**PG Odd Semester (CBCS) Exam., December—2017**

COMMERCE

**( 1st Semester )**

Course No. : COM–102 (S)

**( Research Methodology and Business Statistics )**

*Full Marks* : 75
*Pass Marks* : 30

*Time* : 3 hours

*The figures in the margin indicate full marks for the questions*

Answer **five** questions, taking **one** from each Unit

UNIT—I

**1.** Define research and its importance in business. 15

**2.** Discuss various methods of collection of primary data. 15





UNIT—II

**3.** Write short notes on the following : 5+5+5=15

*(a)* Type-I error and Type-II error

*(b)* Z-test

*(c)* Central limit theorem

**4.** *(a)* A machine is designed to produce insulating washers for electrical devices of average thickness of 0·025 cm. A random sample of 10 washers was to have an average thickness of 0·024 cm with a standard deviation of 0·002 cm. Test the significance of the deviation. (Value of $t$ for 9 d.f. at 5% level is 2·62) 8

*(b)* Write a short note on any *one* of the following : 7

*(i)* Sampling distribution

*(ii)* Tests of hypothesis

UNIT—III

**5.** Write short notes on the following : 7½+7½=15

*(a)* Parametric test vs. non-parametric test

*(b)* Conditions of the applications of non-parametric test

**6.** *(a)* Write a note on sign test or run test. 7

*(b)* To test the effectiveness of inoculation against cholera, the following table was obtained :

| | *Attacked* | *Not attacked* |
|---|---|---|
| *Inoculated* | 30 | 160 |
| *Not inoculated* | 140 | 460 |

The figures represent the number of persons. Does inoculation prevent attack for cholera?

(Given $^{2}_{05,1}$ 3 84; $^{2}_{05,2}$ 5 99 and $^{2}_{05,3}$ 7 815) 8

UNIT—IV

**7.** Discuss the concept of partial and multiple correlation and regression and their applications in business/business research. 2+2+2+2+7=15

**8.** *(a)* What is meant by association of attribute? Mention different kinds of association of attribute. 3+4=7

*(b)* Given, $r_{12\ 4}$ 0 6; $r_{13\ 4}$ 0 5 and $r_{23\ 4}$ 0 7. Find $r_{12\ 34}$ and $r_{13\ 24}$. 4+4=8





UNIT—V

**9.** *(a)* What is statistical quality control? 3

*(b)* Mention the causes of variation of quality. 5

*(c)* Mention the importance of the analysis of statistical quality control in commerce and management. 7

**10.** *(a)* What is meant by control chart? How can you construct control chart? Discuss. 4+4=8

*(b)* A drilling machine bores holes with a mean diameter of 0·5230 cm and standard deviation of 0·0032 cm. Calculate the 3-sigma upper and lower control limits. 7

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