

~~2023~~ 2022

Time : 3 hours

Full Marks : 50

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

*Answer from **all** the Groups as directed.*

Group – A

(Objective Type Questions)

1. [A] Fill in the blanks of the following : $1 \times 5 = 5$
 - (a) The second quartiles is also called _____.
 - (b) The range of simple correlation coefficient is _____.
 - (c) b_{xy} . b_{yx} is euqal to _____.
 - (d) _____ is the difference between the maximum and minimum data entries in the set.
 - (e) The arithmetic mean of first ten natural number is _____.

[B]. Choose the correct answer of the following :

$$1 \times 5 = 5$$

(a) The modal value of 1, 2, 3, 4, 5, 2, 3, 4, 2, 3, 4, 2, 2, and 2 is :

- (i) 5
- (ii) 4
- (iii) 3
- (iv) 2

(b) In which distribution, mean, mode and median are same ?

- (i) Normal distribution
- (ii) Binomial distribution
- (iii) Poisson distribution
- (iv) None of these

(c) In an experiment, the sum of the probability of all possible events is equal to :

- (i) 0
- (ii) 1
- (iii) -1
- (iv) None of these

(d) For any two events A and B :

- (i) $P(A \cap B) = P(A) \cdot P(B | A)$
- (ii) $P(A \cap B) = P(B) \cdot P(A | B)$
- (iii) $P(A \cap B) = P(A) \cdot P(B)$
- (iv) Both (i) and (ii)

(e) The standard deviation of the first 'n' natural number is :

(i) $\frac{n^2 - 1}{12}$

(ii) $\frac{n(n^2 - 1)}{12}$

(iii) $\frac{n^2 - 1}{12n}$

(iv) None of these

Group – B

(Short-answer Type Questions)

2. Answer any four questions of the following :

$$3 \times 4 = 12$$

- (a) Define correlation and types of correlation.
- (b) Define central tendency of the data and its types with example.
- (c) What do you mean by skewness ?
- (d) What is probability ? Show that the probability of an event lies between 0 and 1.
- (e) Find the mean and variance of Binomial distribution.
- (f) What are uses of regression Analysis ?

Group – C

(Long-answer Type Questions)

3. Answer any four questions of the following :

$$7 \times 4 = 28$$

- (a) Define statistics, its scope and importance.
- (b) Discuss the Poisson distribution. Obtain its mean and variance. Show that the Poisson distribution is a limiting case of Binomial distribution.
- (c) Discuss normal distribution with its properties.
- (d) Define probability. Explain addition and multiplication rule / theorem giving suitable examples.
- (e) Define correlation coefficient. Show that correlation coefficient lies between -1 to $+1$.
- (f) What do you mean by standard deviation ? Explain with example. Write down its merits and demerits.

