing company producing air-conditioner compressor believes the number of units of air-conditioner sold is related to atmospheric temperature. A Research and development officer conducted a study and gathered the data as in **Table Q1**.

emperature,	Sale,
()	(in thousand units)
20	50
36	67
40	80
45	/5
48	90
55	134
62	108
59	104
87	192
77	150
68	145
80	170
78	155
46	99
79	170
90	173
106	260
120	259
127	255
125	205

Table Q1: The temperature and sale of air-conditioner.

(a) Sketch a scatter plot for the data in **Table Q1**.

(4 marks)

(b) Find the estimated regression line by using the least square method. Interpret the result.

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(9 marks)

(c) Estimate the sale when the temperature is 152.

(2 marks)

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(d) Compute the coefficient of correlation, *r* and coefficient of determination, . Interpret these results.

(5 marks)

Q2 (a) A shopkeeper mixes a large portion of red sweets with green sweets in the ratio of three red sweets to one green sweets.

Find the probability that a packet of 6 sweets contains 4 or more red sweets.

(5 marks)

(b) The average running time of disks produced by Company A is 88.1 minutes and a standard deviation of 6.1 minutes, while Company B has a mean running time of 99.3 minutes with a standard deviation of 13.6 minutes.

Find the probability that a random sample of 41 disks from Company B will have a mean running time that at most 15 minutes more than the mean running time of a random sample of 32 disks from Company A.

(8 marks)

(c) Ten sample bottles of the product are selected at random and the foam heights observed are as follows (in millimetres)

210 215 194 195 211 201 198 204 208 196

Construct a 95% confidence interval for the population mean.

(7 marks)

(d) Two types of batteries are tested for their length of life and the length of battery life observed are as follows:

Battery A: 490 491 508 505 509 495 489 511 490 510 513 489 Battery B: 552 569 548 549 548 551 572 568 571 572

Test at 5% significance level that there are significant difference in the two batteries. Assume that the variances of population are unknown but equal.

(10 marks)

