Chhatrapati Shahu Ji Maharaj University, Kanpur

Answer Script Details
Barcode 5281928

Roll No. 24154000563
Total Mark 62/75.00

Exam MASTER OF COMMERCE_ODD EXAM-DEC-24
Subject C010703T - STATISTICAL ANALYSIS

Question wise Mark Summary

Q.No	Mark	Q.No	Mark	Q.No	Mark	Q.No	Mark
1A	4/5	8	0/15				
1B	4/5	9	0/15				
1C	4/5						
1D	4/5						
1E	4/5						
1F	4/5						
1G	4/5						
1H	3/5						
1I	3/5						
2	14/15						
3	0/15						
4	0/15						
5A	0/5						
5B	0/5						
5C	0/5						
6	0/15						
7	14/15						

Chhatrapati Shahu Ji Maharaj University
Kanpur, Uttar Pradesh

Date of Exam: 19/12/24 Shift: 8:30-10:30 Room No: 06
Paper Code: C010703T Subject: Statistical Analysis Year/Sem: I
Name of Candidate: UMRA IQBAL
Roll No: 2 4 1 5 4 0 0 0 5 6 3

Signature of Candidate | Signature of Invigilator | COE Facsimile

PART-II

MARKS OBTAINED										
Q.	1	2	3	4	5	6	7	8	9	10
(a)										
(b)										
(c)										
(d)										
(e)										
(f)										
(g)										
(h)										
(i)										
(j)										
Total										
Total Marks in Figures									Max. Marks	
Total Marks in Words										

C 0 1 0 7 0 3 T
Paper Code

Signature of Evaluator

Course: M.Com
Session: 2024-25 Year/Semester: I
Subject Name: Statistical Analysis
Medium: English ● Hindi ○

Paper Code: C 0 1 0 7 0 3 T

Exam Date: 1 9 1 2 2 0 2 4

Name of Candidate: U M R A I Q B A L

Father's Name: S Y E D I Q B A L M A S O O D

महाविद्यालय का कोड College Code: K N 0 1

परीक्षा केन्द्र का कोड Exam Centre Code: K N 0 1

Type of Exam: Regular ● Ex-Student ○ Private ○ Back Paper Exam ○

ANSWER BOOKLET NO.: 5281928

C 0 1 0 7 0 3 T
Paper Code

Enrollment Number: C S J M A 2 4 0 0 0 1 2 7 8 9 8

परीक्षार्थी अनुक्रमांक Candidate's Roll Number: 2 4 1 5 4 0 0 0 5 6 3

प्रश्न कोड Paper Code: C 0 1 0 7 0 3 T

Signature of Candidate

Signature of Invigilator

C S Facsimile

COE Facsimile

नोट - 1. परीक्षार्थी को निर्देशित किया जाता है कि आवरण पत्रके को पृष्ठ भाग पर अंकित सभी निर्देशों को सावधानी पूर्वक पढ़ें।
2. बॉक्स में भरी जाने वाली प्रविष्टियाँ काली स्याही से शुरू की जायें। 3. गोलों को काले या नीले बॉलपेन से भरा जायें।

INSTRUCTION TO THE CANDIDATE FOR FILLING PART-I

1. Read the instructions carefully given on the answer script and admit card.
2. Write Date of Exam, Shift, Paper Code & Name of Subject Correctly.
3. Write Name & Roll No. Correctly.
4. Write Semester & Branch Correctly.

INSTRUCTION TO THE CANDIDATE FOR FILLING PART-III

1. Use blue or black ball point pen for writing alphabets & numerals in boxes.
2. Carefully study the example before you start marking.
3. As shown in the example below, blacken the circles completely.

