DF-3031
Second Year B. Sc. (Sem. III) Examination
March / April - 2016
Statistics : Paper - 303
(Sampling technique)

Time : Hours] [Total Marks : 50

Instrucions :

1. Fillup strictly the details of signs on your answer book.
   Name of the Examination : SECOND YEAR B. SC. (SEM. III)
   Name of the Subject : STATISTICS : PAPER - 303
   Subject Code No. : 3031 Section No. (1, 2,....) : 3

2. All questions are compulsory.

3. Statistical and logarithmic tables will be supplied on request.

4. Use of non-programmable scientific calculator is allowed.

SECTION - A : Q. 1 to 10 Multiple choice questions : (1 mark)
SECTION - B : Q. 11 to 20 Multiple Choice Questions : (2 marks)
SECTION - C : Q. 21 to 25 Multiple choice questions : (4 mark)

O.M.R. Sheet बरेक आंगणी अध्ययनी तथ्याचे आपले
O.M.R. Sheet मध्ये पाचण घेऊन घ्यावे.
Important instructions to fillup O.M.R. Sheet are
given on back side of the provided O.M.R. Sheet.

DF-3031_D ] 1 [Contd...
The error in a survey other than sampling error are called

(A) Planning error
(B) Non sampling error
(C) None of the these
(D) Formula error

An estimator can possess

(A) Any value
(B) Both A Fixed Value and Any value
(C) None of A Fixed Value and Any value
(D) A Fixed Value

Having the sample observations $x_1, x_2, \ldots, x_n$ the formula for sample mean

(A) $n \sum x_i$

(B) $\frac{1}{n} \sum x_i$

(C) None of these

(D) $\frac{n}{N} \sum x_i$
4. Which of the following advantage of systematic sampling you prove?
   (A) Economical
   (B) Spread of sample over the whole population
   (C) All of these
   (D) Easy selection of sample

5. Stratified sampling is not preferred when the population is
   (A) Heterogeneous
   (B) Homogeneous or Heterogeneous
   (C) None of Homogeneous and Heterogeneous
   (D) Homogeneous

6. If the number of units constituting the population is fixed and limited
   (A) In-finite population
   (B) Real population
   (C) Hypothetical population
   (D) Finite population
7. The summarization of a list of monophonic tape samples is called
(A) Complete enumeration
(B) Census
(C) Both Complete enumeration and Census
(D) Sample survey

8. The total numbers of possible samples of size n taken from a population of N units without replacement are:
(A) \(n^N\)
(B) \(\binom{N}{n}\)
(C) None of these
(D) \(N^n\)

9. The total numbers of possible samples of size n taken from a population of N units without replacement are:
(A) SRSWR
(B) Both SRSWOR and SRSWR
(C) None of SRSWOR and SRSWR
(D) SRSWOR

10. Probability of selection of unit varies at each subsequent draw in
(A) SRSWR
(B) Both SRSWOR and SRSWR
(C) None of SRSWOR and SRSWR
(D) SRSWOR

Simple random sample can be selected with the help of
(A) Chit Method
(B) Roulette Wheel
(C) All the these
(D) Random numbers table
11. How many total numbers of the samples of size two without replacement from the population having observations 2, 3, 4, 5, 11?

(A) 10
(B) 11
(C) 12
(D) 9

12. How many samples are drawn with replacement of size 5 from the finite population of having 25 units?

(A) $25^5$
(B) $25^2$
(C) 25
(D) $25C_5$

13. Random sample of size 6 is taken from the class of 60 students. Their monthly expenditure in Rs. are as follows:

132, 168, 88, 140, 92, 100

Considering this sample estimate the total monthly expenditure of total students of the class.

(A) 7100
(B) 7200
(C) 7300
(D) 7000
14. Find the standard deviation of \( \hat{p} \) from the following information:

\[ N = 1000, \ N - n = 900, \ S^2 = 144 \]

(A) 1148.42
(B) 1158.44
(C) 1168.44
(D) 1138.42

15. In a class of 96 students with roll numbers 1 to 96. It is desired to take sample of 10 students, using systematic sampling method the possible sample may be

(A) 1, 9, 17, 26, 35, 44, 53, 62, 71, 80
(B) 1, 11, 21, 31, 41, 51, 61, 71, 80, 91
(C) 1, 11, 21, 31, 41, 51, 61, 71, 81, 91
(D) 1, 10, 19, 28, 37, 46, 55, 64, 73, 81

16. The population observations are 1, 2, 4, 5. The possible random sample of size two without replacement can be -

(A) (1,2), (1,4), (1,5), (5,1), (2,4), (4,5)
(B) (1,2), (2,4), (4,5), (5,1)
(C) (1,2), (1,4), (1,5), (2,4), (2,5), (4,5)
(D) (1,3), (2,4), (4,5), (5,1), (1,2), (2,5)

17. The population observations are 10, 18, 20, 25, 32. Select a random sample of size two without replacement from the population. Find expected value of sample mean:

(A) 20
(B) 21
(C) 22
(D) 19
18  पूर्ववशी वर्ग परसंक दरेका ये करणां शक्त निर्धारण
(11, 15), (12, 11), (15, 12), (11, 14), (14, 15), (14, 12) आहे.
तो समवेत मध्यक म्हणून.

The possible random samples of size two without replacement are:
(11, 15), (12, 11), (15, 12), (11, 14), (14, 15), (14, 12)

Then the population mean is
(A) 13
(B) 14
(C) 15
(D) 12

19  एक समूहात 10 अंकांस आहेत. तेमांटीचे n करणां पूर्ववशी सहित अंकाच्या शक्त निर्धारणाच्या हुय संगमा 1000 भंडे आहे ते नंतरी संगमा शेष.

If the total numbers of samples with replacement are 1000 selected from the population has 10 units. If the sample of n units is selected, then find the value of n.
(A) 2
(B) 3
(C) 4
(D) 1

20  एक सार्वत्रिक समूहाती पूर्ववशी सहित चार अंकांस शक्त निर्धारणाच्या हुय संगमा 4096 भंडे आहे. तो ते समूहाती हुये अंकांस अंकांस आहेत?

If the total numbers of samples are 4096 selected from the finite population.
If the sample of size four is selected with replacement, then how many units are in the population ?
(A) 8
(B) 10
(C) 11
(D) 7
21 \[ V(\bar{X}) = 4,60,000 \] 
for the population having 100 units. Then find the sample variance if the simple random sample is taken 10% from the population.
(A) 46
(B) 56
(C) 66
(D) 36

22 500 students were asked to estimate the mean age of the students. It was estimated at 20 years. If 50 students were asked to estimate the mean age of the students, how many found the estimator to be correct?
(A) 20
(B) 50
(C) 100
(D) 10

23 Find \[ \bar{y}_{st} \] for the population having
\[ 3N_1 = 5N_2 = 900, 3\bar{y}_1 = 4\bar{y}_2 = 153 \] 
(A) 45.22
(B) 46.22
(C) 47.22
(D) 44.22

24 A random sample of 170 children is taken from the 8502 children from an area. There are 21 children having deficiency of vitamins. Then find the standard error of the total children of that area.
(A) 212.64
(B) 223.01
(C) 243.01
(D) 200.01

25 430 students were asked to estimate the mean age of the students. It was found that 19 students had a mean age of 86.6 years. How many students must be taken to estimate the population mean with 10% margin of error and 95% confidence coefficient by complete enumeration of 430 units.
(A) 420
(B) 425
(C) 440
(D) 410