**OBJECTIVE MARKS: 17** You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. 11th Class Statistics Objective Paper DG Khana Board 2024 **QUESTION NO. 1** Statistical results are 1 (B) always true (C) not true (D) true on average (A) exact 2 If C is a constant, then  $\sum C$  is equal to (D)  $\frac{8}{C}$ (A) 8 + C(B) 8-C (C) 8 C The number of items of data in a class is called 3 (B) Variable (C) Parameter (D) Mid point (A) Frequency Ogive can be used for the calculation of 4 (A) Mean (B) Median (C) Mode (D) Harmonic mean Mode of the series 10, 13, 12, 10, 20, 11, 15, 10, 14, 12 is 5 (A) 10 (B) 12 (C) 15(D) 20 If  $\sum (X_i - 50) = 100$ , then sample mean  $\overline{X}$  will be 6 (A) 10 (B) 50 (C) 60 (D) 100 Second moment about mean is 7 (C) Range (A) Zero (B) Variance Mean deviation of values 6, 6, 6, 6, 6, 6, 6, 8 (B) 6 (C) 1 (A) 36Cost of living index numbers are 9 (B) Composite index (C) Chain index (D) Unweighted index (A) Simple index The most suitable average in chain base method is 10 (C) Arithmetic mean (D) Geometric mean (B) Mode (A) Median The orderly arrangement of units is called 11 (D) Factorial (C) Probability (B) Combination (A) Permutation A set of all possible outcomes of an experiment is called 12 (D) Simple event (B) Sample point (C) Sample space (A) Combination A discrete probability function f(x) is always 13 (D) Zero (C) One (B) Negative (A) Non-negative The appropriate graph of probability density function is 14 (D) Historigram (C) Histogram (B) Curve (A) Polygon In a Bernoulli trial the experiment is performed 15 (D) More than once (C) Thrice (B) Twice The parameters of the binomial distribution are 16 (D) n and p (A) n and x (B) p and x(C) p and q

(C) 3

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(A) 1

(B) 2

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In a hypergeometric distribution N=6, n=4 and K=3, then mean is equal to

(D) 4

QUES	TION NO. 2 Write short answers to any E	ight (	8) parts of the following 16
(i)	Define Discret Variable.	(ii)	Describe the importance of Statistic in Economics.
(iii)	Write any two characteristics of Statistics.	(iv)	Enlist any two advantages of mode.
(v)	Find Geometric Mean (G.M)	(vi)	If median = 65 & mode = 85
	If $\sum f \log x = 170.69902$ , $\sum f = 80$		Find the value of mean.
(vii)	Define Harmonic Mean (H.M)	(viii)	Find Mode 2,5,7,11,3,5,11,13,5
(ix)	Given $\sum p_0 q_1 = 402 \& \sum p_1 q_1 = 481$	(x)	Given $\sum p_1 q_0 = 900 \& \sum p_0 q_0 = 897$
	Find current year Weighted index number.		Find Cost of Living index number.
(xi)	Define Fisher's Ideal index number.	(xii)	Write any two uses of index Number

QUESTION NO. 3 Write short answers to any Eight (8) parts of the following 16

(i)	Define relative frequency.	(ii)	What is one way and two way classification?
(iii)	Differentiate between class limits and class	(iv)	Compute coefficient of quartile deviation
	boundaries.		if $Q_1 = 12$ , $Q_3 = 48$
(v)	Define mean deviation.	(vi)	Describe any two demerits of Range.
(vii)	Given $\overline{x} = 12$ and $Var(x) = 3$ , Find $\overline{y}$ and $Var(\overline{y})$	(viii)	Compute coefficient of variation
(011)	When y = 2x - 3	(VIII)	if mean = 1.2 and S = 1.307
(ix)	Make a sample space if we toss a fair coin	(x)	How many permutations can be formed from the
	three times.		word "STATISTICS".
(xi)	Give the statement of addition law of probability for two non-mutually exclusive events.	(xii)	If P (A) = $\frac{1}{4}$ , P (B) = $\frac{1}{3}$ and P (A/B) = $\frac{1}{6}$ ,
	Tor two non macually exclusive events.		then find P (B/A).

OUESTION NO. 4 Write short answers to any Six (6) parts of the following

~~~	The first of the short distress to diff six (o) parts of the following						
(i)	Explain the continuous random variable with example.	(ii)	Write the properties of Distribution function.				
(iii)	For the probability function $f(x) = Ax$ , $x = 1, 2, 3$ , Compute the value of A.	(iv)	Check whether $f(x) = \frac{x}{10}$ , $x = 1, 2, 3, 4$ is a probability density function.				
(v)	Find the E(X) for a binomial distribution with $n = 6$ and $p = \frac{3}{5}$	(vi)	Describe the shape of binomial distribution with p = 0.5				
(vii)	A hypergeometric distribution has parameters  N = 8, k = 4 and n = 3 Give its mean.	(viii)	Enlist any two properties of hypergeometric distribution				
(ix)	Give the range of the hypergeometric random variable.	>					

Note: Attempt any Three questions from this section  $8 \times 3 = 24$ 

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(B) Find Mode from t	the following distribu	ution.			
	Height (in)	60-62	63 - 65	66 - 68	69 – 71
	No. of Students	5	18	27	8

Classes	10-20	20 - 30	30-40	40 - 50	50 – 60	60 - 70	70 - 80
f	02	03	04	20	15	07	05

(B) From the data 1,4,7,8,10 calculate first four moments about mean.

(A) Find Median and D<sub>7</sub> from the given data 15,7,3,0,9,6,4,5

(A) Compute the index numbers of price, taking 1962 as base (i) Mean Q. 7 (ii) G.M are used as average.

V		Commodities					
Years	Fire wood	Short cake	Kerosene oil	Matches			
1962	3.25	2.50	0.20	0.06			
1963	3.44	2.80	0.22	0.06			
1964	3.50	2.00	0.25	0.06			
1965	3.75	2.50	0.25	0.06			

(B) From a well shuffled pack of 52 playing cards, two cards are drawn at random, what is the probability (i) One is a king and other is queen (ii) both are aces (iii) both are black (iv) both are spade cards ?

Q. 8 (A) Given that

Х	2	4	6
P(X)	2/6	$^{2}/_{6}$	$^{2}/_{6}$

Find (i) E(X)

(ii)  $E(X^2)$ 

(B) A continuous random variable X which can assume values between X = 2 and X = 8 inclusive has a density Function, f(x) = A(x+3), where 'A' is constant, Find (i) A (ii)  $P(3 \le x \le 5)$ 

(A) A fair die is thrown 6 times. Let X be a random variable showing number of sixes. Find (i) P(X = 2) (ii) P(X = 6)Q. 9

(B) A Committee of size 3 is selected from 4 men and 2 women. Obtain the probability distribution by the hypergeometric experiment for the number of men in the committee.