Correct Method: ① ● ③ ④ Incorrect Method: ✓ ✗ ● ⓪

4. Make no Stray marks on this sheet.

5. DO NOT WRITE OR MARK ON THE BAR CODE.

IN ORDER TO AVOD UFM (UNFAIR MEANS) :

1. The Roll No. and Answer Book no. found elsewhere or any other symbol found in the answer book will be treated as unfair means.
2. Any tempering of Bar Code and Booklet no shall be treated as Unfair Means.
3. Do Not bring the materials like slip of paper/mobile/digital diaries/ study material/ revision notes in examination hall. Possession of the mobiles/ digital diaries/electronic/digital/ watch and any other electronic gadget except memory less scientific calculator shall be considered as UFM case.
4. Do not keep or paste currency note in answer script it shall be consider as UFM.

अनुचित साधन से बचने हेतु :

1. उत्तर पुस्तिका के निर्दिष्ट स्थान को छोड़कर अनुक्रमांक एवं उत्तरपुस्तिका का क्रमांक कहीं और न लिखें तथा कोई भी चिन्ह न बनायें क्योंकि यह अनुचित साधन प्रयोग की श्रेणी में आता है।
2. उत्तर पुस्तिका के बारकोड अथवा उत्तर पुस्तिका संख्या पर छेड़ छाड़ करने पर अनुचित साधन प्रयोग माना जायेगा।
3. परीक्षा कक्ष में निम्न वस्तुएं साथ न लायें, जैसे लिखे हुए कागज के टुकड़े, मोबाइल, डिजिटल डायरी, डिजिटल वॉच, कॉपी, पुस्तक यह सभी वस्तुएं जो अनुचित साधन के अन्तर्गत आती है। केवल संबंधित प्रश्नपत्र में ही मेमोरी लेस साइंटिफिक कैल्कुलेटर ले जाने की अनुमति होगी।
4. उत्तर पुस्तिकाओं में करेंसी न रखें न ही उत्तर पुस्तिका में चिपकायें। ऐसा करना अनुचित साधन प्रयोग की श्रेणी में आता है।

[illegible]

1. प्रवेश पत्र एवं उत्तर पुस्तिका पर दिये गये निर्देश को ध्यान से पढ़ें।
2. कवर पृष्ठ के दूसरी तरफ कुछ न लिखें।
3. उत्तर पुस्तिका के पृष्ठों पर दोनों तरफ लिखें।
4. प्रश्न पत्र पर अपने अनुक्रमांक के अतिरिक्त कुछ न लिखें।
5. प्रश्न पत्र कोड एवं प्रश्न पत्र ID सावधानी पूर्वक लिखें।
6. अपनी स्थिति स्पष्ट लिखें।
7. उत्तर पुस्तिका के पृष्ठों की संख्या देखें। अगर उत्तर पुस्तिका में पृष्ठ (1-24) से कम है या कटे हुए है, तो [illegible] शुरू होने के पूर्व दूसरी उत्तर पुस्तिका ले लें।
8. प्रश्न पत्र को देख, यदि प्रश्नपत्र के विषय कोड, विषय का नाम तथा प्रश्न में कोई त्रुटि है तो उसको परीक्षा शुरू होने के 30 मिनट के अन्दर कक्ष निरीक्षक को तत्काल सूचित करें, उसके बाद विश्वविद्यालय द्वारा कोई [illegible] नहीं की जाएगी।
9. प्रश्नों के उत्तर लिखने के लिये पेंसिल का प्रयोग न करें।
10. बी कॉपी या अतिरिक्त ग्राफ नहीं दिया जायेगा।

INSTRUCTION TO THE CANDIDATE

1. Read the instructions carefully given on the Question Paper, Admit Card & Answer Script.
2. Do not write anything on back side of this cover page.
3. Write on both sides of pages of answer book.
4. Do not write anything on question paper except Roll Number.
5. Write Paper Code & Question Paper Id carefully.
6. CHECK the number of pages (1-24) or any other kind of damage in your answer script, if found than change the answer script immediately before the commencement of examination.
7. CHECK the Question Paper for any kind of discrepancy e.g. Subject Code, Subject Name, and Question of the Question Paper during first THIRTY MINUTES of the commencement of the exam, so that it can be corrected in TIME. After that no corrections shall be entertained by the university.
8. Do not use pencil for answering the question.
9. Write status correctly e.g. those appearing in carry over papers should fill in status as Carry Over. Those appearing as Ex- Students should fill in status as ex.
10. No supplementary answer book & graph paper will be provided.

