First Year B. Sc. (Sem. I) Examination
March/April – 2016
Statistics : Paper - 102

Time : 2 Hours] [Total Marks : 50

Instrutions:

(1) Fill up strictly the details of \( \ast \) signs on your answer book.

Name of the Examination:
F. Y. B. Sc. (Sem. I)
Name of the Subject:
STATISTICS : PAPER - 102
Subject Code No.: 2917 Section No.(1, 2,.....) Nil

(2) There are 50 questions in the question paper and each question carries one (1) mark and all are compulsory.

(3) Read the question carefully before selecting the correct option.

(4) Statistical and logarithmic tables will be supplied on request.

(5) Use of non-programmable scientific calculator is allowed.

O.M.R. Sheet भरवा अंगेली अंकनाची सूचनांना उपेक्षा
O.M.R. Sheet-ती पाण्यास काशी.

Important instructions to fill up O.M.R. Sheet are given on back side of the provided O.M.R. Sheet.

DE-2917_D 1 [ Contd...
1. The coefficient of quartile deviation of a frequency distribution is 0.3. If \( Q_3 = 30 \) then find \( Q_1 \).

(A) 17.15
(B) 18.15
(C) 19.15
(D) 16.15

2. The coefficient of variation of a frequency distribution is 36.8%. If the mean of the distribution is 100, then the standard deviation of the distribution is

(A) 34.8
(B) 35.8
(C) 36.8
(D) 33.8

3. Find the coefficient of variation if \( \bar{x} + S = 28, n = 15, \sum (x_j - \bar{x})^2 = 540 \).

(A) 27.27%
(B) 28.27%
(C) 29.27%
(D) 26.27%
4. Find the harmonic mean for the observations \(\frac{5}{4}, 5, 4, 20\) माटे क्रमांक मण्डक

(A) 2.08

(B) 2

(C) 4

(D) 3.08

5. If for a series the weighted mean = 24.7 and \(\sum w_i = 18 + 3a\), \(\sum x_i w_i = 541 + 50a\) क्राष तो अन्नी एक्स्केमा में निष्प.

If for a series the weighted mean = 24.7 and \(\sum w_i = 18 + 3a\), \(\sum x_i w_i = 541 + 50a\), then find the value of \(a\).

(A) 2

(B) 3

(C) 4

(D) 1

6. Find the mean of the following distribution.

<table>
<thead>
<tr>
<th>(X)</th>
<th>7</th>
<th>12</th>
<th>16</th>
<th>22</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>(F)</td>
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<td>5</td>
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(A) 15.09

(B) 20.80

(C) अपेक्षाकृत एक निण/None of above

(D) 16.40
7 If $x$ is a positive number and the median of the observations $x, 5x, 3x, 2x, 6x, 8x, 8x+1$ is 10 then find the value of $x$.
   (A) 2
   (B) 3
   (C) 4
   (D) 1

8 25% of the observation for frequency distribution are less than 29 and 25% are more than 40 then find the quartiles of the distribution
   (A) 25, 29
   (B) 40, 25
   (C) None of these
   (D) 29, 40

9 The s.d. of 25 observations is 2. If 4 is subtracted from each observation, the new s.d. is
   (A) 2
   (B) 4
   (C) 6
   (D) 0

10 If the mode of $2y - 6x = 6$ and the mode of $y$ is 66, then the mode of $x$ is
   (A) 21
   (B) 22
   (C) 23
   (D) 20
11. Find the median of the first 10 natural numbers.
   (A) 0
   (B) 5
   (C) 5.5
   (D) 10

12. The percentile rank of a student's marks in a class of 40 students is 96.25. Find his rank in class.
   (A) 2
   (B) 5
   (C) 15
   (D) 40

13. For a variable X if \( \frac{1}{n} \sum_{i=1}^{n} x_i = 3, \frac{1}{n} \sum_{i=1}^{n} x_i^2 = 25 \), then \( \frac{1}{n} \sum_{i=1}^{n} (5x_i) = \) ________.

