**Vivekanand College, Kolhapur (Autonomous)**
**Department of Statistics**
**Internal Examination (2018-19)**
**Notice**

Date: 01/09/2018

All the students of B.Sc. III are hereby informed that, the internal examination of semester V will be held as per following time table.

| Date | Time | Paper No. | Title of the Paper |
|---|---|---|---|
| 01/10/2018 | 1:00 pm to 1:15 pm | Paper No. IX | Probability Distribution I |
| 11/09/2018 | 11.30 am to 12.30 pm | Paper No. X | Statistics Inference I |
| 28/09/2018 | 11.30 am to 12.30 pm | Paper No. XI | Design of Experiments |
| 06/09/2018 | 11.30 am to 12.30 pm | Paper No. XII | Operations Research |

Nature of Question paper: Total 10 Marks

10 Multiple choice questions for one mark each

VIVEKANAND COLLEGE ESTD JUNE 1964 KOLHAPUR - 416003

(Ms. Pattanshetti R. N.)
HEAD
DEPARTMENT OF STATISTICS
VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)

(01)

**VIVEKANAND COLLEGE, KOLHAPUR**

**Department of statistics**

Internal Examination B.Sc.-III

Sub: Probability Distributions I

Date: 01/10/2018 Max marks: 10

Q. Select the correct alternatives:

Q1. Ratio of two identical and independent normal variates is
a) Laplace b) Log normal
c) Cauchy d) Weibull

Q2. The first ordered raw moment $\mu_1'$ about the origin of the discrete random variable which follows truncated Poisson distribution with parameter $m$ truncated at X=0 is
a) $\frac{m^2}{1-e^{-m}}$ b) $\frac{2}{1-e^{-m}}$
c) $\frac{m}{1-e^{-m}}$ d)None of the above

Q3. If X follows Cauchy distribution with parameters $(\mu, \lambda)$ then quartile deviation is
a) $\mu - \lambda$ b) $\mu + \lambda$
c) $\mu$ d) $\lambda$

Q4. Laplace distribution is
a) Positively skew b) Negatively skew
c) Symmetric d) None of the above

Q5. If X has normal distribution with parameters $\mu$ and $\sigma^2$ then distribution of $e^X$ is
a) Laplace b) Log normal
c) Gamma d) Cauchy

Q6. The mean of truncated binomial distribution with parameters n and p truncated at X=0 is
a) $\frac{np}{1-q^n}$ b) $\frac{np^2}{1-q^n}$
c) $npq$ d) None of the above

Q7. If X has Weibull distribution with parameters $\alpha$ and $\beta$ then $\left(\frac{X}{\alpha}\right)^{\beta}$ has ..... distribution
a) Standard exponential b) Exp($\beta$)
c) Gamma(1,1) d) Both (a) and (c)

Q8. Mean and variance of the truncated exponential distribution with parameter $\theta$ truncated below at X=a is
a) $\frac{1}{a} + \frac{1}{\theta}$ and $\theta$ b) $a + \frac{1}{\theta}$ and $\frac{1}{\theta^2}$
c) $a + \frac{1}{\theta}$ and $\theta^2$ d) $a + \frac{1}{\theta}$ and $\theta$

Q9. For which distribution mean and variance does not exist
a) Laplace b) Cauchy
c) Log normal d) Weibull

Q10. The following is the p.m.f. of truncated Poisson distribution truncated at X=0
$P(X = x) = c.\frac{e^{-\lambda}\lambda^x}{x!}$, $x = 1,2, \ldots \ldots$. Then value of $c$ is
a) $\lambda$ b) $\frac{1}{\lambda}$
c) $\frac{1}{1-e^{-\lambda}}$ d) $1 - e^{-\lambda}$

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- शिक्षणमहर्षी डॉ. बापूजी साळुंखे.