INSTRUCTION TO THE CANDIDATE FOR FILLING PART-IV

1. Use blue or black ball point pen for writing alphabets & numerals in Boxes.
2. Use blue or black ball point pen for filling the circles.

	1	8	1	5	4	3	2	1	6	9
0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9

Note- If your Roll No. is of 10 digits. Please leave first three columns.

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C 0 1 0 7 0 3 T

SECTION - A

Answer - 1 (a)

Probability of occurence of event A = P(A) = 0.7
Probability of occurence of event B, P(B) = 0.54

By using formula,

A or B = P(A) + P(B) − P(A & B)
= 0.7 + 0.54 − 0.7 × 0.54
= 1.24 − 0.378
= 0.862

Probability of Not A = 1 − Probability of (A)
= 1 − 0.7
(Not A) = 0.3

Probability of Not B = 1 − Probability of (B)
= 1 − 0.54
= 0.46

Answer - (b)

co-variance between x & y = 9.6
variance of x & y = 16 & 9

By using formula,

coefficient of correlation = $\frac{\Sigma dx\, dy}{N \sigma x \sigma y}$

$= \frac{9.6}{\sqrt{(\text{variance of } x)}\,(\text{variance of } y)}$

$= \frac{9.6}{(\sqrt{16}).(\sqrt{9})}$

$= \frac{9.6}{4 \times 3} = \frac{9.6}{12} = 0.8$

Deviation = $dx = (X - \bar{x})$ $dy = (Y - \bar{y})$

variance = $\frac{\Sigma d^2 x}{N}$ $\frac{\Sigma d^2 y}{N}$

Answer - (c)