## DG Khan Board-2023

PAPER CODE - 8187

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### **STATISTICS**

## 12th CLASS - 1st Annual 2023

TIME: 20 MINUTES MARKS: 17

## **OBJECTIVE**

OTTE	the circles. Cutting or filling two or more circles will result in zero mark in that question.  ESTION NO. 1
1	Correlation co-efficient between X and X is
1	(A) 0 (B) $-1$ (C) $+1$ (D) $-1$ to $+1$
2	Co-efficient of association Q lies between
_	(A) 0 to +1 (B) -1 and +1 (C) $-\infty$ and +1 (D) $-\infty$ to $+\infty$
3	The shape of $\chi^2$ - distribution depends upon
	(A) Mean (B) Degrees of freedom (C) Number of cells (D) S.D
4	A sudden decrease in supplies due to floods is
	(A) Secular trend (B) Seasonal variations (C) Cyclical variations (D) Irregular variations
5	A sequence which follow regular variations is called
	(A) Signal (B) Noise (C) Model (D) Trend
6	One byte equals
	(A) 8 bits (B) 4 bits (C) 6 bits (D) 12 bits
7	Shape of normal curve is
	(A) J (B) L (C) Bell (D) Circle
8	In a normal distribution $E(x - \mu)^2$ is
	(A) Q.D (B) S.D (C) Variance (D) M.D
9	The maximum ordinate of standard normal curve is at
	(A) 0 (B) 1 (C) (D) 0 ED (CATION
10	In sampling with replacement the population becomes
	(A) Infinite (B) Existent (C) Finite (D) Hypothetical
11	Non probability form of sampling is
	(A) Quota sampling (B) Random sampling (C) Stratified sampling
	(D) Systematic sampling
12	In sampling with replacement $\sigma_{\bar{x}} = \dots$
	(A) $\frac{\sigma}{n}$ (B) $\frac{\sigma}{\sqrt{n}}$ (C) $\frac{\sigma^2}{n}$ (D) $\frac{\sigma}{\sqrt{n}} \cdot \frac{N-n}{N-1}$
13	A formula or function used to estimate a parameter is called
13	(A) Estimate (B) Estimation (C) Bias (D) Estimator
14	Which of the following cannot be null hypothesis
	(A) $\theta \le \theta_o$ (B) $\theta \ge \theta_o$ (C) $\theta = \theta_o$ (D) $\theta \ne \theta_o$
15	Probability of rejecting true hypothesis is called
	(A) Critical region (B) Level of significance (C) Test statistic (D) Power of test
16	In the regression equation $Y = a + bx$ , "a" is the
	(A) Y-intercept (B) Slope (C) X-intercept (D) Trend
17	In least squares regression line $\Sigma(Y - \widehat{Y})^2$ is always
1	(A) Negative (B) Non-negative (C) Zero (D) Fractional

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Searche relationship between Mean, Median and Mode of the normal distribution   If X = NIS, 4, Pind the value Z, if X = 18	QUEST	TION NO. 2 Write short answers any Eight (8) parts of the following
Wate is standard coronal distribution ?	i	Describe relationship between Mean, Median and Mode of the normal distribution
viric down the lower and upper quartile of the normal distribution, $\mu = 0$ , $Q_0 = 171$   Find standard deviation   viric down the lower and upper quartile of the normal distribution, $\mu = 0$ , $Q_0 = 171$   Find standard deviation   viric Explain statistical inference   xi		
v In normal distribution, μ = 9, Q <sub>2</sub> = 171. Find standard deviation  vii What is point estimation?  vii Explain statistical inference ix Define composite hypothesis What is type1-error?  xi Define input devices iii Distinguish between hardware and software iii Distinguish between hardware and software iii Distinguish between hardware and software iii Define probability sampling and non-probability sampling iii Define probability sampling and non-probability sampling iii Define probability sampling and strainfed random sampling with the volume of mean and variance of sampling distribution of mean without replacement  What are two disadvantages of non-probability sampling viii What is objective of correlation and of regression?  What are two disadvantages of non-probability sampling viii What is objective of correlation and of regression?  Wife any two properties of intercept a <sub>n</sub> is How would you interpret a <sub>n</sub> = 3?  If rind y if N <sub>m</sub> = 4, S <sub>m</sub> = 2, S <sub>m</sub> = 10  wiii What is objective of correlation and of regression inc. Write normal and slope of a regression line. Write formulae of a <sub>n</sub> iviii What is illustrate class frequency iii Discuss negative association if The value of r <sub>n</sub> = 0.19 for 8 students in two subjects. Find y if N <sub>m</sub> = 4, S <sub>m</sub> = 2, S <sub>m</sub> = 10  viii What is listorigram?  viii What do you mean by analysis of time aeries viii What is listorigram?  viii What of your performant of time series viii What of performant of time series viii What of your performant of time series viii What to Perform the section  SECTION-II  Q. 6(a)  Let X be normally distributed with mean 8 and standard deviation 4.  Find (in Plet's X = 21] (ii) P(X ≤ 3]  (b) Let X ~ N (40, 64) then find the single point which has 90 % area below it  The raline recreation and the single point which has 90 % area below it	1	What is standard normal distribution?
i i What is point estimation?  iii Kaplain statistical inference  ix Define composite hypothesis  x What is type-I error?  ix Define input devices  ix Define probability sampling and non-probability sampling is done without replacement  iv What are row odisadvantages of non-probability sampling?  ivi Define input and on sampling and stratified random sampling and the replacement of the following of the sample input and the replacement of the following of the follo	1	Write down the lower and upper quartie of the horizontal distribution
with what is point estimation?  if Explains statistical inference is Define composite hypothesis in What is type-I error?  if Define input devices is instance of sampling and non-probability sampling is done without replacement befine probability sampling and non-probability sampling is done without replacement in Define probability sampling and non-probability sampling in Define simple random sampling and stratified random sampling in the work of the following in Define simple random sampling and stratified random sampling in Write formulae of mean and variance of sampling distribution of mean without replacement what are two disadvantages of non-probability sampling?  vi Distinguish between probability and non-probability sampling?  vi What as objective of corporalation and of regression?  viii What is objective of corporalation and of regression?  viii What is objective of corporalation and of regression in Write any two properties of intercept a <sub>x</sub> = 3?  Find γ if $b_{xy} = 4$ , $b_{xy} = 2$ , $b_{yy} = 1$ in Define ultimate class frequency in Discuss negative association in The value of $t_{xy} = 0.00$ in the second variation?  Viii What do you mean by analysis of time series with what is Historigram?  viii What do you mean by analysis of time series with what is Historigram?  Viii What do you mean by analysis of time series with what is Historigram?  viii What (i) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in In Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in In Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in In Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii (ii) Pi4≤ X ≤ 12 (ii) PiX ≤ 3 in Viii Pi4 ≤ 6 in Viii Pi4 ≤		In normal distribution, $\mu = 9$ , $Q_3 = 1/1$ This standard deviation
x What is type-I error?  i Define intercept and variance of sampling is done without replacement period with the sample of size 36 is taken from this section  Viatory and the sample of the sample of the sample of size 36 is taken from this section  Viatory and the sample of the sample of the sample of size 36 is taken from this section of the sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample of size 36 is taken from a normal population with a sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample proportion from from this section  8×3 = 24.  O, 5(a)  Let X ≈ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution mean  (D, 6(a)  Find the mean μ <sub>x</sub> , variance σ² and standard errors σ <sub>x</sub> of the mean X for a random sample of size 36.  (D, 8(a)  Find the mean μ <sub>y</sub> , variance σ² and standard errors σ <sub>x</sub> of the mean X for a random sample of size 36.  (D, 8(a)  Find the mean μ <sub>y</sub> , variance σ² and standard errors σ <sub>x</sub> of the mean X for a random sample of size 36.  (D, 8(a)  Find the mean μ <sub>y</sub> , variance σ² and standard errors σ <sub>x</sub> of the mean X for a random sample of size 36.  (D, 8(a)  Find the correlation coefficient from the single point which has 90 % area below it  Find the mean μ <sub>y</sub> , variance σ² and standard errors σ <sub>x</sub> of the mean X for a random sample of size 36.  Find the cardom variable X has the following probability distribution mean of		Define Estimation  What is point estimation?
