SL No of QP 9853

Unique Paper Code(UPC): **2923060047**

Name of the Paper : **Research Methodology (DSE)**

Name of the Course : **BMS NEP**

Semester : VII

Duration : 3 hours

Maximum Marks : 90 Marks

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are **6 questions** in all. Each question carries **18 marks.**
3. **Attempt any 5 questions.**
4. Attempt all parts of a question together and show your workings clearly as a part of the solution.
5. Use of **simple calculator** is allowed.

Q1. GreenBasket, an online grocery delivery service, has experienced a decline in repeat purchases over the past year, especially among working professionals. The management believes that factors such as delivery speed, pricing, app usability, and product availability may be shaping customer behavior. To investigate this issue, the company intends to undertake a research study involving customer surveys, app usage data, and follow-up interviews across four metropolitan cities.
(i) Outline and explain the key steps in the research process that GreenBasket should follow, beginning with problem formulation and ending with report preparation.
(ii) Recommend a suitable research design for this study and provide justification for your choice.
(18)

Q2. A university intends to evaluate student satisfaction with online learning platforms implemented under the NEP reforms. To achieve this, the administration plans to develop a structured questionnaire focusing on teaching effectiveness, access to technology, assessment methods, and the overall learning experience. Outline the key steps in designing such a questionnaire. Discuss the appropriate types of questions and measurement scales to be employed, and explain how the validity and reliability of the instrument can be ensured. (18)

Q3. Explain the assumptions underlying linear regression. Explain how linear regression can be used in HR research to study the relationship between employee training hours and productivity.
(9)

(b) A researcher wants to examine whether there is an association between type of smartphone operating system and preferred mode of digital payment among 150 respondents. The observed data are given below:

Operating System	UPI	Debit Card	Credit Card	Total
Android	40	25	15	80
iOS	20	25	10	55
Others	5	5	5	15

Total	65	55	30	150

Formulate the null and alternative hypotheses and test whether digital payment preference is independent of operating system at 5% level of significance.

(χ^2 value at 5% level for 4 d.f. = 9.487) (9)

Q4(a) Discuss how different scales of measurement are used in market surveys. Provide examples of nominal, ordinal, interval, and ratio data collected in consumer preference studies. (9) (b)Discuss how uniform referencing practices contribute to academic integrity, reduce plagiarism, and facilitate cross-disciplinary communication. (9)

Q5. Explain how independent sample t-tests help in comparing group performance. Based on the given data, comment whether male and female students differ significantly in their average science project scores out of 1000. Evaluate the given table and explain thoroughly.

Group Statistics

	Student_Gender	N	Mean	Std. Deviation	Std. Error Mean
Project_Score	Male	16	530.63	80.372	20.093
	Female	14	673.57	44.308	11.842

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Project_Score	Equal variances assumed	4.486	.043	-5.907	28	.000	-142.94	24.19	-192.51	-93.38
	Equal variances not assumed			-6.129	23.902	.000	-142.94	23.32	191.09	-94.80

(18)

Q6(a) "Integrity is the cornerstone of academic inquiry." Critically analyze this statement by highlighting the role of honesty, transparency, and accountability in research. (9)

(b) A factory manager claims that the average daily output of workers is 200 units. A sample of 40 workers shows an average output of 210 units with a standard deviation of 18 units. Formulate the null and alternative hypotheses to test the company's claim. Explain the concepts of Type I error and Type II error in the context of this problem. Give an example of each type of error based on this scenario.

(9)