**SHRI SWAMI VIVEKANAND SHIKSHAN SANSTHA'S**
**VIVEKANAND COLLEGE, KOLHAPUR.**
**B. Sc. (Part – III) Midterm Examination, 2018**
**STATISTICS (Paper –X)**
**Statistical Inference-I**

09/10 needs

Roll No.:

Day and Date: 11|09|2018

Total Marks: 10

**Q. Choose the correct alternative.** **(10)**

i) The estimator $\frac{\Sigma X}{n}$ of population mean is:

a) an unbiased estimator b) a consistent estimator c) Both (a) & (b) d) neither (a) nor (b)

ii) A sequence of estimator Tn will be consistent for θ if:

a) $E(Tn)=0$ & $V(Tn)\to 0$ as $n \to \infty$ b) $E(Tn)\to \theta$ & $V(Tn) \to 0$ as $n\to \infty$

c) Both (a) & (b) d) Neither (a) nor (b)

iii) If a statistic T is an unbiased estimator of the parameter θ, then

a) MSE (T) = 0 b) MSE (T) = V(T) c) MSE(T)>V(T) d) MSE(T)<V(T)

iv) Bias of an estimator can be:

a) Positive b) negative c) either positive or negative d) always zero

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v) The moment estimator of the parameter p in case of Binomial distribution based on a sample $X_1, X_2, ...X_n$ is

a) $\bar{X}$ b) $\frac{\bar{X}}{n}$ c) $n\bar{X}$ d) $\frac{n}{\bar{X}}$

vi) Let -2,0,8,1,-1,6,-3 be a r.s. of size 7 from $f(x,\theta) = \frac{1}{2} e^{-|x-\theta|}; -\infty < x < \infty$ Then MLE for $\theta$ is...

a) 9/7 b) 0 c) 9 d) 7

vii) If a family receives 1,0,2,3,2,4 wrong telephone calls on six randomly selected days, and wrong calls follow P($\lambda$) then the moment estimate of $\lambda$ will be

a) 0 b) 2 c) 4 d) 3

viii) The MLE of parameter θ based on the r. s. $X_1, X_2, ....X_n$ is that value of θ which

a) Maximizes the likelihood function b) Maximizes the information function
c) Maximizes the distribution function d) None of these

ix) The sufficient estimator of the parameter λ of Poisson distribution based on a sample $X_1, X_2, X_3$ is given by

a) $X_1+X_2+X_3$ b) $X_1+2X_2+X_3$ c) $X_1+X_2+2X_3$ d)$2X_1+X_2+X_3$

x) Let $X_1, X_2, .....X_n$ be a random sample of size n taken from U(0, b) population. Then sufficient estimator of b is...

a) max $(x_1, x_2, ....x_n)/n$ b) min $(x_1, x_2, ....x_n)$ c) max $(x_1, x_2, ....x_n)$ d) max $(x_1, x_2, ...x_n)^2$

# VIVEKANAND COLLEGE ,KOLHAPUR.

**Department of Statistics**

**Designs of Experiments**

**Internal Examination**

10

Date : 28/09/18

Roll No. 8686

Max marks : 10

---

Q.1 Choose a correct alternative

1) The number of replications in an experiment is based on ----------

a) the precision required b) experiment material available

c) heterogeneity of experimental material d) all the above

2) A commonly used approach to test the significance of difference between pairs of means in design of experiment is --------

a) coefficient of variation b) critical difference c) standard difference d) error sum of squares

3) The analysis of Completely randomized design is analogous to ANOVA for ---------

a) one way classification b) two way classification c) both a) and b) d) none of these

4) The Principle of repetition of treatments over the experimental material in design of experiments is----

a) randomizatiom b) replication c) both a) and b) d) none of these

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5) In analysis of data of RBD with b blocks and v treatments , the error degrees of freedom are-------

a) b(v-1) b) v(b-1) c) (b-1)(v-1) d) (b-1)(v-1)-1

6) ANOCOVA procedure is a combination of ------

a) analysis of variance and regression analysis b) analysis of variance and correlation

c) both a) and b) d) neither a) nor b)

7) In LSD number of rows is equal to -------

a) number of columns b) number of treatments c) both a) and b) d) none of these

8) ) Suppose there are two designs d1 and D2 with replications r1 and r2 then efficiency of design D2 with respect to design D1 is------

a) $\sigma^2_1/\sigma^2_2$ b) $\sigma^2_2/\sigma^2_1$ c) 1 d) $\sigma^2_1 - \sigma^2_2$

