Indian Statistical Institute
Documentation Research and Training Centre
MS (LIS) (2020-21)
Second Semester Final Examination
Paper 8: Elements of Statistics and Research Methodology
Date: 14/07/2021

Time: 3.00 hrs   Maximum Marks: 60

Note: All questions are compulsory. This question paper consists of 4 parts. Marks corresponding to each part are printed in bold. Scientific Calculator is allowed. Necessary distribution tables will be provided on demand.

Part A: **3X1**
(This part consists of 3 Multiple Choice Questions. Choose the best answer out of the given options.)

1. The limits of the coefficient of skewness are
   a. 1
   b. 2
   c. 3
   d. ___

2. A school librarian wants to conduct a survey on student satisfaction with library services. You were tasked with contacting your classmates about their opinion and then presenting them to the librarian. Would you say this was population or sample data? What is the value you presented called?
   a. Population, Statistic
   b. Population, Parameter
   c. Sample, Statistic
   d. Sample, Parameter

3. The mode of a distribution is 8. What is the median of the distribution, given that the median of distribution is twice of its arithmetic mean.
   a. 2
   b. 4
   c. 8
   d. 10

Part B: **6X2**
(This part has 6 questions. Answer all the questions.)

4. What is research?
5. Distinguish between the sampling and non-sampling error.
6. Which measure of central tendency will be suitable to compare:
   a. Size of agricultural holdings
   b. Per capita income of several countries
   c. The intelligence of students in a class

d. Heights of students in two classes

7. Write a note on Type I and Type II errors.
8. What is the degree of freedom?
9. Write a short note on Standard Error.

Part C

5X5

(This part consists of 6 questions. Attempt any 5.)

10. Differentiate between explanatory and exploratory type of research.
11. Differentiate between research method and research methodology.
12. Justifying the need for measurement in research, explain various levels/scales of measurements with one-one example each.
13. The daily salaries of 31 workers are given below:

Salary (in ₹)	0-50	50-100	100-150	150-200	200-250	250-300
No. of Workers	3	4	6	8	7	3

Calculate the arithmetic mean, median, mode, standard deviation and variance for the above data.

14. A sample of 16 circuits from a large normal population has a mean resistance of 3.30 ohms. The sample standard deviation is 0.35 ohms. Determine a 95% confidence interval for the true mean resistance of the population.
15. State the null and alternative hypotheses of the following tests:
    a. You want to test if your height is above average, compared to your classmates.
    b. You want to test if the Manmohan administration issued fewer executive orders than the Vajpayee administration.

Part D

10X2

(This part consists of 3 questions. Attempt any two.)

16. What is a research design? Explain all the steps of a Research Design?
17. Heights (in inches) of fathers(X) and their sons(Y) are given as follows:

X	63	64	65	65	66	67	68	70
Y	65	66	64	66	68	70	69	71

a. Obtain the equations of the lines of regression.
b. Find the most likely height of X corresponding to the height 75 inches of Y.

18. Set up an analysis of variance table (ANOVA) for the following per acre production data for four varieties of paddy, each grown on five plots. Verify if the variety of differences are significant at the 5% level.

Per acre production data			
Plot of land	Variety of paddy		
	A	B	C
1	5	5	7
2	5	4	6
3	3	3	4
4	7	4	5
5	5	4	8