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

Time : Hours] [Total Marks : 50

Instructions :

(1) Fill up 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) अर्थशास्त्र एवं 3 दृष्टिकोण करण्यासाठी टोकरे जवळी आपल्यास आपले.

All questions are compulsory.

(3) संख्यातील अनेक दाखलाकिंवा टीके मिळाली असल्यास आपणास आपले.

Statistical and logarithmic tables will be supplied on request.

(4) प्रश्नात अस्तित्वात असलेल्या तथ्यांच्या कार्याने केंद्रांना उपयोग करू शकते.

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 बरेच अंगेनी अनुसार नॉट्स रूपांतर केलेले आपले.
O.M.R. Sheetची पांचवें पृष्ठ याॅपक आपले.

Important instructions to fill up O.M.R. Sheet are
given on back side of the provided O.M.R. Sheet.
1. If a sample is taken from an unknown population, the survey becomes:
   (A) Directed survey
   (B) Random survey
   (C) Randomized survey
   (D) None of these
   If all the units of a population are surveyed, it is called
   (A) Sample survey
   (B) Complete enumeration
   (C) Census
   (D) Both Complete enumeration and Census

2. N kabhi samajmohini n aekamohini nirdesh purushvarli valar pashank karta mangata khal nirdeshnir samay?
The total numbers of possible samples of size n taken from a population of N units without replacement are:
   (A) N^m
   (B) n^N
   (C) N^C_n
   (D) None of these

3. Aekamohini pashankginiin samajmohini dhere prakalmaa juthi juthi com
   Probability of selection of unit varies at each subsequent draw in
   (A) SRSWOR
   (B) SRSWR
   (C) Both SRSWOR and SRSWR
   (D) None of SRSWOR and SRSWR

4. Sarnath pashank nirdeshnir pashankgini
   (A) Partik pashank maddathi
   (B) Nirdesh pashank maddathi
   (C) Irata pashank maddathi
   (D) Aadhiya thambam
   Simple random sample can be selected with the help of
   (A) Random numbers table
   (B) Chit Method
   (C) Roulette Wheel
   (D) All the these
The error in a survey other than sampling error are called

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

An estimator can possess

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

Having the sample observations $x_1, x_2, \ldots, x_n$ we wish to estimate the mean, $\mu$.

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

(A) $\frac{n}{N} \sum x_i$
(B) $n \sum x_i$
(C) $\frac{1}{n} \sum x_i$
(D) None of these
8 Which of the following advantage of systematic sampling you prove ?
(A) Easy selection of sample
(B) Economical
(C) Spread of sample over the whole population
(D) All of these

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

10 If the number of units constituting the population is fixed and limited
(A) Finite population
(B) In-finite population
(C) Real population
(D) Hypothetical population
11. The total number 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) 1  
(B) 2  
(C) 3  
(D) 4

12. The total number 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) 7  
(B) 8  
(C) 10  
(D) 11

13. The total numbers of the samples of size two without replacement from the population having observations 2,3,4,5,11.

How many are total numbers of the samples of size two without replacement from the population having observations 2,3,4,5,11?

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

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

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

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15 60 students of a class are sampled from a class of 60 students. The 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) 7000
(B) 7100
(C) 7200
(D) 7300

16 Necessary condition for the following information:
\[ N = 1000, \ N - n = 900, \ S^2 = 144 \]
Find the standard deviation of \( \hat{\mu} \) from the following information:
\[ N = 1000, \ N - n = 900, \ S^2 = 144 \]
(A) 1138.42
(B) 1148.42
(C) 1158.44
(D) 1168.44

17 96 students are sampled from a class of 96 students. It is desired to take a sample of 10 students, using systematic sampling method the possible sample may be
(A) 1, 10, 19, 28, 37, 46, 55, 64, 73, 81
(B) 1, 9, 17, 26, 35, 44, 53, 62, 71, 80
(C) 1, 11, 21, 31, 41, 51, 61, 71, 80, 91
(D) 1, 11, 21, 31, 41, 51, 61, 71, 81, 91

DF-3031_A ] 6 [Contd...
The population observations are 1, 2, 4, 5. The possible random sample of size two without replacement can be:

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

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) 19
(B) 20
(C) 21
(D) 22

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) 12
(B) 13
(C) 14
(D) 15
21 500 विद्यार्थियोंमध्ये पंदजा केही विद्यार्थीयोंच्या वजनाच्या मध्यवर्ती विच्छेदनास अर्धसूत्र 0.4 छ. ते पंदजा केही विद्यार्थीयोंच्या वजनाच्या विच्छेद 50 होय तो केही विद्यार्थीयोंच्या वजनांच्या आंकणे कसे?

The estimator of weight of some selected sample mean is 0.4 from the 500 students. If the variance of weight of selected students is 50 then how many sample of size of the students is selected?

(A) 10
(B) 20
(C) 50
(D) 100

22 अंक समीकरण माने $3N_1 = 5N_2 = 900, \bar{y}_1 = 4\bar{y}_2 = 153$ होय ते $\bar{y}_{st}$ शोधो.

Find $\bar{y}_{st}$ for the population having

$3N_1 = 5N_2 = 900, \bar{y}_1 = 4\bar{y}_2 = 153$

(A) 44.22
(B) 45.22
(C) 46.22
(D) 47.22

23 अंक विषयांमध्ये 8502 भाषाकर्मी 170 भाषाकर्मी युक्त निर्देश बेलेता तेना 21 भाषकी विभागित निर्देश परायणता केला. ते अंक विषयांमध्ये कुल विभागित निर्देश परायणासाठी भाषेच्या संख्येच्या प्रमाणाच्या बूझ शोधो.

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) 200.01
(B) 212.64
(C) 223.01
(D) 243.01

24 अंक 430 अंकमोली समीकरण युक्त तपासांच्या तेना मध्यक 19 असे विच्छेद 86.6 प्राप्त झाले तो समीकरण मध्यका आंकणासाठी केही अंकमोली युक्त निर्देश देऊ शोधूने के ही विभागांनीता अंक 95% सारे अंक युक्त बूझ नसले गाणे 10% छ.

How many units must be taken to estimate the population mean with 10% margin of error and 95% confidence coefficient by complete enumeration of 430 units. It was found the mean was 19 and variance was 86.6

(A) 410
(B) 420
(C) 425
(D) 440

25 100 कुटींची संख्येमध्ये $V(\bar{r}) = 4,60,000$ होय तो समीकरण व्यक्ता 10% युक्त युक्त निर्देश मध्यका विच्छेद केला.

The $V(\bar{r}) = 4,60,000$ for the population having 100 units. Then find the sample variance if the simple random sample is taken 10% from the population.

(A) 36
(B) 46
(C) 56
(D) 66