ix   Define composite hypothesis   What is typel-error?	VII	What is point estimation:
X   What is type-I error?	VIII	Explain statistical inference
xi Define input devices xi Distinguish between hardware and software yet Diestrion No. 3. Write short answers any Eight (8) parts of the following 16 16 16 Find standard error of X if N = 5, n = 2, σ² = 10 if sampling is done without replacement 17 18 Define probability sampling and non-probability sampling 18 Define simple random sampling and startified random sampling 19 Write formulae of mean and variance of sampling distribution of mean without replacement 19 Write formulae of mean and variance of sampling distribution of mean without replacement 20 What are two disadvantages of non-probability sampling 21 Distinguish between probability and non-probability sampling 22 What is objective of correlation and of regression? 23 Will with any two properties of intercept a <sub>x</sub> = 3? 24 Find y if b <sub>y</sub> = 4, S, ≥ 7, S, = 10 24 Write any two real life applications of regression 25 Eight intercept and slope of a regression line. Write formulae of a <sub>x</sub> 26 Discuss negative association 26 Define ultimate class frequency 27 Write down the components of time series 28 Will what is seasonal variation? 29 Write down the components of time series 39 Write down the components of time series 30 What is Historigram? 30 What is Historigram? 30 What is Historigram? 31 What do you mean by analysis of time series 31 Write down the components of time series 32 Write down the components of time series 33 What is Historigram? 34 What is X > 12 (ii) P[X ≤ 3] 35 Write down the components of time series 34 What is X > 24 (iii) Write down the components of time series 35 Write down the components of time series 36 Write down the components of time series 36 Write down the components of time series 37 Write down the components of time series 38 Write down the components of time series 39 Write down the components of time series 30 Write down the components of time series 30 Write down the components of time series 31 Pind the mean and the sail point which has 90 % area below it 39 The find the mean p <sub>x</sub> variance σ <sup>2</sup> <sub>x</sub> and standard errors σ	1	
Six   Distinguish between hardware and software   Distinguish between hardware and software   Distinguish between hardware and software   Find standard error of X if N = 5, n = 2, σ² = 10 if sampling is done without replacement	1 - 1	
DIESTION NO. 3 Write short answers any Eight (8) parts of the following  i   Find standard error of X if N = 5, n = 2, σ² = 10 if sampling is done without replacement  Define probability sampling and non-probability sampling  Define imple random sampling and straiffied random sampling  Write formulae of mean and variance of sampling distribution of mean without replacement  What are two disadvantages of non-probability sampling?  Vill wite any two properties of intercept a <sub>xx</sub> = 3?  I bestinguish between probability and non-probability sampling?  Will write any two properties of intercept a <sub>xx</sub> = 3?  I Find y if b <sub>x</sub> = 4, S, ≥ 2, S <sub>x</sub> = 10  xi Write any two real life applications of regression  Define ultimate class frequency  iD bestine intercept and slope of a regression line. Write formulae of a <sub>xx</sub> Define ultimate class frequency  iD bestine intercept and slope of a regression line. Write formulae of a <sub>xx</sub> Define ultimate class frequency  iD biscuss negative association  iii The value of r <sub>x</sub> = 0.19 for 8 students in two subjects, Fight 2d²  i Write down the components of time series  vii What is Historigram?  What is Historigram?  What is Historigram?  What is Historigram?  Note: Attempt any Three questions of time series  ixi Given 9 = 50 + 2x with origin at 1983 and unit of x is one year. Shift the origin at 1980  Section-1.  O. 5(a)  Let X be normally distributed with mean 8 and standard deviation 4.  Find (i) Pi4≤ X ≤ 12] (ii) PIX ≤ 3   (b)  Let X ~ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution  Find (ii) Pi4≤ X ≤ 12] (ii) PIX ≤ 3   Define ultimate components of the sample proportion favouring this issue  Q. 7(a)  A random sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample proportion favouring this issue  Q. 8(a)  Find the greatest to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue  Q	xii	Distinguish between hardware and software
i Find standard error of X if N = 5, n = 2, σ² = 10 if sampling is done without replacement in Define probability sampling and one-probability sampling with the sampling and stratified random sampling with the sampling and stratified random sampling in Write formulae of mean and variance of sampling distribution of mean without replacement with what are two disadvantages of non-probability sampling?  What are two disadvantages of non-probability sampling?  What are two disadvantages of non-probability sampling?  With any two reported as σ² = 7  x Find y if b <sub>p</sub> = 4, S <sub>r</sub> = 2, S <sub>r</sub> = 10  Witte any two real life applications of regression?  With any two real life applications of regression Define intercept and slope of a regression line. Write formulae of a <sub>rc</sub> Define ultimate class frequency  ii Discuss negative association  If the value of r <sub>r</sub> = 0.19 for 8 students in two subjects, Find Xard  What is seasonal variation?  Write down the components of time series will what do you mean by analysis of time series?  What do you mean by analysis of time series?  Write down the components of time series?  Write tax N = 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	OUEST	NON NO 2 Write short enswers any Fight (8) parts of the following
ii Define probability sampling and non-probability sampling iii Define impler andom sampling and stratified random sampling iii Define impler andom sampling and stratified random sampling?  With a formulae of mean and variance of sampling distribution of mean without replacement What is retwo disadvantages of non-probability sampling?  Distinguish between probability and non-probability sampling?  What is objective of correlation and of regression?  With any two properties of intercept $a_x$ .  I Find $\gamma$ if $b_y = 4$ , $S_y = 7$ , $S_y = 10$ Wite any two real life applications of regression inc. Write formulae of $a_x$ .  Distinguish between probability and non-probability sampling?  Write any two properties of intercept $a_y$ .  I Find $\gamma$ if $b_y = 4$ , $S_y = 7$ , $S_y = 10$ Wite any two real life applications of regression.  Define ultimate class frequency  Discuss negative association of the following of the following.  Discuss negative association iii The value of $r_x = 0.19$ for 8 students in two subjects, Fisad $\Delta T$ Write down the components of time series with the work of the following		Find standard error of $\overline{X}$ if $N=5$ , $n=2$ , $\sigma^2=10$ if sampling is done without replacement
Define simple random sampling and stratified random sampling  Write formulae of mean and variance of sampling distribution of mean without replacement  What are two disadvantages of non-probability sampling?  Vi Distinguish between probability and non-probability sampling?  Write any two properties of intercept a <sub>x</sub> in How would you interpret a <sub>x</sub> = 3?  x Find γ if b <sub>x</sub> = 4, S, = 2, S, = 10  Write any two real life applications of regression  Define intercept and slope of a regression line. Write formulae of a <sub>x</sub> ZUESTION NO. 4 Write short answers any Six (6) parts of the following  i Define ultimate class frequency  ii Discuss negative association  If the value of τ, = 0.19 for 8 students in two subjects. Find Δd  Give two examples of secular trend  What is seasonal variation?  Write down the components of time series  What is Historigram?  Write down the components of time series  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  Write down the components of the series?  Octean Attempt any Three questions from this section  SECTION-II  Note: Attempt any Three questions from this section  SECTION-II  Octean Attempt any Three questions from this section  Section 19 [14 ≤ X ≤ 12]  (b) Let X ~ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution $x = 4 + 5 + 6 + 7 - 7$ P(x) 0, 2 0.4 0.3 0.1  Find the mean μ <sub>x</sub> , variance σ <sup>2</sup> <sub>x</sub> and standard errors σ <sub>x</sub> of the mean X for a random sample of size 36  Suppose that 60 % of a city population favours public finding for a proposed recreational facility.  If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue  Q. 7(a)  Octean A 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		Define probability sampling and non-probability sampling
