M. Sc DEGREE END SEMESTER EXAMINATION - OCT 2020 : FEBRUARY 2021
SEMESTER 1 : ENVIRONMENTAL SCIENCE
COURSE : **16P1EVST02 : RESEARCH METHODOLOGY - I**
(For Regular - 2020 Admission and Supplementary - 2016/2017/2018/2019 Admissions)

Time : Three Hours   Max. Marks: 75

PART A
Answer any 10 (2 marks each)

1. List the different graphical representations of data? Give details of any two.
2. Define probability sampling.
3. State the merits and demerits of mean.
4. What are the merits and demerits of 'Mode'?
5. Explain the term skewness.
6. How to calculate the mode for a discrete frequency data?
7. What are different types of correlation?
8. Explain regression
9. State addition theorem of probability.
10. Define Binomial distribution.
11. Define Z-test.
12. Briefly explain 'Statistical hypothesis'.

(2 x 10 = 20)

PART B
Answer any 5 (5 marks each)

13. What is simple random sampling? Discuss its relative merits and demerits.
14. Find the median of the following data giving the income of ten officers of a company Salary : 1000 1500 1580 2000 2500 3000 No. of officers: 1 1 4 2 1 1
15. Find standard deviation for the following data

X	18	19	20	21	22	23	24	25	26	27
f	3	7	11	14	18	17	13	8	5	4

16. The rank of the same 15 students in two subjects A and B are given below: the two numbers within the brackets denoting the ranks of the same students in A and B respectively. Compute rank correlation coefficient
(1,10) (2,7) (3,2) (4,6) (5,4) (6,8) (7,3) (8,1) (9,11) (10,15) (11,9) (12,5) (13,14) (14,12) (15,13)
17. A card is drawn from an ordinary pack of cards and a gambler bets that it is either a spade or ace. What are the odds against winning the bet?
18. Write brief notes on a) Standard error b) Null hypothesis c) Type I and type II errors
19. Define 'Vital statistics' and list out its uses.
20. What are the different measures of vital statistics?

(5 x 5 = 25)

21. What do you mean by histogram and ogive? Explain their construction with the help of sketches?

22. From the following data find the standard deviation and coeffienct of variation.
    Wage   : 0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80
    No. of persons: 12   30   65   107   157   202   222   230

23. Calculate Pearson's correlation coefficient

X	12	18	16	15	12	10	20	17
Y	6	10	9	8	9	8	12	10

24. Define regression. The following data are sparrow wing lengths at various times after hatching. Find out the regression equations and estimate the age (days) of the sparrow when the wing lenth is 3.5cm.

Age (Days)	3.0	4.0	5.0	6.0	8.0	9.0	10.0	11.0	12.0	14.0
Wing length (cm)	1.4	1.5	2.2	2.4	3.1	3.2	3.2	3.9	4.1	4.7

(15 x 2 = 30)