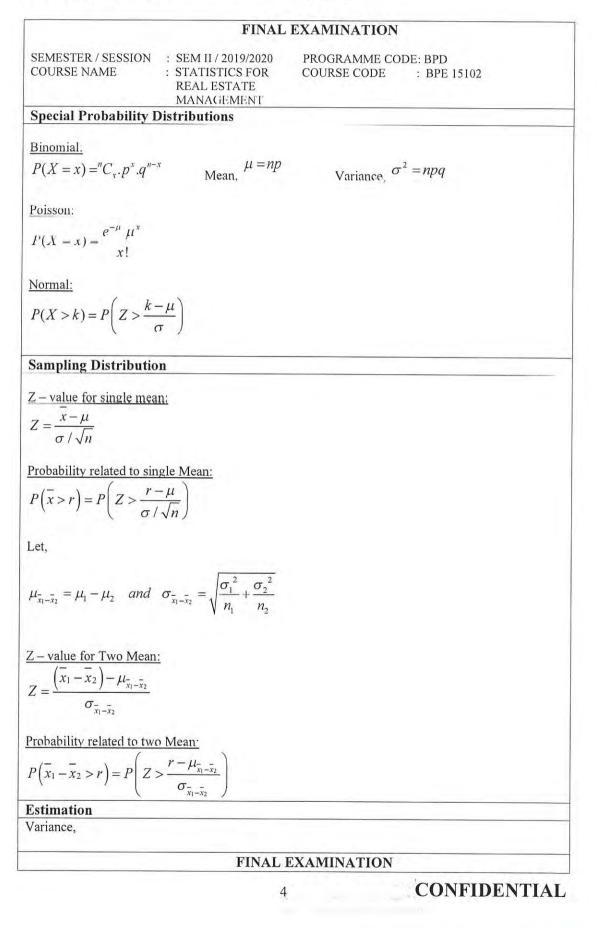
- END OF QUESTIONS

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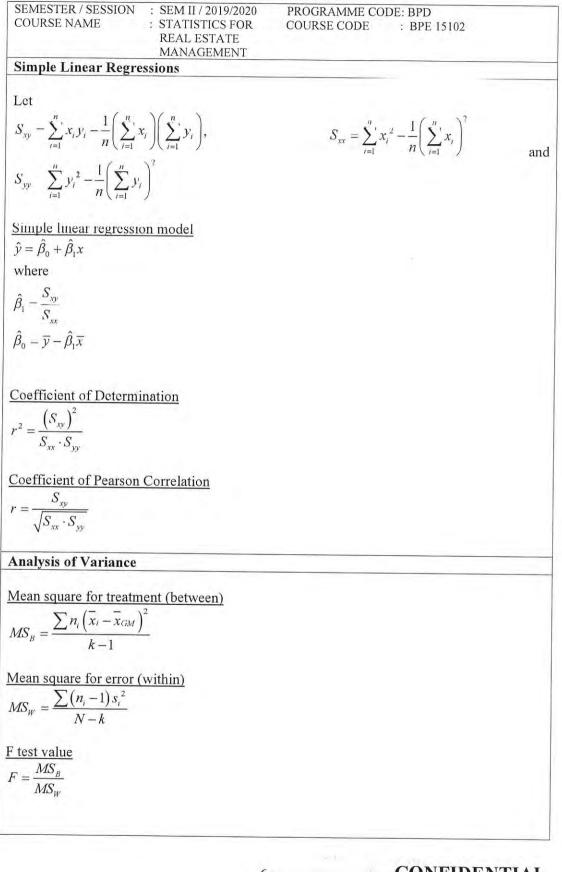
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onfidence interval for	single mean:	
		$\overline{z} = \overline{z_{\alpha/2}} \left(\sigma / \sqrt{n} \right) < \mu < \overline{x} + \overline{z_{\alpha/2}} \left(\sigma / \sqrt{n} \right) \right)$
	$\Rightarrow \sigma$ is unknown:	$\left(\overline{x} - z_{\alpha/2}\left(s / \sqrt{n}\right) < \mu < \overline{x} + z_{\alpha/2}\left(s / \sqrt{n}\right)\right)$
mall complex w < 20		
mall sample: $n < 30$ _	$\Rightarrow \sigma$ is unknown. ($\left(\overline{x} - t_{\alpha/2}\left(s / \sqrt{n}\right) < \mu < \overline{x} + t_{\alpha/2}\left(s / \sqrt{n}\right)\right)$
ypothesis Testing		
ypotnesis resting		
esting of hypothesis or	a difference betwe	en two means
Variances	Samples size	Charles I and
Unknown (Equal)	$n_1, n_2 < 30$	Statistical test
Unknown (Not equal)	$n_1, n_2 < 30$ $n_1 = n_2 < 30$	
and the second second	$ \eta - \eta_j < 50$	$T_{Test} = \frac{\left(\bar{x}_{1} - \bar{x}_{2}\right) - \left(\mu_{1} - \mu_{2}\right)}{\sqrt{\frac{1}{\mu}\left(s_{1}^{2} + s_{2}^{2}\right)}}$
		$\sqrt{\frac{1}{(s_1^2 + s_2^2)}}$
		111
Unknown (Not age al)	20	v = 2(n-1)
Unknown (Not equal)	$n_1, n_2 < 30$	$T_{Test} = \frac{\left(\bar{x}_1 - \bar{x}_2\right) - \left(\mu_1 - \mu_2\right)}{\sqrt{\frac{s_1^2 + s_2^2}{s_1^2 + s_2^2}}}$
		$T_{Test} = \frac{1}{\left(S_1^2 + S_2^2\right)}$
		$\sqrt{n_1 + n_2}$
		$\left(s^2, s^2\right)^2$
		$v = \frac{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)^2}{\left(S^2\right)^2 - \left(S^2\right)^2}$
		$v = \frac{(s^2)^2}{(s^2)^2} (s^2)^2}$
		$\left(\frac{s_1^2}{n_1}\right) \left(\frac{s_2^2}{n_2}\right)$
		$\frac{(n_1)}{n_1-1} + \frac{(n_2)}{n_2-1}$



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