9) In analysis of RBD with usual notations the estimate of missing observation is -----

a) $\frac{rT+rB-G}{(r-1)(t-1)}$ b) $\frac{rT+tB-G}{(r-1)(t-1)}$ c) $\frac{rT+tB-2G}{(r-1)(t-1)}$ d) $\frac{tT+rB-2G}{(r-1)(t-1)}$

10)In degrees of freedom for the error ion a Latin square design with 5 rows, 5 columns and 5 treatments with one missing observation is----

a) 22 b) 10 c) 12 d) 14

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Shri Swami Vivekanand Shikshan Sanstha's (Kolhapur) Roll No: 8686

**VIVEKANAND COLLEGE, KOLHAPUR**

Department of Statistics

B.Sc III Sem V Paper XII (Shivaji University Internal Test)

Date- 06 Sep 2018 Time – 1.00 -1.15PM **Max Marks 10**

10/10

**Select the correct answer from the given answers to each question and rewrite the sentences.**

1] LPP is a technique of obtaining solution to a set of variables when the number of equations is ---- the number of variables: a) ≤ b) ≥ c) = d) none of a,b & c

2) Any solution to general LPP which satisfies non negativity restrictions of LPP is called
a] Optimum solution b] unbounded solution c] feasible solution d] Degenerate solution

3) In LPP the number of slack variables is---- number of constraints of ≤ type
a) Less than b) More than c) equal to d) none of a, b &c

4] In Big-M method, -M in the objective function of the LPP is cost of
a] Slack variable b] artificial variable c] surplus variable d] none of these

5] In simplex procedure, a basic solution may be ----- solution:

a) Optimum b) unbounded c) Degenerate d) All a,b &c

6] In decision theory the alternatives of action and states of nature-----

i) Strategies are random (ii) States of nature are random (iii) Both are random (iv) neither are random

7] In decision making under condition of uncertainty, Maximax criterion is also known as criterion of --- i) Pessimism (ii) Optimism (iii) Equally likely (iv) regret

8] In decision theory EVPI is equal to ------

i) EPPI-EOL (ii) EPPI-Max EMV (iii) EOL-EMV (iv) Max EMV-EOL

9] In decision making under condition of risk, EVM criterion is also known as---

i) Savage Criterion (ii) Baye's Criterion (iii) Wald's Criterion (iv) Laplace Criterion

10] The minimum expected opportunity loss (EOL) is -----

i) equal to EVPI (ii) minimum regret (iii) equal to EMV (iv) both (i) & (ii)

10

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**Vivekanand College, Kolhapur**

**Department of Statistics**

**Notice**

**B. Sc. I**

(1)

**Date: 02/02/2019**

All students of B.Sc. I are hereby informed that, there will be an Internal Examination On 9th February, 2019 at 2.00 pm in Room No. 41.

↓ 25th February, 2019

Subject Teacher

VIVEKANAND COLLEGE ESTD JUNE 1964 KOLHAPUR - 416003

Head of the Department

Head
Department of Statistics
Vivekanand College Kolhapur

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- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Signature of Supervisor

Shri Swami Vivekanand Shikshan Sanstha's

# VIVEKANAND COLLEGE (Autonomous), KOLHAPUR

Class B.Sc I Div A Roll No. 7700

Suppliment No. I Subject Statistics

Test / Tutorial No. Internal Examination

Q. Choose the carred alternative.

1) Extension of Bernauli Distribution is ... distribution.
   i) Uniform ii) Binomial iii) Hypergeometric
   iv) Two - point.
→ ii) Binomial

2) With usual notations what is an interpretation of N in hypergeometric distribution.
   i) Lot size ii) Random Variable
   iii) Sample size iv) None of these
→ i) Lot size.

