

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

CLASS: MUP
BRANCH: MUP

SEMESTER : III
SESSION : MO/19

SUBJECT: MT601 RESEARCH METHODOLOGY

TIME: 3 HOURS

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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Q.1(a) Distinguish in between Descriptive and Applied research designs with distinct features and real life applications. [5]

Q.1(b) Discuss nature of Predictive research techniques with its real life applicability. [5]

Q.2 Design (i) Research Plan with Sampling scheme and (ii) Frame a Questionnaire for primary data collection to the following problem: [5+5]

“HERCULESis famous company making Cycles in India. Company has its diversification strategy of marketing and intends to launch new type of bicycles with a position it as a means of improving physical fitness as well as reducing environment pollution”

Q.3(a) Alphakoff is claimed to be effective in curing problem on cough and cold. In an experiment on 500 persons suffering cough and cold, half of them were given Alphakoff and half of them were given Sugar pills. Patient’s reactions to be the treatment are recorded in the following table: On the basis of this data, can it be concluded that there is a significant difference in the effect of Alphakoff and sugar pills? (Tabulated value of Chi Square at 5% LOS with 2 d.f is 5.99) [5]

	Helped	Harmed	No effect	Total
Drug: Alphakoff	150	30	70	250
Sugar Pills	130	40	80	250
Total	280	70	150	500

Q.3(b) An examination of 8 applicants for a clerical post was taken by a firm. From the marks obtained by the applicants in the accountancy and Statistics papers. Compute Rank Correlation by using Spearman’s Rank formula [5]

Applicant	A	B	C	D	E	F	G	H
Marks in Accountancy	15	20	28	12	40	60	20	80
Marks in Statistics	40	30	50	30	20	10	30	60

Q.4(a) For the variables X and Y, the regression equations are given as: $7X-3Y-18= 0$ and $4X-Y-11 = 0$. Find (i) Arithmetic means of X and Y, (ii) Identify Regression equation of Y on X and X on Y to find Regression coefficient of X on Y and also Y on X, (iii) Find Coefficient of Correlation. [5]

Q.4(b) A random sample is selected from each of the three makes of Ropes I, II and III show their breaking strength (in kgs.) are measured with the following results: [5]

Rope I	Rope II	Rope III
70	100	60
72	110	65
75	108	57
80	112	84
83	113	87
-	120	73
-	107	-

Test whether the breaking strength of the three types of ropes I, II and III differ significantly? (Given tabulated value of F with d.f : $F(2, 15) = 3.68$ at 5% LOS)

Q.5(a) Discuss Any Two of the followings with real life practical situation: [5+5]

1. Multiple Regression
2. ANOVA Table -Testing with Two-way Classification
3. Sampling Distribution
4. Business Forecasting

PTO
[5+5]