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Name.....

Reg. No.....

FIRST SEMESTER M.B.A. DEGREE EXAMINATION, DECEMBER 2018

(CUCSS)

M.B.A.

BUS 1C 06—QUANTITATIVE TECHNIQUES

(2016 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A

Answer all questions.

Each question carries 1 weightage.

1. Explain the two types of estimation.
2. State the difference between null and alternative hypothesis.
3. Distinguish between one-way ANOVA and two-way ANOVA.
4. Distinguish between partial and multiple correlation.
5. What is SPSS ?
6. What do you mean by non-parametric tests ?

(6 × 1 = 6 weightage)

Part B

Answer any four questions.

Each question carries 3 weightage.

7. What are the important characteristics of Poisson distribution ? Mention three business situations where Poisson model is applicable ?
8. Assume that a factory has two machines. Past records show that machine 1 produces 30% of the items of output and machine 2 produces 70% of the items. Further, 5% of the items produced by machine 1 were defective and only 1% produced by machine 2 was defective. If a defective item is drawn at random, what is the probability that the defective item was produced by machine 1 or machine 2?
9. Describe the important properties of good estimator.
10. Explain the procedure for importing data files into SPSS.

Turn over

11. Making use of the data summarised below, calculate the co-efficient of correlation :

Case	:	A	B	C	D	E	F	G	H
X_1	:	10	6	9	10	12	13	11	9
X_2	:	9	4	6	9	11	13	8	4

12. On the basis of observations made on 39 cotton plants, the total correlation of yield on cotton (X_1), number of bolls, i.e., seed vessels (X_2) and height (X_3) are found to be $r_{12} = 0.8$; $r_{13} = 0.65$ and $r_{23} = 0.7$

Comment on the partial correlation between yield of cotton and the number of bolls, eliminating the effect of height.

(4 × 3 = 12 weightage)

Part C

Answer any three questions.

Each question carries 4 weightage.

13. Discuss the applications of conditional probability and Bayes' theorem in business parlance.
14. What do you mean by sampling ? Explain various techniques involved in sampling.
15. To see whether Silicon chip sales are independent of where the U.S economy is in the business cycle, data have been collected on the weekly sales of Zippy Chippy, a Silicon Valley firm, and on whether the U.S. economy was rising to a cycle peak, falling to a cycle trough, or at a cycle trough. The results are :

Economy	Weekly Chip Sales			Total
	High	Medium	Low	
At peak	20	7	3	30
At Trough	30	40	30	100
Rising	20	8	2	30
Falling	30	5	5	40
Total	100	60	40	200

- (a) Calculate a table for observed and expected frequencies.
- (b) State the null and alternative hypotheses.
- (c) Calculate the sample χ^2 Value.
- (d) At the 0.10 significance level, what is your conclusion ?

16. The following table shows the ages (X) and blood pressure (Y) of 8 persons :

X	:	52	63	45	36	72	65	47	25
Y	:	62	53	51	25	79	43	60	33

Obtain the regression equation of Y on X and find the expected blood pressure of a person who is 49 years old.

17. American Theatres knows that a certain hit movie ran an average of 84 days in each city, and the corresponding standard deviation was 10 days. The manager of the south eastern district was interested in comparing the movie's popularity in his region with that in all of American's other theatres. He randomly chose 75 theatres in his region and found that they ran the movie an average of 81.5 days.

- (a) State appropriate hypotheses for testing whether there was a significant difference in the length of the picture's run between theatres in the south eastern district and all of American's other theatres.
- (b) At a 1 percent significance level, test these hypotheses.

(3 × 4 = 12 weightage)

Part D

*Answer the compulsory question.
The question carries 6 weightage.*

18. Perform a two-way ANOVA on the data given below :

Plots of land	Treatment			
	A	B	C	D
1	38	40	41	39
2	45	42	49	36
3	40	38	42	42

(1 × 6 = 6 weightage)