3) For Binomial distribution
   i) Mean = Variance ii) Mean ≤ Variance
   iii) Mean ≥ Variance iv) None of these
→ iii) Mean ≥ Variance

4) If Var (x) = 0 then
   i) X has one point distribution.
   ii) X takes ~~only~~ any single value.
   iii) Only i) or ii)
   iv) Both i) and ii)
→ iv) Both i) and ii)

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5) If discrete r.v. X has following p.m.f.

$$P(x) = \begin{cases} k & ; \text{ if } x = 0, 1, 2, 3, 4 \\ 0 & ; \text{ ow.} \end{cases}$$

then k is

i) 1/4 ii) 1/3 iii) 1/5 iv) 1

→ iii) 1/5

6) If X and Y are two independent r.v. such as $X \sim B(n_1 = 5, p = 0.2)$ and $Y \sim B(n_2 = 7, p = 0.2)$ then $Z = X + Y$ has binomial distribution with ... parameters

i) (5, 0.2) ii) (7, 0.2) iii) (12, 0.2) iv) (12, 0.4)

→ iii) (12, 0.2)

7) If for a r.v. X probability of X ie $P(X = c) = 1$ then X follows ... distribution.

i) Bernauli ii) Binomial

iii) Discrete uniform iv) Two - point.

→ iii) Discrete uniform

8) The height of a person, time, temperature etc. are examples of ... r.v.

i) Discrete ii) Continuous

iii) Both i) and ii) iv) None of these

→ iii) Both i) and ii)

9) If $X \sim B(10, 0.8)$ then distribution of $(10 - X)$ is ...

i) Binomial (10, 0.2) ii) Binomial (10, 0.8)

iii) Binomial (8, 0.8) iv) Binomial (8, 0.2)

→ ii) Binomial (10, 0.8)

10) Mean of Hypergeometric distribution with parameters $(N, M, n)$ is ...

i) $nM/N$ ii) $nN/M$ iii) $nM$ iv) $MN$

→ i) $nM/N$

(V). Fill in the gap –

1) If for a Binomial distribution $n=8$, $p=1/2$ then variance is 2

2) For a Bernauli distribution mean is always greater than variance.

3) A distribution in which the probability at each draw remains $1/n$ is called discrete uniform distribution.

4) For Bernauli distribution with parameter $p=0.5$ then mean is 0.5

5) The number of successes in a series on n independent Bernauli trials is p variable.

6) If X has hypergeometric probability distribution with parameters $(N, M, n)$ then the minimum and maximum possible values of X are $\max\{M\}$ and $\min\{n\}$

7) If $X$ is a one-point distribution with $P(X=k) = 1$ and $P(X \neq k) = 0$ then its probability generating function is $\underline{s^k}$

8) If $X_1$ and $X_2$ are two Bernauli variates then $X_1 + X_2$ is a $\underline{\text{Binomial}}$ variate.

9) In a Binomial variate the probability of success in each trial is $\underline{\text{same or equal}}$.

10) If $P(X=x) = 1/4$ $x = 1, 2, 3, 4$ then mean of $X$ is $\underline{5/2}$

B Sc I

Internal Examination 2018-19 (Sem-II)

Date: 12/01/2019

Q. Choose the correct alternative.

1) If there exists perfect corrl$^n$ bet$^n$ x & y then corrbi coefficient is ...

a) 0 b) 1 c) -1 d) -1 or +1

2) The karl Pearson's corrl$^n$ coefficient is ... of reg coefficients.

a) A.M. b) H.M. c) G.M. d) Median

3) Expenditure on Advertisement & scale have ...

a) +ve corrl$^n$ b) -ve corrl$^n$ c) Perfect -ve corrl$^n$ d) No corrl$^n$.

4) If the variables x & y changes in same direction then cov (x, y) is ...

a) zero b) one c) Positive d) Negative.

5) If x & y are independent variables then cov (x, y) = ....

a) 0 b) 1 c) -1 d) none of these.

