

Ph.D.
(PHDVET)
Term-End Examination
December, 2022

RVE-005 : RESEARCH METHODOLOGY –II

Time : 3 hours

Maximum Marks : 100

Note : *Attempt any **five** questions. All questions carry equal marks. Simple calculator will be allowed to students.*

1. (a) Calculate the mean and standard deviation from the following data set : 10

X →	2	4	6	8	10	12
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- (b) Explain 'p-value' and its significance in statistical analysis. 5
- (c) Describe median and calculate median for the following data : 5

6, 2, 5, 7, 10, 3

2. (a) Given random sample of 10,000 families in a city, the average income was obtained as ₹ 5,000 with a standard deviation of ₹ 400. Calculate Confidence Interval at 95% level of confidence. 10

(Z value at 95% confidence level is 1.96)

- (b) Prepare a simple bar diagram from the following data of wheat production in different states of a country : 10

State	A	B	C	D	E
Wheat production (in thousand tonnes)	20	12	15	08	10

3. (a) Which statistical test would you apply to :
- (i) Compare the frequency distribution of three or more groups of continuous data ?
(Explain with the help of examples)
- (ii) Assess the strength of association between two continuous variables with 'real values' ? 5+5=10
- (b) List out the steps involved in :
- (i) Research topic finalization
- (ii) Data analysis 5+5=10

4. A dice is thrown 132 times with the following result :

Number turned up	1	2	3	4	5	6
Frequency	16	20	25	14	29	28

Test the hypothesis that the dice is unbiased. 20

(Hint : Assume that the probability of each number turning up is equal)

(Given $\chi^2_{(5), 0.05} = 11.07$)

5. (a) Define Correlation. Given the results below, give your interpretation in 50 – 100 words. 10

(i) 'r' value for variables 'A' and 'B' is '- 0.9'

(ii) 'r' value for variables 'C' and 'D' is '+ 0.09'

(iii) 'r' value for variables 'X' and 'Y' is '+ 0.75'

(b) Explain Regression with its purpose and equation. Give the regression equation for finding 'Y' when 'X' is known. 10

6. (a) Formulate the null hypothesis, state the test to be applied and give the interpretation of the result (in both cases : i.e., H_0 is accepted and H_0 is rejected) for the research study given below : 10

“A researcher studies 25 people visiting India to attend a spiritual camp to cure hypertension and high blood pressure.”

(b) Describe paired t-test. 10

7. A researcher wishes to find out whether the average waiting time for a patient to meet a doctor in the emergency room at three hospitals (A, B and C) is equal or not. To study it, she/he takes a sample of the patients in the emergency rooms of each hospital on a particular day and records the waiting time. It is the time measured from the instance the patient arrives in the emergency room until she/he is attended by a doctor. The data obtained is as follows :

Waiting Time (in minutes)		
Hospital A	Hospital B	Hospital C
10	12	8
12	15	7
9	15	8
12	16	6
10	15	10
12	12	7
8	12	6

Assuming that the waiting time is normally distributed in each hospital and variances of all waiting time distributions are approximately equal :

- (a) Formulate the null and alternate hypothesis.
(b) Is there enough evidence that the average waiting time in the hospitals is equal at 5% level of significance ?

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(Given, $F_{(2, 18), 0.05} = 3.55$)