By using the formula,

$r = \sqrt{b_{xy} \times b_{yx}}$

Putting values of b_{xy} & b_{yx} in formula we get,

$= \sqrt{1 \times 0.64}$

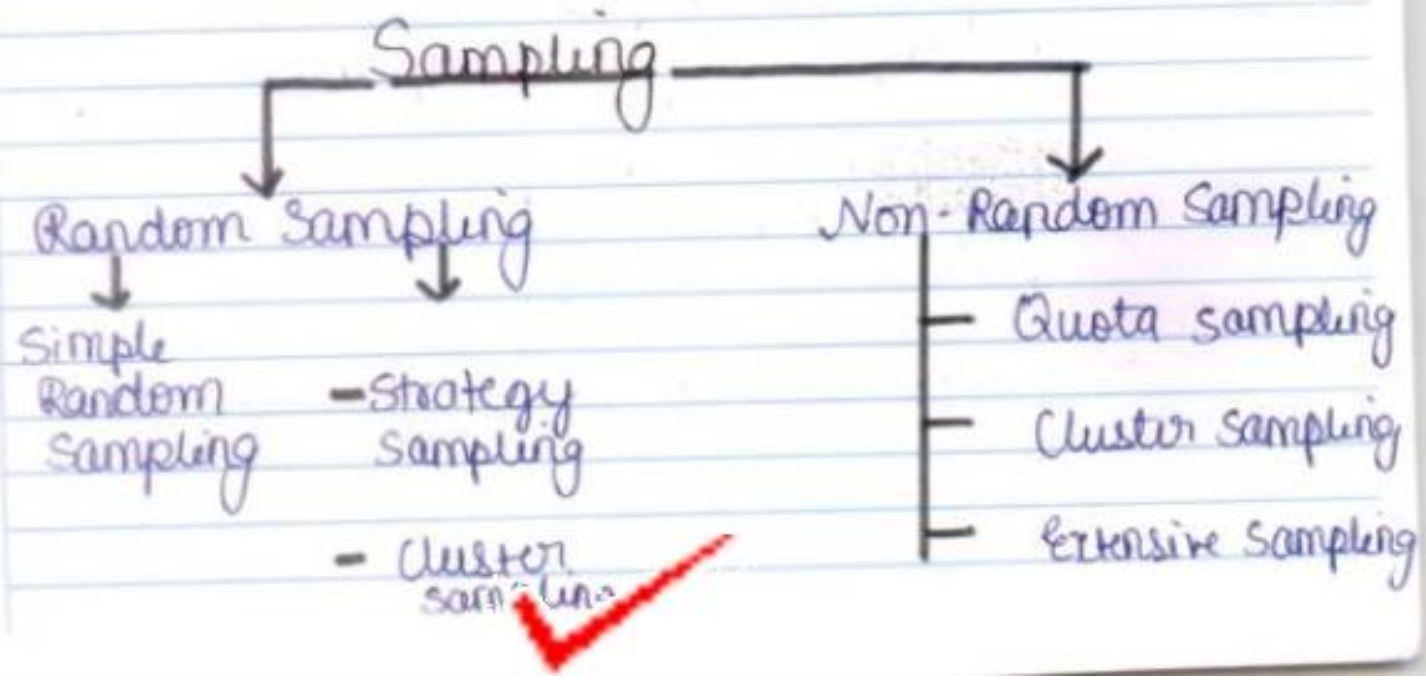
$= \sqrt{0.64}$

$= 0.8$

Answer - (d)

Sampling refers to the representative of the universe.

Sample refers to the representative of the universe.
Sample is a subset of a population.
The process of using sample to calculate the parameters is known as sampling.
Sampling is the process of finding or doing observations regarding sample



- Stratified sampling
- Multistage sampling
- Convenience sampling

Objective of Sampling :-

~ By taking samples from part of the population, we get the idea of the entire population.

~ It is way difficult to examine the whole population as well as uneconomical Sampling helps in making it economical.

~ Main purpose of sampling is to get the idea about the parameters.

~ Types of sampling is divided according the objective of sampling.

~ Sampling is the process to get the idea about entire universe by picking few samples.

~ Sampling makes the calculation economical & less time consuming.

Answer - (e)

Statistical significance refers to the importance of statistics in current scenarios. Statistics helps us to know about the data statistically. It is one of the most important feature. There are lots of statistical significance, most prominent statistician and scientist have explained about the importance of statistics. Statiscian like Karl pearson, Spearmen etc has explained the vast background of stats. Statistics deals in the quantitative form of data.

Answer - (f)

Mean of sample 1000 ($\bar{X}$) = 69.5

Mean ($\bar{X}$) of sample 2000 = 70

Yes, these samples been drawn from the same universe having a standard deviation (σ) 3.

Answer- (g)

Hypothesis testing is a statement which is based on assumptions.
Hypothesis test means measuring or validating about hypothesis that it is true or not.
Null hypothesis is a part of the hypothesis or we can say that it is a type of hypothesis.
Null hypothesis contains the information related to the hypothesis.
While calculating the hypothesis, which is a statement that is based on assumptions, informations are there in the null hypothesis regarding the hypothesis testing.
Null hypothesis is a hypothesis which is void.

Answer- (h)

F-ratio which is also known as fisher's Ratio.
The F-ratio is a ratio which is given by Ronald fisher.
F ratio is used to test the significance

F ratio which is also known as fisher's ratio is used to ~~calculate~~ calculate variance of data.
Pearson's coefficient of correlation's test of significance is done by F ratio or fisher's ratio.
F ratio plays a important role in finding the variations and the cause of the variation.
F ratio is mostly used for the test of signifance.
Test of significance means difference between two independent variables.
F-ratio is used so promptly in finding test of significance and also use to measure the variation and its cause.