6) If the angle between two reg lines is 90° then the corrl$^n$ coefficient between two variables is ...

a) 0 b) 1 c) -1 d) $-1 \leq r \leq 1$

7) If the eq$^n$ of the two regression lines are $4X - 3Y = 22$ & $2X - Y = 16$, then the mean value of x & y is ...

a) $\bar{X} = 10$, $\bar{Y} = 13$ b) $\bar{X} = 13$, $\bar{Y} = 10$

c) $\bar{X} = 26$, $\bar{Y} = 5$ d) None of these.

8) The two regression eqn intersect at ...

a) (0,0) b) $(\bar{x}, \bar{y})$ c) $(b_{yx}, b_{xy})$ d) $(0, \bar{y})$

9) If $b_{yx} = -1/4$ & $b_{xy} = -1$ then correlation coeffi (r) is ...

a) 1/4 b) -1/4 c) $\frac{1}{2}$ d) -1/2

10) If the two variables are uncorrelated then the two lines of regression are....

a) Parallel to each other b) Perpendicular to each other

c) Coinside with each other. d) None of these.

**Vivekanand College, Kolhapur (Autonomous)**
**Department of Statistics**
**Internal Examination (2018-19)**
**Notice**

Date: 06/02/2018

All the students of B.Sc. III are hereby informed that, the internal examination of semester VI will be held as per following time table.

| Date | Time | Paper No. | Title of the Paper |
|---|---|---|---|
| 18/02/2019 | 1:00 pm to 1:15 pm | Paper No. XIII | Probability Theory |
| 15/02/2019 | 1:00 pm to 1:15 pm | Paper No. XIX | Statistics Inference II |
| 14/02/2019 | 1:00 pm to 1:15 pm | Paper No. XV | Sampling Theory |
| 13/02/2019 | 1:00 pm to 1:15 pm | Paper No. XVI | Quality Management and Data Mining |

Nature of Question paper: Total 10 Marks

10 Multiple choice questions for one mark each

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(Ms. Pawar V. V.)
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8/10

VIVEKANAND COLLEGE KOLHAPUR
DEPARTMENT OF STATISTICS
MID-TERM EXAMINATION (Semester II)

Roll No: 8686 Paper- Probability Theory (XIII) Date: 18/02/2019

**Q.1 Choose the correct alternative.** **[10]**

1) Let $\{X_n , n\geq 1\}$ be a sequence of random variable with $p(X_n=0)=1-1/n$ , $p(X_n=1)=1/n$ then

a) $Xn \xrightarrow{2} 1$ b) $Xn \xrightarrow{2} 2$ c) $Xn \xrightarrow{2} 0$ d) None of these.

2) A sequence of random variable $\{X_n , n\geq 1\}$ is said to converge in distribution function to x if------

a) $\lim_{n\to\infty} Fn(x) = 1$ b) $\lim_{n\to\infty} F(x) = 0$

c) $\lim_{n\to\infty} Fn(x) = 0$ d) $\lim_{n\to\infty} Fn(x) = F(x)$

3) If $X_1, X_2, \ldots\ldots X_n$ are i.i.d. random sample drawn from population with mean $\mu$ and finite variance $\sigma^2$ then WLLN states---------

a) $Xn \xrightarrow{p} \mu$ b) $\overline{Xn} \xrightarrow{p} \mu$ c) $Xn \xrightarrow{p} \bar{\mu}$ d) $\overline{Xn} \xrightarrow{p} \bar{\mu}$ Where, $\bar{\mu}=\frac{1}{n}\sum\mu i$

4) If $X_1, X_2, X_3$ is random sample from U(0,1) then sample range follows -----

a) $\beta_2$ (2,2) b) $\beta_1$ (2,2) c) $\beta_2$ (1,n) d) $\beta_1$ (1,n)

5) If $X_1, X_2$ are independent exponential variate with mean 1 and 2 then $p[\min\{X_1,X_2\} >1]$ is ----

a) $e^{-2}$ b) $e^{-3}$ c) $e^{-1}$ d) $e^{-1.5}$

6) If $X_1$, $X_2$, $X_3$ is random sample from U(0,1) distribution then expected value of second order statistic is ------

b) 0.4 b)0.6 c)0.5 d) 0.1

7) If P=(Pij) is the t. p. m. then state j is recurrent if ------

a) $\sum_{n=0}^{\infty} Pjj^n = 1$ b) $\sum_{n=0}^{\infty} Pjj^n < \infty$ c) $\sum_{n=0}^{\infty} Pjj^n > \infty$ d) $\sum_{n=0}^{\infty} Pjj^n = \infty$