14. The second moment about point 5 for the observations 3, 4, 6, 7, 10 is ________.
   (A) 7
   (B) 9
   (C) 10
   (D) 5
15. The first three moments about point 2 is 1, 16, -40 then the second raw moment is
(A) 22
(B) 24
(C) 26
(D) 20

16. If the first four central moments are 0, 14.75, 39.75 and 142.31 then \( \beta_1 = \) _______.
(A) 0.5923
(B) 0.6923
(C) 0.7923
(D) 0.4923

17. The first four central moments are 0, 2.49, 0.7, 18.32 then \( \beta_2 = \) _______.
(A) 0.0317
(B) 0.0417
(C) 0.0517
(D) 0.0217

18. If the mean and standard deviation of random variable X is 3 and 5 then \( \frac{1}{n} \sum (3x+7) = \) \( \) _______.
(A) 12
(B) 14
(C) 16
(D) 10
19  A random variable $X$ has $\frac{1}{n}\sum x = 3$, $\frac{1}{n}\sum x^2 = 25$. Then $\frac{1}{n}\sum (x - \bar{x})^2 =$

For a random variable $X$, $\frac{1}{n}\sum x = 3$, $\frac{1}{n}\sum x^2 = 25$ then

$\frac{1}{n}\sum (x - \bar{x})^2 =$

(A) 12  
(B) 14  
(C) 16  
(D) 10

20  A random variable $X$ has mean 3 and standard deviation 5. If the mean and standard deviation of random variable $X$ is 3 and 5 respectively then the second raw moment is

(A) 32  
(B) 34  
(C) 36  
(D) 30

21  A random variable $X$ has mean 3 and standard deviation 5. If $y = 9 - 3x$, then $\frac{1}{n}\sum (y - \bar{y})^2 =$

$\frac{1}{n}\sum (y - \bar{y})^2 =$

The mean and standard deviation of variable $X$ are 5 and 3 respectively and $y = 9 - 3x$, then $\frac{1}{n}\sum (y - \bar{y})^2 =$

(A) 80  
(B) 81  
(C) 91  
(D) 70
22 The arithmetic mean and geometric mean of two observations are 10 and 6 respectively. Then the observations are

(A) 18, 8
(B) 18, 6
(C) 18, 2
(D) 18, 10

23 If a constant 5 is subtracted from each observation of a series, the variance is

(A) reduced by 25
(B) unaltered
(C) increased by 25
(D) reduced by 5

24 Range of a set of values is 65 and maximum value in the series is 83. The minimum value of the series is

(A) 9
(B) 18
(C) None of above
(D) 74
If each value of the series is multiplied by 10, the coefficient of variation will be increased by

(A) 10%
(B) 15%
(C) 0%
(D) 5%

Out of all measures of dispersion, the easiest one to calculate

(A) range
(B) variance
(C) quartile deviation
(D) standard deviation

If mean and standard deviation of 8 observations in a sample are 9 and 4 respectively. The second sample of size 4 the mean and standard deviation are 15 and 3, then the combined variance of two samples is

(A) 21.66
(B) 31.66
(C) 41.66
(D) 11.66
28. Sum of squares of the deviation from the mean is divided by the total numbers is called

(A) quartile deviation
(B) range
(C) variance
(D) standard deviation

29. The standard deviation of the five observations 5,5,5,5,5 is

(A) 1
(B) 2
(C) 5
(D) 0

30. The sum of square of the deviation is minimum when the deviation is taken from

(A) median
(B) mode
(C) zero
(D) mean
31. \( X \text{ नो ध्वनि भाटे AM=25, HM=9 कोष रूपे GM = } \\
For the values of \( X, \text{ AM}=25, \text{ HM}=9 \) then GM is \\
(A) 15 \\
(B) 5.83 \\
(C) 16 \\
(D) 17

32. \( \text{अवबोधनो } 0, 1, -1, -2, 6, 4, 5, 8, 12, 10, 11 \text{ भाटे बैठो अनुबंधक} \\
The second quartile of the observations 0, 1, -1, -2, 6, 4, 5, 8, 12, 10, 11 is \\
(A) 5 \\
(B) 6 \\
(C) 8 \\
(D) 4