with the formulae of mean and variance of sampling distribution of mean without replacement  what are two disadvantages of non-probability sampling?  Distinguish between probability and non-probability sampling?  What is objective of corpetation and of regression?  What is objective of corpetation and of regression?  Write any two properties of intercept a₂₂ is find y if b₂₂ = 1, s₂ = 2, s₂ = 10  with the would you interpert a₂₂ = 3?  Find y if b₂₂ = 1, s₂ = 2, s₂ = 10  with the any two real life applications of regression incomplete intercept and slope of a regression line. Write formulae of a₂₂ = 10  Define ultimate class frequency  i) Discuss negative association  The value of τ₁ = 0.19 for 8 students in two subjects, Fijido 2d  i) Define ultimate class frequency  ii) Discuss negative association?  What is seasonal variation?  viii What to you mean by analysis of time series viii What is Historigram?  wiii What to you mean by analysis of time series viii What is Historigram?  wiii What to you mean by analysis of time series viii What to you mean by analysis of time series viii What to you mean by analysis of time series viii What to you mean by analysis of time series viii What to you mean by analysis of time series viii What to you mean by analysis of time series viii What to you mean by analysis of time series viiii What to you mean by analysis of time series viii What to you mean by analysis of time series viii What to you mean by analysis of time series viiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii		Define simple random sampling and stratified random sampling
what are two disadvantages of non-probability sampling?  vi Distinguish between probability and non-probability sampling  what is objective of correlation and of regression?  Write any two properties of intercept a <sub>xx</sub> = 3?  x Find γ if b <sub>xy</sub> = 4, S <sub>y</sub> = 2, S <sub>x</sub> = 10  Write any two real life applications of regression  Define intercept and slope of a regression line. Write formulae of a <sub>xx</sub> Define ultimate class frequency  Discuss negative association  ii The value of τ <sub>x</sub> = 0.19 for 8 students in two subjects. Find Σdd  What is seasonal variation?  will What do you mean by analysis of time series  What is Historigram?  What is Historigram?  Note: Attempt any Three questions from this section  Q. 5(a)  Let X be normally distributed with mean 8 and standard deviation 4.  Find (1) P[4X ≤ 12] (ii) P[1X ≤ 3]  Let X ~ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution  x 4 5 6 7  P(x) 0, 2, 0, 4, 0, 3, 0, 1.  Find the mean μ <sub>xx</sub> , variance σ <sub>xx</sub> and standard errors σ <sub>xx</sub> of the mean X for a random sample of size 36  (b)  Suppose that 60 % of a city population favours public finding for a proposed recreational facility.  If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue  Q. 7(a)  A random sample of size 36 is taken from a normal population with a known variance σ <sup>2</sup> = 25. If the mean of the sample is 42.6, find 95 % confidence limits for the population mean  (b) A random sample of size 36 is taken from a normal population with a known variance σ <sup>2</sup> = 25. If the mean of the sample is 42.6, find 95 % confidence limits for the population mean  (c) A random sample of size 36 is taken from a normal population with a known variance σ <sup>2</sup> = 25. If the mean of the sample is 42.6, find 95 % confidence limits for the population mean  (a) A random sample of size 36 is taken from a normal population with a known variance σ <sup>2</sup> = 4.5 (linches) <sup>2</sup> . Test H <sub>x</sub> :	iv	Write formulae of mean and variance of sampling distribution of mean without replacement
will with any two properties of intercept a <sub>γx</sub> How would you interpret a <sub>γx</sub> = 3 ?  x Find γ if b <sub>γy</sub> = 4 , S <sub>x</sub> = 2 , S <sub>x</sub> = 10  xi Write any two properties of intercept interpret a <sub>γx</sub> = 3 ?  x Find γ if b <sub>γy</sub> = 4 , S <sub>x</sub> = 2 , S <sub>x</sub> = 10  xi Write any two real life applications of regression line. Write formulae of a <sub>γx</sub> Define intercept and slope of a regression line. Write formulae of a <sub>γx</sub> Discuss negative association  ii Define ultimate class frequency  lii Discuss negative association  What is Historigram?  vi Write down the components of time series  What is Historigram?  vii What do you mean by analysis of time series?  What is Historigram?  Viii What do you mean by analysis of time series?  SECTION-II  Note: Attempt any Three questions from this section  8×3 = 24  Q. 5(a) Let X bo normally distributed with mean 8 and standard deviation 4.  Find (i) P[4 X × 12] (ii) P[X × 3]  (b) Let X ~ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution  x 4 5 6 7  P(x) 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,	v	What are two disadvantages of non-probability sampling?
with the any two properties of intercept $a_{xx} = 3$ ?  I How would you interpret $a_{yx} = 3$ ?  Find $y$ if $b_{xy} = 4$ , $S_y = 2$ , $S_x = 10$ Write any two real life applications of regression [ine. Write formulae of $a_{xx}$ with properties of intercept and slope of a regression line. Write formulae of $a_{xx}$ with properties of intercept and slope of a regression line. Write formulae of $a_{xx}$ with properties of the following of the following of the following of the view of the camponents of time series with the camponents of secular trend what is seasonal variation?  Write down the components of time series with what is Historigram?  What is seasonal variation?  Write down the components of time series with what is Historigram (1983) and unit of $x$ is one year. Shift the origin at 1980 SECTION-II  What do you mean by analysis of time series with with one of the properties of the series of the sample proportion favouring this issue  Q. 7(a)  Find the mean $\mu_x$ , variance $\sigma_x^2$ and standard errors $\sigma_x$ of the mean $\pi_x$ for a random sample of size 36 is taken from a normal population with a known variance $\sigma_x^2 = 2.5$ . If the mean of the sample proportion favouring this issue  Q. 7(a)  A random sample of size 36 is taken from a normal population with a known variance $\sigma_x^2 = 2.5$ . If the mean of the sample is 42.6, find 95 % confidence limits for the population mean  A random sample of nine from the men of a large city gave a mean height of 68" and variance $\sigma_x^2 = 4.5$ (inches)? Test $H_x$ : $\mu = 68.5$ Series of data of two regression lines $\frac{\pi_x}{1} = \frac{\pi_x}{1} = \frac{\pi_x}{1} = \pi_$	vi	Distinguish between probability and non-probability sampling
ix How would you interpret a <sub>xx</sub> = 3 ?  x Find y if b <sub>xy</sub> = 4 , 5, 2 = 2 , S, = 10  xi Write any two real life applications of regression line. Write formulae of a <sub>xx</sub> Define intercept and slope of a regression line. Write formulae of a <sub>xx</sub> Define intercept and slope of a regression line. Write formulae of a <sub>xx</sub> Define ultimate class frequency  ii Define ultimate class frequency  iii The value of r <sub>x</sub> = 0.19 for 8 students in two subjects. Find y  iii What is seasonal variation?  iv Write down the components of time series?  ivi What do you mean by analysis of time series?  ivi What do you mean by analysis of time series?  ivi What do you mean by analysis of time series?  ivi What is Historigram?  vii What do you mean by analysis of time series?  SECTION-II  Note: Attempt any Three questious from this section  SECTION-II  Note: Attempt any Three questious from this section  Q. 5(a) Let X be normally distributed with mean 8 and standard deviation 4.  Find (i) P[4≤ X ≤ 12] (ii) P[X ≤ 3]  (b) Let X ~ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution  x	4.554.755	What is objective of correlation and of regression?