8) Which of the following is not order statistics.....

a) sample mean b) min $\{X_1, \ldots X_n\}$ c) max $\{X_1, \ldots X_n\}$ d) sample median

9) $Xn \xrightarrow{p} a$ where a>0 then

a) $Xn^2 \xrightarrow{p} a^2$ b) $\frac{1}{Xn} \xrightarrow{p} \frac{1}{a}$ c) $Xn - a \xrightarrow{p} 0$ d) All of these

10) A stochastic process $\{X_n, n \geq 1\}$ where random variable $X_n$ is number of sixes in first n throws of a die is------

a) Continuous time, Continuous state space b)Continuous time, discrete state space

c) Discrete time, Continuous state space d)Discrete time, Discrete state space

**VIVEKANAND COLLEGE, KOLHAPUR.**
**B. Sc. (Part – III) Midterm Examination, 2019**
**STATISTICS (Paper –XIV)**
**Statistical Inference-II**

10/10 DBCE19

Day and Date: Friday, February 15, 2019 Roll No: 8686 Total Marks: 10

**1. Choose the correct alternative.**

i) Formula for the confidence interval for ratio of variances of two normal populations involves.....
a) Chi square distribution b) F distribution c) t- distribution d) Normal distribution

ii) A sample of size 64 from N ($\mu$,16) gives the sample mean 20 then 95% C.I. for $\mu$ is:
a) (19.20, 20.98) b) (19.12, 20.99) c) (19.02, 20.98) d) (19.02, 20.89)

iii) The difference between upper & lower limits of a confidence interval of level (1-$\alpha$) is known as
a) level of significance b) Length of C.I. c) Confidence coefficient d) Confidence limits

iv) The quantities C1& C2 within which the unknown value of the parameter is expected to lie such that $P(C1 < \theta < C2) = 1-\alpha$ are known as
a) Confidence limits b) C.I. c) Confidence coefficient d) confidence levels

v) The probability of rejecting the null hypothesis when it is true is called as .....
a) P- value b) Size of the test c) Power of the test d) Type II error

vi)Which of the following is most appropriate for testing simple $H_0$ against simple $H_1$.
a) UMP level $\alpha$ test exists b) MP level $\alpha$ test exists c) UMP level $(1-\alpha)$ test exists d) MP level $(1-\alpha)$ test

vii) If $X_1, X_2, \ldots X_n$ is a r.s. of size n taken from $N(\theta, 100)$ population a UMP test exists for testing $H_0: \theta = \theta_0$ against
a) $H_1: \theta \neq \theta_0$ b) $H_1: \theta > \theta_0$ c) $H_1: \theta < \theta_0$ d) Either (ii) or (iii)

viii) The theory of SPRT is developed by.....
a) Wald b) Fisher c) Neyman d) Pearson

ix) In a SPRT of strength $(\alpha, \beta)$
a) Sample size is fixed, $\alpha$ & $\beta$ are minimized b) Sample size & $\alpha$ are fixed, $\beta$ is minimized
c) Sample size & $\beta$ are fixed, $\alpha$ is minimized d) Sample size is random, $\alpha$ & $\beta$ are fixed

x) In SPRT of strength (0.5, 0.2) the stopping bounds denoted by A & B are given by
a) A=1.6, B=0.4 b) A=1.5, B=0.4 c) A=1.6, B=0.5 d) A=0.5, B=0.4

Vivekanand College, Kolhapur.

Internal Examination 2018-19, Sem- II

Sub: Sampling Theory (Statistics)

Paper- XV

Date: 14/02/2019 Roll No: 9691.

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1) The probability of not selecting a specified unit in SRSWOR of 5 units from population of 50 units is

a) 1/5 b) 1-1/5 c) 5/50 d) 1-6/66 None of these.