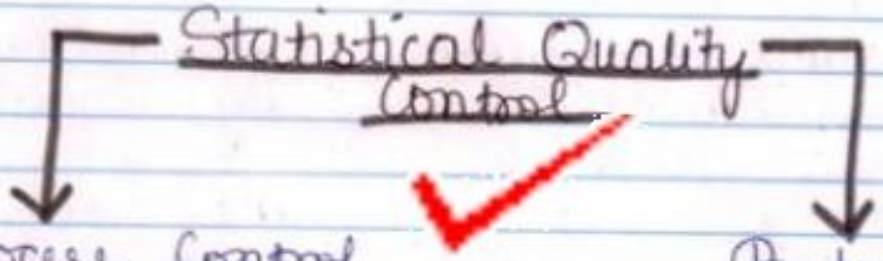
Answer - (i)

(a) Statistical quality control

Statistical quality control is a statistical method to control the quality of manufactured goods or commodities.
It refers to the statistical measure which control the quality of commodities.

Statistifical quality control is one of the most important statistical methods.

It includes two types of control.



Process Control = Process control is a method to control the production of a product so that it can be according to the pre determined standard Process control is applicable during the process of production.

Product Control = Product Control which is also known as acceptance sampling It is that type of statistical quality Control which accept or reject the product after its production.

Both methods are very important for standard quality control to maintain the standard or desired quality of the product the major difference among both of them is of duration or time of their Control.
Process control is during the production process whereas product Control is after the production process.

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(b) Acceptance Sampling

Acceptance sampling which is also known as Product control.
Acceptance sampling is one of the important method of standard quality control.

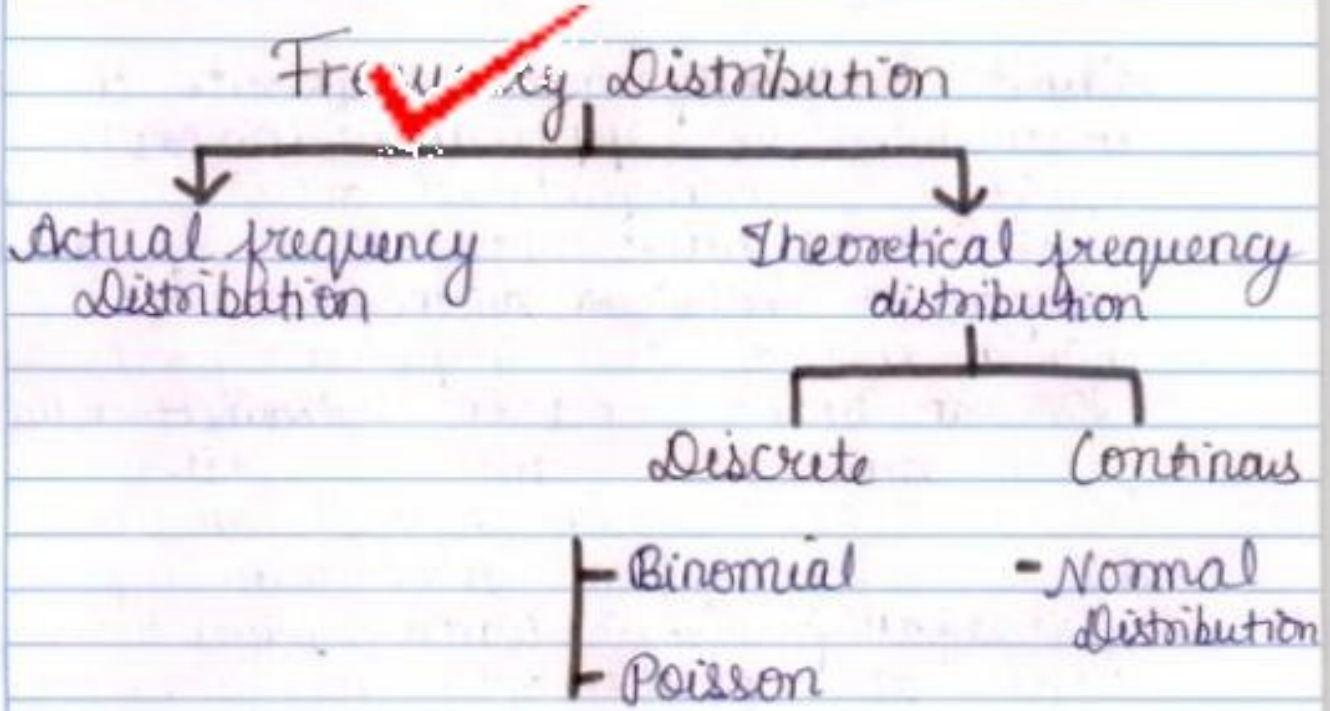
Standard quality control refers to the statistical method, use or application to control the quality of manufactured goods or commodities. Statistical quality control is one of the most important statistical methods which includes two important parts —
Process Control Product Control