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xi   Write any two real life applications of regression   xi   Define intercept and slope of a regression line. Write formulae of a <sub>xx</sub>   Define ultimate class frequency	1 1	How would you interpret $a_{yx} = 3$ ?
Define intercept and slope of a regression line. Write formulae of a <sub>xx</sub>	1 1	Find $\gamma$ if $b_{xy} = 4$ , $S_y = 2$ , $S_x = 10$
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i Define ultimate class frequency Discuss negative association iii The value of r <sub>s</sub> = 0.19 for 8 students in two subjects. Find Σd v What is seasonal variation? vi Write down the components of time series vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? vii What do you mean by analysis of time series? viii What do you mean by analysis of time series? viii What do you mean by analysis of time series? viii What do you mean by analysis of time series? viii What do you mean by analysis of time series? What is Historigram?  SECTION-II  8×3 = 24  Let X be normally distributed with mean 8 and standard deviation 4. Find (i) P[4≤ X ≤ 12] (ii) P[X ≤ 3]  (b) Let X ~ N (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution  \[ \begin{array}{c} \text{x} & 4 & 5 & 6 & 7 \\ \text{P(x)} & 0.2 & 0.4 & 0.3 & 0.1 \end{array} \] Find the mean \(\frac{x}{y}\) of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue  Q. 7(a) A random sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample or pinci from the men of a large city gave a mean height of 68" and variance δ² = 4.5 (inches)². Test H <sub>0</sub> : μ = 68.5 against H <sub>1</sub> : μ ≠ 68.5  Find the correlation co-efficient r <sub>xy</sub> for a given set of data of two regression lines  \[ \begin{array}{c} \text{y} & \frac{1}{2} & \frac{1}{4} & \frac{1}{2} & \frac{1}{4} &	XII	Define intercept and slope of a regression line. Write following
iii The value of T <sub>x</sub> = 0.19 for 8 students in two subjects. Find Σd <sup>2</sup> iii Give two examples of secular trend  what is seasonal variation?  will what is seasonal variation?  will kis is Historigram?  what do you mean by analysis of time series?  what do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  SECTION-II  8×3 = 24   ECTION-II  8×3 = 24   Let X be normally distributed with mean 8 and standard deviation 4.  Find (1) P[4≤ X ≤ 12] (ii) P[X ≤ 3]  The random variable X has the following probability distribution  The random variable X has the following probability distribution  The random variable X has the following probability distribution  The random variable X has the following brown so you are a below it  The random variable X has the following probability distribution  The random variable X has the following brown so you are a proposed recreational facility.  If 15 opersons are to be randomly selected and interviewed, what is the mean Ar for a random sample of size 36 is taken from a normal population with a known vari		11014 NO. 4 WIRE SHOTE districts district districts districts districts district districts districts districts districts districts districts districts district districts district districts distric
iii The value of $\mathbf{r}_* = 0.19$ for 8 students in two subjects. Find $\Sigma d^{\times}$ Give two examples of secular trend $\mathbf{r}_*$ What is seasonal variation? What is seasonal variation? What do you mean by analysis of time series What is Historigram? What do you mean by analysis of time series Given $\mathbf{g} = 50 + 2\mathbf{x}$ with origin at $(983)$ and unit of $\mathbf{x}$ is one year. Shift the origin at $1980$ SECTION-II 8×3 = 24  Note: Attempt any Three questiens from this section 8×3 = 24  Q. 5(a) Let $\mathbf{X}$ be normally distributed with mean 8 and standard deviation 4. Find (i) $\mathbf{P}[4 \le \mathbf{X} \le 12]$ (ii) $\mathbf{P}[\mathbf{X} \le 3]$ (ii) $\mathbf{P}[\mathbf{X} \le 3]$ by Let $\mathbf{X} \sim \mathbf{N}$ (40, 64) then find the single point which has 90 % area below it The random variable $\mathbf{X}$ has the following probability distribution $\frac{\mathbf{x}}{\mathbf{x}} + \frac{4}{5} = \frac{6}{7} + \frac{7}{\mathbf{P}(\mathbf{x})} = \frac{7}{2} = \frac{7}{2}$		
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<ul> <li>What is seasonal variation?</li> <li>Write down the components of time series with its Historigram?</li> <li>What do you mean by analysis of time series?</li> <li>Given 9 = 50 + 2x with origin at (1983) and unit of x is one year. Shift the origin at 1980</li> <li>SECTION-II</li> <li>Note: Attempt any Three questions from this section</li> <li>Q. 5(a) Find (i) P[4≤ X ≤ 12] (ii) P[X ≤ 3]</li> <li>(b) Let X ~ N (40, 64) then find the single point which has 90 % area below it</li> <li>The random variable X has the following probability distribution</li> <li>x 4 5 6 7 P(x) 0.2 0.4 0.3 0.1</li> <li>Find the mean Px y variance σ² and standard errors σx of the mean X for a random sample of size 36</li> <li>(b) Suppose that 60 % of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue</li> <li>Q. 7(a) A random sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample is 42.6, find 95 % confidence limits for the population mean</li> <li>(b) A random sample of nine from the men of a large city gave a mean height of 68" and variance x² = 4.5 (inches)². Test H; : μ = 68.5 against H; : μ ≠ 68.5</li> <li>Q. 8(a) Find regression equation of Y on X of the following data</li> <li>X 1 2 3 4 5 Y 5 8 14 13 18</li> <li>(b) Find the correlation co-efficient r<sub>xy</sub> for a given set of data of two regression lines</li> <li>Y = 20.8 - 0.219 X X 1 = 1.6.2 - 0.785 Y</li> <li>Also show that r is symmetrical and interpret the results</li> <li>Find the rank correlation co-efficient for the following set of data</li> <li>Rank (X) 8 3 10 11 5 9 7 1 4 2 6 A Find the rank correlation co-efficient for the following the trend values</li> <li>Find the rank correlation for the following the trend values</li> </ul>	9 3 2 2 4	Give two examples of secular trend
with what is Historigram?  What do you mean by analysis of time series?  What do you mean by analysis of time series?  SECTION-II  SECTION-II  8×3 = 24  Note: Attempt any Three questions from this section  Q. 5(a)  Let X be normally distributed with mean 8 and standard deviation 4.  Find (i) $P[4 \le X \le 12]$ (ii) $P[X \le 3]$ (b) Let $X \sim N$ (40, 64) then find the single point which has 90 % area below it  The random variable X has the following probability distribution $ \frac{x}{P(x)} = \frac{4}{0.2} = \frac{5}{0.1} = \frac{7}{0.2} $ (b) Suppose that 60 % of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue  Q. 7(a)  A random sample of size 36 is taken from a normal population with a known variance $\sigma^2 = 25$ . If the mean of the sample is 42.6, find 95 % confidence limits for the population mean  (b) A random sample of nine from the men of a large city gave a mean height of 68" and variance $s^2 = 4.5$ (inches)? Test $H_0 : \mu = 68.5$ against $H_1 : \mu \neq 68.5$ Find regression equation of Y on X of the following data $ \frac{x}{y} = 20.8 - 0.219 X  \frac{x}{y} = 16.2 - 0.785 Y  Also show that r is symmetrical and interpret the results  Find the correlation co-efficient r_{xy} for a given set of data   \frac{Rank(X)}{8} = \frac{3}{3} = \frac{10}{10} = \frac{11}{10} = \frac{5}{3} = \frac{7}{3} = \frac{1}{3} = \frac{4}{3} = \frac{6}{3}  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank correlation co-efficient for the following set of data  Find the rank$		
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viii   x   What do you mean by analysis of time series   Given ŷ = 50 + 2x with origin at 1983 and unit of x is one year. Shift the origin at 1980     SECTION-II		What is Historioram?
