



**BRAINWARE UNIVERSITY**

**Coursework Examination 2018 – 19 (June 2019)**

**Programme – Doctor of Philosophy in Science/ Engineering/ Management**

**Course Name – Research Methodology I**

**Course Code – PHD-RM01**

**Time allotted: 4 Hours**

**Full Marks : 100**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

**Group –A**

(Objective Type Questions)

10 x 1 = 10

1. *Answer the following*
  - (i) Explain the term 'Fundamental Research'.
  - (ii) What are the different types of sampling?
  - (iii) Explain research ethics.
  - (iv) Distinguish between pure and applied research.
  - (v) What is self-plagiarism?
  - (vi) Name the types of surveys.
  - (vii) Define hypothesis.
  - (viii) Define literature survey.
  - (ix) What are the basic principles of experimental design?
  - (x) Arrange the sentences in proper sequence:
    - (a) formulating a hypothesis, (b) define the problem, (c) collecting the facts or data, (d) reaching certain conclusions, (e) analyzing the facts.

**Group – B**

(Short Answer Type Questions)

6 x 5 = 30

Answer any *six* from the following

2. Differentiate between primary and secondary data.

5

3. Differentiate between descriptive and analytical research. 5
4. Describe the technique applied in stratified random sampling. 5
7. (a) Distinguish between Type I and Type II. 3
- (b) Distinguish between one-tailed and two-tailed tests in hypothesis testing. 2
6. Explain, in brief, the three basic principles of experimental design. 5
7. Discuss the usefulness of the ANOVA technique. 5
8. Give the syntax of the function of Vlookup. 5
9. List the steps of conducting t test in SPSS. 5

### Group – C

(Long Answer Type Questions)

6 x 10 = 60

Answer any *six* from the following

10. Analyze any one format of indexing. 10
11. Analyze qualitative and quantitative research methods. 10
12. Appraise the scope of interdisciplinary research. 10
13. Explain format of a research report. 10
14. Describe different types of scaling techniques. 10
15. A random sample of five motor-car tyres is taken from each of 3 brands manufactured by three companies. The lifetime of these tyres (as measured by the mileage run) is shown below: 10

Lifetime of tyres ('000 miles)		
Brand A	Brand B	Brand C
35	32	34
34	32	33
34	31	32
33	28	32
34	29	33

On the basis of the given data, test whether the average lifetime of the 3 brands of tyres are equal or not.

16. Develop a questionnaire using Likert Scale. 10

17. A restaurant near the railway station was having average sales of 500 tea cups per day. Because of the development of bus stand nearby, it expects to increase its sales. During the first 12 days after the start of the bus stand, the daily sales were as under: 10

550, 570, 490, 615, 505, 580, 570, 460, 600, 580, 530, 526

On the basis of this sample information, can one conclude that the restaurant's sales have increased? Use 5 % level of significance.

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