Product Control which is also known as Acceptance sampling. It is that type of statistical quality control which accepts or rejects the product after its production.

Process Control	=	Acceptance Sampling

SECTION-B

Answer - 2



The distribution comprises expectation based on past experience is known as Theoretical frequency distribution

Theoretical frequency distribution is a part of frequency distribution.

Theoretical frequency distribution further divided into different class frequencies. which includes Poisson, Binomial, Normal distribution.

1) Poisson frequency distribution
This distribution was founded by Mr Poisson.

Poisson distribution = $e^{-m} \cdot \frac{m^x}{x!}$

Poisson distribution is a discrete frequency distribution, where the value of n is infinite.

Features of Poisson distribution =

1) Parameters – Poisson distribution have one parameter that is mean

2) Frequency distribution – It is a discrete frequency distribution.

3) Shape of curve – The shape of curve of poisson distribution is positively skewed.

4) Value of n – The value of n in poisson distribution is infinite.

5) value of p, q – Value of p will be 0 very small and value of q will be very large

Features of Normal Distribution –

1) Parameter - Normal Distribution have parameter – two that is standard deviation and mean.

2) frequency distribution – Normal distribution are continous frequency distribution.

3) Uni Model – Normal distribution is also known as uni model

4) Shape of graph – The shape of graph is perfect symmetrical bell-shape

5) Value of n – The value of n in Normal distribution leads toward infinite.

6) Value of q.p – Neither the value of p or p, no value will be small

Normal Distribution $= \frac{1}{\sigma\sqrt{2\pi}} \cdot e^{-\frac{1}{2}\left(\frac{x-\bar{x}}{\sigma}\right)^2}$

Binomial Distribution –

It is a Discrete frequency Distribution

$$\text{Binomial Distribution} = {}^{n}C_{x}\, q^{n-x}\, p^{x}$$

Features of Binomial Distribution –

1) Parameter – There are two parameters in Binomial distribution – p & q

2) frequency distribution – It is a discrete frequency distribution.

3) Bernoulli Model – This Distribution is based on Bernoulli Model.

$$\underline{\text{Bernoulli Model}} = \underline{{}^{n}C_{r}\, p^{r}\, q^{n-r}}$$

4) Dichotonomous – Use of this model will be in dichotomous classification.

5) Shape of graph – Shape of graph may be symmetrical or assymmetrical based on the value p & q.

6) Value of n – The value of n will be

finite in binomial distribution.

Difference between Binomial, Normal & Poisson Distribution :-

Basis of difference	Binomial	Poisson	Normal distribution
frequency distribution	It is a discrete frequency distribution	It is also a discrete frequency distribution	It is a continous frequency distribution
Parameters	Two parameters p & q	One Parameter Mean	Two parameters Standard deviation & mean
Value of n	Value of n will be finite	Value of n will be infinite	Value of n will be infinite
formula	${}^nC_x q^{n-x} p^x$	$e^{-m}\frac{m^x}{x!}$	$\frac{1}{\sigma\sqrt{2\pi}} \cdot e^{-\frac{1}{2}\left(\frac{x-\bar{x}}{\sigma}\right)^2}$