<ul> <li>ix Given 9 = 50 + 2x with origin at 1983 and unit of x is one year. Shift the origin at 1980</li> <li>Note: Attempt any Three questions from this section</li></ul>		What do you mean by analysis of time series?
<ul> <li>Note: Attempt any Three questions from this section [Q. 5(a)]</li> <li>Let X be normally distributed with mean 8 and standard deviation 4. Find (i) P[4≤ X ≤ 12] (ii) P[X ≤ 3]</li> <li>Let X ~ N (40, 64) then find the single point which has 90 % area below it The random variable X has the following probability distribution [P(x)] 0.2 0.4 0.3 0.1</li> <li>Find the mean μ<sub>x</sub>, variance σ<sub>x</sub><sup>2</sup> and standard errors σ<sub>x</sub> of the mean X for a random sample of size 36 Suppose that 60 % of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue</li> <li>Q. 7(a) A random sample of size 36 is taken from a normal population with a known variance σ² = 25 . If the mean of the sample is 42.6, find 95 % confidence limits for the population mean</li> <li>(b) A random sample of nine from the men of a large city gave a mean height of 68" and variance 3² = 4.5 (inches)². Test H<sub>0</sub>: μ = 68.5 against H<sub>1</sub>: μ ≠ 68.5</li> <li>Find regression equation of Y on X of the following data</li> <li>(b) Find the correlation co-efficient r<sub>xy</sub> for a given set of data of two regression lines Y = 20.8 - 0.219 X X = 16.2 - 0.785 Y</li> <li>Also show that r is symmetrical and interpret the results</li> <li>Find the rank correlation co-efficient for the following set of data</li> <li>Rank (X) 8 3 10 11 5 9 7 1 4 2 6 6 Rank (X) 6 1 10 11 2 9 8 5 7 3 4</li> <li>Fit a linear trend to the following information for the year 1986 to 1992 (both inclusive) Σx = 0 , Σy = 245 , Σx² = 28 and Σxy = 66 . Also compute the trend values</li> </ul>		Given $\hat{\mathbf{v}} = 50 + 2\mathbf{x}$ with origin at 1983 and unit of x is one year. Shift the origin at 1980
<ul> <li>Q. 5(a)   Color   Find   P[4≤ X ≤ 12]   (ii) P[X ≤ 3]   (iii) P[X ≤ 4]   (iii) P[X ≤ 4]</li></ul>		SECTION-II
<ul> <li>Q. 5(a)   Color   Find   P[4≤ X ≤ 12]   (ii) P[X ≤ 3]   (iii) P[X ≤ 4]   (iii) P[X ≤ 4]</li></ul>	Note:	Attempt any Three questions from this section $8\times 3 = 24$
<ul> <li>Find (i) P[4≤ X ≤ 12] (ii) P[X ≤ 3] Let X ~ N (40, 64) then find the single point which has 90 % area below it The random variable X has the following probability distribution    X</li></ul>		
The random variable X has the following probability distribution		Find (i) $P[4 \le X \le 12]$ (ii) $P[X \le 3]$
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Find the mean μ <sub>χ</sub> , variance σ <sup>2</sup> <sub>x</sub> and standard errors σ <sub>x̄</sub> of the mean X̄ for a random sample of size 36  Suppose that 60 % of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue  A random sample of size 36 is taken from a normal population with a known variance σ <sup>2</sup> = 25. If the mean of the sample is 42.6, find 95 % confidence limits for the population mean  A random sample of nine from the men of a large city gave a mean height of 68" and variance δ <sup>2</sup> = 4.5 (inches) <sup>2</sup> . Test H <sub>0</sub> : μ = 68.5 against H <sub>1</sub> : μ ≠ 68.5  Find regression equation of Y on X of the following data    Y	Q. 6	
<ul> <li>Find the mean μ<sub>x</sub> , variance σ<sub>x</sub><sup>2</sup> and standard errors σ<sub>x</sub> of the mean X for a random sample of size 36 Suppose that 60 % of a city population favours public finding for a proposed recreational facility. If 150 persons are to be randomly selected and interviewed, what is the mean and standard errors of the sample proportion favouring this issue</li> <li>Q. 7(a) A random sample of size 36 is taken from a normal population with a known variance σ² = 25. If the mean of the sample is 42.6, find 95 % confidence limits for the population mean</li> <li>A random sample of nine from the men of a large city gave a mean height of 68" and variance σ² = 4.5 (inches)². Test H<sub>3</sub>: μ = 68.5 against H<sub>1</sub>: μ ≠ 68.5</li> <li>Find regression equation of Y on X of the following data</li> <li>(b) Find the correlation co-efficient r<sub>xy</sub> for a given set of data of two regression lines</li></ul>		
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variance $s^2 = 4.5$ (inches) <sup>2</sup> . Test $H_0: \mu = 68.5$ against $H_1: \mu \neq 68.5$ Find regression equation of Y on X of the following data  (b) Find the correlation co-efficient $r_{xy}$ for a given set of data of two regression lines $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		of the sample is 42.6, find 95 % confidence limits for the population mean
<ul> <li>Q. 8(a) Find regression equation of Y on X of the following data    X   1   2   3   4   5     Y   5   8   14   13   18     Find the correlation co-efficient r<sub>xy</sub> for a given set of data of two regression lines  </li></ul>	1	(b) A random sample of nine from the men of a large city gave a mean height of 68" and
<ul> <li>(b)  X</li></ul>		
<ul> <li>(b) Find the correlation co-efficient r<sub>xy</sub> for a given set of data of two regression lines</li></ul>	Q. 8	
<ul> <li>(b) Find the correlation co-efficient r<sub>xy</sub> for a given set of data of two regression lines</li></ul>	}	
$\begin{array}{c} Y=20.8-0.219 \ X\\ \widehat{X}=16.2-0.785 \ Y\\ \text{Also show that } r \text{ is symmetrical and interpret the results}\\ \text{Find the rank correlation co-efficient for the following set of data}\\ \hline (b) & \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
$\begin{array}{c} Y=20.8-0.219 \ X\\ \widehat{X}=16.2-0.785 \ Y\\ \text{Also show that } r \text{ is symmetrical and interpret the results}\\ \text{Find the rank correlation co-efficient for the following set of data}\\ \hline (b) & \begin{array}{c ccccccccccccccccccccccccccccccccccc$		(b) Find the correlation co-efficient r <sub>xy</sub> for a given set of data of two regression lines
Also show that r is symmetrical and interpret the results  Find the rank correlation co-efficient for the following set of data $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		$\hat{Y} = 20.8 - 0.219 \text{ X}$
Q. 9(a) Find the rank correlation co-efficient for the following set of data $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
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(b)	Q. 9	
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$\Sigma x = 0$ , $\Sigma y = 245$ , $\Sigma x^2 = 28$ and $\Sigma xy = 66$ . Also compute the trend values		Rank (Y) 6 1 10 11 2 9 8 5 7 3 4
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45 (Sub) - 1 <sup>st</sup> Annual 2023		$\Sigma x = 0$ , $\Sigma y = 245$ , $\Sigma x^2 = 28$ and $\Sigma xy = 66$ . Also compute the trend values
		45 (Sub) - 1 <sup>st</sup> Annual 2023

## 11th CLASS - 12022

**STATISTICS** 



TIME: 20 MINUTES

MARKS: 17

Q	UES	STION NO. 1
ſ	1	Research journals and newspapers are the sources of
		(A) Primary data (B) Secondary data (C) Grouped data (D) Un-grouped data
	2	The number of values falling against a particular class is called
		(A) Mid point (B) Class mark (C) Class limit (D) Frequency
1	3	In the construction of ogive are marked along Y-axis
		(A) Frequency (B) Class boundaries (C) Cumulative frequency
l	ĺ	(D) upper class boundaries
1	4	First quartile is equal to
		(A) P <sub>25</sub> (B) D <sub>3</sub> (C) D <sub>5</sub> (D) Median
	5	For open end frequency distribution cannot be calculated
		(A) Median (B) Arithmetic mean (C) Mode (D) Upper quartile
	6	Harmonic mean cannot be computed if any value in the data is
		(A) Negative (B) Fractional (C) Positive (D) Zero
	7	Second moment about mean is
		(A) Zero (B) One (C) Variance (D) Standard deviation
	8	SD (bx) =
		(A) $ b  SD(x)$ (B) $bSD(x)$ (C) $SD(x)$ (D) $b^2SD(x)$
	9	A frequency distribution is leptokurtic if
		(A) $b_2 < 3$ (B) $b_2 > 3$ (C) $b_2 = 3$ (D) $b_1 = 0$
	10	Most suitable average for index numbers is
		(A) Mean (B) Median (C) Mode (D) G.M
	11	Base year quantities are used as weights in kcity.org
	*	(A) Fisher's ideal index No. (B) Paasche's index No. (C) Laspeyere's index No.
