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D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1

SEMESTER EXAMINATIONS

NOVEMBER – 2018 15CPCO1D

# ADVANCED BUSINESS STATISTICS

**Time : 3 Hrs Max. Marks : 75**

SECTION-A (5x6=30)

**Answer ALL the questions.**

1. (a) Explain partial and multiple correlation.

(Or)

(b) If r12 = 0.8, r13 = −0.4 and r23 = − 0.56, find partial correlation coefficient.

1. (a) Mention some of the characteristics and applications of normal distribution.

(Or)

(b) The mean of the binomial distribution is 5 and the standard deviation is 2. Determine the

distribution.

1. (a) Define sampling and explain any two methods of sampling with an example.

(Or)

(b) A sample of 400 students is found to have a mean height of 171.38cms. Can it be reasonably

regarded as a sample from a large population with mean height 171.17cms and standard

deviation 3.30cms? (The table value of z at 5% level is 1.96).

1. (a) Define Chi-square test and mention its uses and characteristics.

(Or)

(b) A random sample of employees of a large company was selected and the employees were asked

to complete a questionnaire. One question asked was whether the employees were in favour of

the introduction of flexible working hour. The following table classifies the employees by their

response and gender i.e., male and female

|  |  |  |
| --- | --- | --- |
| Response | Gender | |
| Male | Female |
| In favour | 57 | 83 |
| Not in favour | 33 | 27 |

Test whether there is evidence of a significant association between the response and

gender. (The table value of chi square for 1 df at 5 % level is 3.94).

1. (a) Describe the principle and the analysis of Randomized Block Design.

(Or)

(b) The Time taken by workers in performing a job are given below

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Method I | 20 | 16 | 26 | 27 | 23 | 22 |  |
| Method II | 27 | 33 | 42 | 35 | 32 | 34 | 38 |

Test whether there is any significant difference between the variances of time distribution.

(Table value of F for (6,5) df at 5% level is 4.28).

SECTION-B (3x15 =45)

**Answer any THREE of the following questions.**

1. If r12 = 0.7, r13 = 0.61 and r23 = 0.4, find the value of multiple and partial correlation coefficients.
2. A company has three machines M1, M2, M3 which produces 20%, 30% and 50% of the products respectively. Their respective defective percentages are 7, 3 and 5. From these products one is chosen and inspected. It is defective. What is the probability that it has been made by (i) Machine M1 and (ii) Machine M2.
3. The marks obtained by a group of 9 regular course students and another group of 11 part time course students in a test are given below:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Regular | 56 | 62 | 63 | 54 | 60 | 51 | 67 | 69 | 58 |  |  |
| Part time | 62 | 70 | 71 | 62 | 60 | 56 | 75 | 64 | 72 | 68 | 66 |

Examine whether the marks obtained by regular students and part time students differ significantly at 5 % level.

(Table value of t at 5 % level for 18 df is 2.101)

1. The results of a certain survey shows that out of 50 ordinary shops of small size, 35 are managed by men of which 17 are in cities, 12 shops in villages are run by women. Can it be inferred that shops run by women are relatively more in villages than in cities. (Table value of chi square is 3.84).
2. The following table gives monthly sales (in thousand rupees) of a certain firm in the three states by its four salesmen.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| States | Salesmen | | | |
| **S1** | **S2** | **S3** | **S4** |
| **A** | 6 | 5 | 3 | 8 |
| **B** | 8 | 9 | 6 | 5 |
| **C** | 10 | 7 | 8 | 7 |

Setup the analysis of variance table and test whether there is any significant difference

(i) between the sales by the firm salesmen and (ii) between sales in the three states.

(Table value of F for (2,6) df at 5% level is 5.14 and for (3,6) df at 5% level is 4.76)

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