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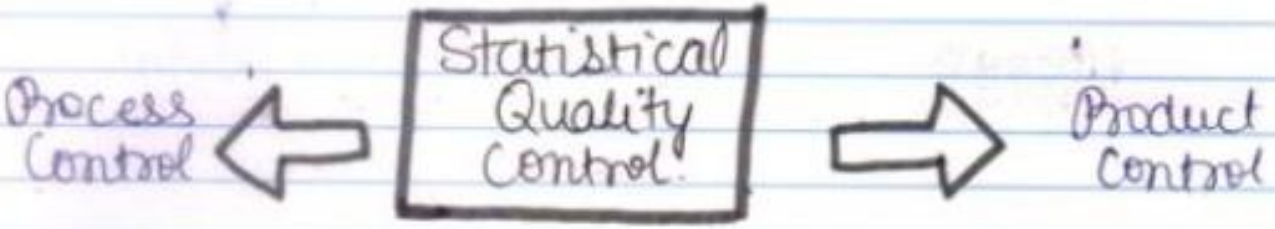
SECTION-C

Answer-7

Statistical quality control is a statistical method to control the quality of manufactured goods or commodities
It refers to a statistical measure which control the quality of commodities.

features of Statistical Control -

- One of the most important statistical method to control quality of the commodity.
- Improves the standard of the products
- A statistical method



There are two types of statistical quality control — Process control & Product Control.

Process Control - It is the first method to control the quality of the product. Process Control is a method to control the production of a product so that it can be according to the pre-determined standard.
Process Control is applicable during the process of production.

Product Control - Product Control which is also known as acceptance sampling It is that type of statistical quality Control which accept or reject the product after its production.

Both methods are very important for standard quality control to maintain the standard desired quality of the product the major difference among both of them is of duration or time of their Control

Process control is during the production process whereas product control is after the production process.

Need and Usefulness of statistical Quality Control in Industry :-

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1) It give a quality check so that product is approved

2) Plays a very crucial role in mainting the quality of a commodity.

3) Statistical quality control help industries to increase its standards in production.

4) Statistical quality control ensures the smooth flow of production in an enterprise.

5) It is very important in the production or manufacturing process of commodities.

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Do Not Write anything in this Portion

Paper Code

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19

Paper Code

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20

Do Not Write anything in this Portion

Paper Code

21

Paper Code

22

Do Not Write anything in this Portion

Paper Code

23

Do Not Write anything in this Portion

Paper Code

1 − 0.7
= 0.3

1 − 0.54
= 0.46

RW

Poisson = $e^{-m} \frac{m^x}{x!}$ Binomial = $^nC_x q^{n-x} p^x$

Normal = $\frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\bar{x}}{\sigma}\right)^2}$

Bayes = $\frac{P_m P_m}{P_1 P_1 + P_2 P_2 \text{ ---- } P_n P_n}$

Bernoulli = $^nC_r p^r q^{n-r}$

Karl pearson = $\frac{N\Sigma xy - \Sigma x . \Sigma y}{\sqrt{[N.\Sigma x^2 - (\Sigma x)^2] N.\Sigma y^2 - (\Sigma y)^2}}$

Deviation = $dx = (x-\bar{x})$ $dy = (y-\bar{y})$

variance = $\frac{\Sigma dx dy}{N}$ coeff = $\frac{\Sigma dx dy}{N . \sigma x . \sigma y}$

Spearmen Rank = $1 - \frac{6\Sigma D^2}{N(N^2-1)}$

$\frac{9.6}{120}$

PE = $0.6745 \times \frac{1-r^2}{\sqrt{N}}$

$\frac{9.6}{12}$

Regression coeff = $\sqrt{b_{xy} \times b_{yx}}$

Yulle's = $\frac{(AB)(a'b) - (Ab) \times aB}{(AB)(ab) + (Ab \times aB)}$

12) 0.8
9.6

0.54
× 0.7
.378

0.7
0.54
1.24
−0.378
.862

1.24
0.862
2.102