		(D) Chain index No.
	12	Probability of drawing red card of spade from a pack of playing cards is
		(A) 0 (B) 1 (C) ½ (D) ¼
	13	For mutually exclusive events A and B P(A \cap B) is
		(A) $P(A) P(B A)$ (B) $P(A) P(B)$ (C) $P(B) P(A B)$ (D) 0
	14	For a random variable X, $\Sigma P(x) = \dots$
		(A) 0 (B) 1 (C) $< 1$ (D) $> 1$
	15	Y = 2x - 8 and $Var(x) = 3$ then $Var(y) =$
l		(A) 3 (B) 6 (C) 12 (D) 20
	16	Variance of binomial distribution is
		(A) npq (B) np (C) $n^2p$ (D) $(npq)^2$
	17	A hyper geometric distribution has parameters 15, 5 and 3, its mean is
		(A) 15 (B) 5 (C) 3 (D) 1

STATISTICS pakcity.org TIME: 2.40 HOURS **SUBJECTIVE** SECTION-I **MARKS**: 68

- QUESTION NO. 2 Write short answers any Eight (8) parts of the following DG Khan Board-2022 16
  - (i) Differentiate between population and sample (ii) Define variable (iii) Find median of 0, -1, -3, 3, 2
  - (iv) Define mode and give an empirical relationship between mean, median and mode
  - (v) Define Harmonic Mean with its formula (vi) Write down the advantageses of A.M (vii) If the mean and G.M of two numbers are 20 and 16 respectively, then find the value of H.M
  - (viii) For a frequency distribution of a variable X, it is given X = 10 + 5u,  $\Sigma f = 125$ ,  $\Sigma f u = -45$ . Find the value of mean
  - (ix) Define Index Number (x) Write down the uses of Index Number
  - (xi) If Laspayer's Index No. = 105.4, Paache's Index No. = 103.2, find Fisher's I.No. =?
  - (xii) Given  $\Sigma p_1 q_0 = 900$  and  $\Sigma p_0 q_0 = 897$ . Find cost of Living Index Number

QUESTION NO. 3 Write short answers any Eight (8) parts of the following

- (i) Distinguish between one-way and two-way classification (ii) Write a short note on pie-chart
- (iii) Explain the absolute measure of dispersion
- (iv) Given median = 8, n = 4 and  $\Sigma \mid X$ -median  $\mid = 48$ . Compute median coefficient of dispersion
- (v) Given mean = 50, median = 47 and coefficient of skewness = 1, find the value of variance
- (vi) Explain positively skewed distribution in your own words (vii) Describe variance with formula
- (viii) Explain quartile deviation with formula
- (ix) If  $P(A) = \frac{1}{3}$ ,  $P(A \cup B) = \frac{1}{2}$  and  $P(A \cap B) = \frac{1}{10}$ . Find P(B) and  $P(\overline{A})$  (x) Explain sample space with example
- (xi) Describe the term compound event (xii) What do you understand by dependent events?

## QUESTION NO. 4 Write short answers any Six (6) parts of the following

(i) How can random number be generated ? (ii) State any two properties of expectation

(iii) Find the probability distribution of number of heads when two coins are tossed

(iv) Given x:0,1,2 P(x) = 9/16,6/16,1/16 Find E(x)

- (v) If Var(x) = 2 and Var(y) = 5, where 'x' and 'y' are independent variables then find Var(2x y)
- (vi) State any two properties of hypergeometric experiment
- (vii) Find the number of trials if mean is 20 and probability of success in binomial distribution is 0.20
- (viii) If p = q and n = 10. Find out mean and variance of binomial distribution
- (ix) Write the p.d.f. of Hypergeometric distribution

#### SECTION-II

Note: Attempt any Three (3) questions from this section

 $8 \times 3 = 24$ 

16

12

Q.5. (a) A bus travelling 200 miles has 5 stages at equal intervals. The speed of bus in various stages was observed to be: 10, 15,20, 25 and 20. Find average speed at which the bus travels

(b) Find lower quartile for the given distribution

Classes	2-4	846	8 - 12	12 - 16	16-22
Frequency	5	10	12	6	4

Q.6. (a) Find the coefficient of S.D from the following data

X	5	10	15	20	25	30
f	3	7	20	10	6	4

(b) If  $\Sigma f = 200$ ,  $\Sigma f x^2 = 12080$ ,  $\Sigma f x = 1520$ ,  $\Sigma f x^3 = 16070$  then find first three moments about the mean

Q.7 (a) Compute index number of prices from the following data taking 1981 as base and using median as an average

Year	A.	В	C
1981	18	85.	52
1982	22	76	60
1983	28	80	66
1984	31	95	80

(b) A digit is selected at random from the first 10 natural numbers. Find the probability that the (ii) A complete square (iii) Multiple of 3 selected digit is (i) Greater than 6

Q.8.(a) Given the following probability distribution

x	-1	0	1	2	3
p(x)	0.125	0.500	0.200	0.050	0.125

Verity E(2x + 3) = 2 E(x) + 3

- (b) A continuous random variable x has a brobability density function f(x) = cx for 0 < x < 2(ii) P(1 < x < 1.5)
- In a binomial distribution n = 20 and p = 3/5 Find Mean, Variance and Standard deviation. Q.9.(a) Also find P(x = 3)
  - (b) Five balls are drawn without replacement from a bag containing 4 white and 7 black balls. Find probability distribution for number of white balls

#### STATISTICS

## DG Khan Board-2019

TIME: 20 MINUTES MARKS: 17



## **OBJECTIVE**

O	UES	TION NO. 1
1	1	The group data is also called
1		(A) Primary data (B) Secondary data (C) Raw data (D) Collected data
	2	The midpoint of the group $5.5 - 7.5$ is
1		(A) 6 (B) 6.5 (C) 7 (D) 13
1	3	The difference between the upper and lower class boundaries of a class is called.