33. \( \text{शीर्ष अनुबंधक} \text{ क्षेत्र के बारे अवबोधनो नी कारी} \\
The percentage of values of a set which is beyond the third quartile is \\
(A) 50 \\
(B) 75 \\
(C) 25 \\
(D) 100

34. \( \text{सतत आयुत्प वितरण} \text{ माटे बाहुल्यता सूचक कई पद्धति पर आधारित है?} \\
(A) विनिर्देश \\
(B) ईस्टर्न \\
(C) आधेश मांडी एक प्ल्या नहीं \\
(D) अवाल्य \\
The formula of mode for the continuous frequency distribution is depends on \\
(A) extrapolation \\
(B) iteration \\
(C) None of these \\
(D) interpolation
The mode of the observations 3, 6, -1, -2, 2, 1, 0, -1, -4, 5 is

(A) 1
(B) 2
(C) -1
(D) 0

The geometric mean of the two observations 5 and -5 is

(A) -5
(B) 0
(C) None of these
(D) 5

The mean of seven observations is 8. A new observation 16 is added, the mean of 8 observations is

(A) 9
(B) 8
(C) 24
(D) 12
38 2, 4, 8, 64 तार अंकों गुणोत्तर मध्यक

The geometric mean of four numbers 2, 4, 8, 64 is

(A) 4
(B) 6
(C) 8
(D) 2

39 एक समूहात 30 अवश्यकतांको मध्यक 22.8 अनेक वैदिक समूहात 20 अवश्यकतांको मध्यक 18.2 टी को बने समूहातो मिश्र मध्यक शोधा.

The mean of 30 observations of a group is 22.8 and the mean of 20 observations of another group is 18.2. Find the combined mean of two groups.

(A) 21.96
(B) 22.96
(C) 20.96
(D) 19.16

40 नीचे दिले माहिती मात्र वारित मध्यक शोधा:

The weighted mean of the following information is

<table>
<thead>
<tr>
<th>X</th>
<th>56</th>
<th>42</th>
<th>55</th>
<th>45</th>
<th>49</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>3</td>
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(A) 40
(B) 50
(C) 60
(D) 20
41 20 observations mean 38.5. One observation 26 is replaced by 36. What is the correct mean?
(A) 39
(B) 36
(C) 26
(D) 35

42 The sum of all observations is 410 and its mean is 16.4. Hence the total number of observations of the series is
(A) 25
(B) 30
(C) 35
(D) 20

43 4, 3, 9, x, 6 mean 5.4. Find x.
The mean of 4, 3, 9, x, 6 is 5.4 then x is
(A) 4
(B) 3
(C) 2
(D) 5

44 In a music competition the rank of Mahesh is 5 out of 20 competitors. Find his percentile rank.
(A) 77.5
(B) 87.5
(C) 97.5
(D) 67.5
In a frequency distribution $P_{72} = 82$ then find the percentile rank of 82.

(A) 82
(B) 40
(C) 30
(D) 72

If $\bar{x} - M = 5$ and $Z = 26.5$ then $M$ is

(A) 36.54
(B) 46.54
(C) 56.54
(D) 26.54

The geometric mean of three observations is 6 and two observations are 6 and 12. Find the third observation.

(A) 6
(B) 10
(C) 12
(D) 3
48 अवबोधनो 5, 6, 7, 8, 9 माटे विचारण शोधो।

Find the variance for the observations 5, 6, 7, 8, 9.

(A) 2
(B) 5
(C) 7
(D) 1

49 एक श्रेणी माटे $Q_1 = 17.4$ अने $Q_3 = 25.6$ छोप तो न्युनत्वक विचारण भेद्यो।

For the series $Q_1 = 17.4$ and $Q_3 = 25.6$ then find coefficient of quartile deviation.

(A) 0.17
(B) 0.18
(C) 0.19
(D) 0.16

50 50 अवबोधनो माटे भवनक्षंभीय बीकिला वन विचारण नो सर्वावधि 192 छ। तो सर्वेश्चम विचारण शोधो।

The sum of absolute deviation from mean for 50 observations is 192, then find mean deviation.

(A) 3.84
(B) 4.84
(C) 5.84
(D) 2.84