

2018

Time : 2 hours

Full Marks : 50

All questions from Section A is compulsory and attempt any five from Section B

*The figures in the right-hand margin indicate marks  
Candidates are required to answer in their own words  
as far as practicable*

(STATISTICAL METHODS)

SECTION—A

1. Fill in the blanks : 5
- (i) Variance = ( )<sup>2</sup>
  - (ii) Sum of squares of the deviations is minimum, when deviations are taken from \_\_\_\_\_.
  - (iii)  $\beta_2 > 3$ , the distribution is said to be kurtosis and the curve is known as \_\_\_\_\_.

- (iv) In a perfectly symmetric curve, the skewness coefficient is \_\_\_\_\_.
- (v) \_\_\_\_\_ is the simplest form of measure of dispersion.
- (vi) The modal value of the distribution is {21, 24, 39, 45, 44 and 34 } \_\_\_\_\_.
- (vii) The no. of class ( $k$ ) in the frequency distribution table is determined by the formula given by Yule is \_\_\_\_\_.
- (viii) The intersection of the curves of both the cumulative frequencies (< and > types) is called \_\_\_\_\_ curve.
- (ix) The probability distribution value ranges from \_\_\_\_\_ to \_\_\_\_\_.
- (x) The percent of standard deviation over mean is called \_\_\_\_\_.

2. Match the followings :

5

- | A                               | B   |
|---------------------------------|---|
| (a) Mesokurtic curve            | (i) $\beta_1 < 0$                         |
| (b) CF (less than type)         | (ii) Reciprocal of average of reciprocals |
| (c) Left skewed                 | (iii) 1                                   |
| (d) Standard deviation          | (iv) 2nd Quartile value                   |
| (e) Karl Pearson                | (v) $\beta_2 = 3$                         |
| (f) $\mu_1$                     | (vi) OGIVE curve                          |
| (g) H.M                         | (vii) Upper value of the class            |
| (h) 50 <sup>th</sup> percentile | (viii) Skewness coefficient               |
| (i) Median                      | (ix) (product of C. V and mean)/100.      |
| (j) $P(A) + P(\bar{A})$         | (x) Kurtosis                              |

3. Select the *correct* alternatives out of given choices : 5

(i) Which of the following is the measure of central tendency ?

- (a) Range
- (b) Standard deviation
- (c) Variance
- (d) Harmonic mean

(ii) Which measure of dispersion ensures lowest degree of reliability ?

- (a) Range
- (b) Quartile deviation
- (c) Standard deviation
- (d) Mean deviation

(iii) If  $A$  &  $B$  are two mutually exclusive events, the probability of occurrence of either  $A$  or  $B$  is given by ?

- (a)  $P(A) + P(B)$

(b)  $P(A \cup B)$

(c)  $P(A \cap B)$

(d)  $P(A) \cdot P(B)$

(iv) The certainty in the probability is measured by

(a) 0

(b)  $\frac{1}{2}$

(c) 1

(d) None of these

(v) An integer is chosen from 1 to 20. The probability that the number is divisible by 4

(a)  $\frac{1}{2}$

(b)  $\frac{1}{4}$

(c)  $\frac{3}{4}$

(d)  $\frac{1}{5}$

(vi) If 10 plants average height is 50 cm with standard deviation is 5 cm, then the relative measure of dispersion factor will be

- (a) 25 %
- (b) 10%
- (c) 5%
- (d) 50%

(vii) With the help of histogram we can draw

- (a) Frequency polygon
- (b) Frequency curve
- (c) Frequency distribution
- (d) All of these

(viii) Which value is most affected by the extreme values

- (a) Mean
- (b) Median
- (c) Mode
- (d) None of these

(ix) For a set of data {8,8,8,8,8} the standard deviation value is ?

- (a) 1
- (b) 0
- (c) 8
- (d) None of these

(x) Which of the following can be classified as continuous data ?

- (a) Colour of the seed
- (b) Weight of the seed
- (c) No. of seeds
- (d) All of the above

4. Define the following :

1 × 5

- (i) Primary data
- (ii) Co-efficient of variation
- (iii) Type-2 error
- (iv) Histogram
- (v) OGIVE curve

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SECTION-B

Answer any five questions : 6 × 5

5. Define measures of dispersion. Discuss all the measures of dispersion and its uses with suitable example ?
6. Differentiate between SRSWR & SRRWOR. Explain advantage of sampling over complete enumeration.
7. What do you mean by coefficient of variation ? Define standard deviation for grouped and ungrouped data. Give its properties.
8. What do you mean by kurtosis, explain it with an example ?
9. What is correlation & regression ? Discuss in details with suitable example ?

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10. What is meant by cause and effect ? State the properties of regression coefficient. From the following data, find the regression equation ?  
 $\Sigma X = 21, \Sigma Y = 20, \Sigma X^2 = 91, \Sigma XY = 74, n = 7$
11. What is central tendency ? Explain how to calculate the arithmetic mean, median and mode for raw and grouped data ?