2) If number of units in the population is not integral multiple of sample size, the systematic sampling is called --

a) simple systematic sample b) circular systematic sample

c) linear systematic sample d) none of these

3) For large population with population $S^2$ , confidence coefficient $(1-\alpha)$ and margin of error d, the size of sample under SRSWOR is

a) $z^2_{\alpha/2} S^2/d^2$ b) $z^2_{\alpha/2}/S^2d^2$ c) $z^2_{\alpha/2} S^2/2d^2$ d) none of these

4) Which of the following statement is true?

a) $V_{SRSWOR} \geq V_{prop} \geq V_{opt}$ b) $V_{SRSWOR} \geq V_{opt} \geq V_{prop}$

c) $V_{SRSWOR} \leq V_{prop} \leq V_{opt}$ d) $V_{SRSWOR} \geq V_{prop} \leq V_{opt}$

5) Under proportional allocation, the size of sample from each stratum depends on

a) the size of stratum b) the stratum variability c) both (a) and (b) d) neither (a) and (b)

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6) If population size is N and sample of n is drawn from it ($f = \frac{n}{N}$) then finite population correction is -----

a) 1 b) 1-f c) 1+f d) none of these

7) In sampling from proportion, if sample is drawn by without replacement then var(p) is

a) $\frac{N-n}{N-1}\frac{PQ}{n}$ b) $\frac{N-n}{N}\frac{PQ}{n}$ c) $\frac{N+n}{N-1}\frac{PQ}{n}$ d) $\frac{N-n}{N-1}\frac{PQ}{n-1}$

8) Systematic sampling will yield better results only if the units within the same sample are

a) Homogeneous b) Heterogeneous c) all equal d) none of these

9) If the population consists of linear trend then variance of stratified, systematic and SRSWOR are in the proportion of--

a) 1: n: $\frac{1}{n}$ b) n : 1 : $\frac{1}{n}$ c) n: $\frac{1}{n}$ : 1 d) $\frac{1}{n}$ : 1 : n

10) In linear Systematic sampling N= 40 and n = 5 then probability of drawing any systematic sample is

a) $\frac{1}{40}$ b) $\frac{39}{40}$ c) $\frac{5}{8}$ d) $\frac{7}{8}$

**VIVEKANAND COLLEGE, KOLHAPUR.**

**Department of statistics**

Internal Examination

Sub: Quality Management and Data Mining (Paper: XVI)

Date: 13/02/19 Max marks:10

Q. Attempt the following questions

a) The quality of the product means……..

i) Degree of brightness (ii) Fitness for use iii) Degree of perfection at any cost iv) None of them

b) Which of the following are the memory chart

i) CUSUM ii) Shewhart iii) EWMA (iv) Both i) and iii)

c) Which of following tools are useful in 'analyze and improve' step of DMAIC cycle?

i) Histogram (ii) Cause and effect diagram iii) Scatter diagram iv) Pareto chart

d) The word PDCA stands for

i) Plan Do Control Act ii) Plan Do Control Analyze iii) Both i) and ii) (iv) None of them

e) Which of the following are not phases DMAIC methodology

i) Define ii) Analyse (iii) Act iv) Measure

f) If lot is accepted on the basis of sampling inspection plan then ……..

(i) ASN= ATI ii) ASN<ATI iii) ASN> ATI iv) None of them

g) Producers risk is also called as……

(i) Type I error ii) Power iii) Type II error iv) None of them

h) For CUSM chart the value of the K is chosen as……

(i) $|\mu_0 - \mu_1|/2$ ii) $|\mu_0 + \mu_1|/2$ iii) $|\mu_1|/2$ iv) Both i) and ii)

i) In three sigma limits the probability of producing a product within specification is…..

(i) 0.9973 ii) 0.0027 iii) 0.027 iv) 0.9975

j) For single sampling plan the value of average total inspection (ATI) is …

i) $p*P_a$ (ii) $n+(N-n)*(1-P_a)$ iii) $n$ iv) $n_1+n_2*(1-P_a)$

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ASN = n.

$n+(N-n)(1-Pa) \sim n$