İ		(A) Midpoint (B) Class interval (C) Class frequency (D) Class boundary
1	4	Average is easy to
		(A) Calculate (B) Read (C) Remember (D) Write
	5	If $n = 10$ and $\overline{Y} = 20$ than $\Sigma Y$ is
		(A) 150 (B) 120 (C) 200 (D) 250
	6	It is necessary to arrange the values in an array before finding
		(A) Arithmetic Mean (B) Mode (C) Median (D) Harmonic mean
Ì	7	Variance is always calculated from
		(A) Mean (B) Median (C) Geometric Mean (D) Mode
	8	The lack of symmetry is called
		(A) Uniformity (B) Kurtosis (C) Skewness (D) Dispersion
	9	The range of data 1,2,3,4,5 is
		(A) 1 (B) 5 (C) 4 (D) 3
6 50000	10	Index No. hastypes.
		(A) Two (B) Three (C) Four (D) Five
	11	The most suitable average for index number is
		(A) A.M (B) G.M (C) H.M (D) Median
	12	<sup>5</sup> P <sub>3</sub> is equal to
		(A) 40 (B) 50 (C) 60 (D) 70
	13	Probability of any event lies between
		(A) -1 and +1 (B) 0 and +1 (C) -1 and 0 (D) 0 and 2
	14	A random variable may be discrete or
		(A) Experimental (B) Functional (C) Given (D) Continuous
	15	A discrete random variable only assumes the values which are
		(A) Countable (B) Uncountable (C) Infinite (D) None of these
	16	1-P is equal to
	1.7	(A) 1-q (B) $p+q$ (C) $p-q$ (D) q
	17	In hyper-geometric distribution the trails are
		(A) Independent (B) Controlled (C) Allocated (D) Dependent

## DG Khan Board-2019

#### SECTION-I

ESTION NO. 2 Write short answers any Eight (8) questions of the following

16

- (1) Define descriptive statistics. (2) Define secondary data (3) Define harmonic mean
- (4) Given data  $\Sigma f u_i = -1$ ,  $\Sigma f = 30$  and  $u_i = \frac{X_i 98}{5}$  Find arithmetic mean of 'X'
- (5) What are advantages of Median? (6) What are demerits of arithmetic mean?
- (7) In moderately skewed distribution, mode =15, median = 12, find its mean
- (8) Define link relatives. (9) Define composite index number (10) Define un-weighted index number
- (11) Find Paasche's index number if Laspeyre's = 118.8 and Fisher's = 115.8
- (12) What are the uses of an index number.

QUESTION NO. 3 Write short answers any Eight (8) questions of the following

16

- (2) Define "Class limits". (1) What is "Tabulation"?
- (4) Define "Relative measure of dispersion" (3) Define "Absolute measure" of dispersion".
- (5) Write down any "Two Properties of variance"
- (6) If  $Q_1 = 13.73$ ,  $Q_3 = 38.29$ , Compute Quartile deviation
- (7) Calculate range of 13,3,7,15,17,5,23,27. (8) Define "sample Space". (9) Define "Simple event"
- (10) Define "Mutually exclusive events". (11) Define "Equally likely events".
- (12) For two independent events A and B, if P(A) = 0.25, P(B) = 0.40 then find  $P(A \cap B) = ?$

## QUESTION NO. 4 Write short answers any Six (6) questions of the following

12

- (1) Differentiate between discrete random variable and continuous random variable.
- (2) Give properties of a probability density function.
- (3) Given  $E(X^2) = 400$ , S.D (x) = 12, then find E(X)
- (4) Write down the formula for computing the area of a triangle of a continuous r.v.
- (5) Define a distribution function
- (6) Write down any two properties of binomial distribution
- (7) In a binomial distribution with n=5, what is the value of 'P' if P(x=0) = P(x=1)
- (8) Define a Hyper-geometric probability distribution.
- (9) If N = 40, n = -5, K = 4, then find values of mean and variance of Hyper-geometric distribution

## SECTION-II

Note: Attempt any Three (3) questions from this section

 $8 \times 3 = 24$ 

O 5 (a) Given dat	a on inco	me, Find mean	ncome. F	uso lina (	21
Q.D.(a) 01 1 1 a	X	1-10	11-20	21-30	31-40
	£	1300	10	5	1 2

(b) Find median and mode of data given in Q.5 (a)

Q.6.(a) Find the mean deviation about mean

Find the mean	deviation at	out mean		A STATE	
Clsses	10-19	20-29	30-39	40-49	50-59
frequency	2	4	10	11	3

- (b) The first three moments of a distribution about the value 2 are 1, 8 and 20. Find (i) Variance (ii) Is the distribution positively or negatively skewed?
- Q.7.(a) Given the following information .  $\Sigma p_0 q_0 = 3600$ ,  $\Sigma p_1 q_0 = 4300$  .  $\Sigma p_1 q_1 = 4890$  &  $\Sigma p_0 q_1 = 4100$ Find Fisher price index number & Paache' index number
  - (b) If, A and B are mutually exclusive events and P(A) = 0.4, P(B) = 0.5 then, find P(AU B) also find P( $\overline{A}$ ) & P( $\overline{B}$ )
- Q.8.(a) A continuous random variable 'X' has probability density function given below

$$f(x) = A (x+5)$$
 where  $2 \le x \le 4$   
= 0 other wise

(ii)  $P(2 \le x \le 3)$ Find (i) A

(b) Given the discrete probability distribution

c discipl	c probabi	arry distrib	uuon		
X	0	1	2	3	4
P(x)	0.1	. 0.2	0.3	0.2	0.2

Compute mean, variance and Coefficient of variance

- Q.9.(a) If X is a binomial random variable with E(x) = 1.44 and S.D.(X) = 0.96. Find the parameters of the binomial distribution and P(X=2)
  - (b) In hyper-geometric distribution, n = 4, K = 4, N = 12, then make probability distribution of 'X'

# DG Khan Board-2018 PAPER CODE - 6181

(11th CLASS - 12018)

STATISTICS (NEW COURSE)

**OUESTION NO. 1** 

ACADEMIC SESSION: 2015 - 2017 TO 2017 - 2019

TIME: 20 MINUTES

MARKS: 17

OBJECTIVE A pakcity.org

1	A single numerical fact is called
	(A) Statistics (B) Variable (C) Datum (D) Data
2	The process of arranging data into rows and columns is called
	(A) Tabulation (B) Classification (C) Grouped data (D) Frequency distribution
3	A pie diagram is represented by
	(A) Square (B) Circle (C) Triangle (D) Rectangle
4	Sum of deviations is zero when deviations are taken from
	(A) Mean (B) Median (C) Mode (D) Geometric Mean
5	Geometric Mean of two numbers 4 and 16 is
	(A) 4 (B) 10 (C) 16 (D) 8
6	Quartile Deviation of 8,8,8 is
11207	(A) Zero (B) One (C) Positive (D) Negative
7	If $SD(x) = 5$ then $SD(2x+1)$ is equal to
	(A) 10 (B) 5 (C) 15 (D) 2
8	If moment ratio $b_1 = 0$ then distribution is
	(A) Skewed (B) symmetrical (C) J-shaped (D) U-shaped
9	An index number computed for a single commodity is called
	(A) Simple index (B) Composite index (C) Weighted index (D) Consumer price index
10	If Laspeyre's index = 118.8, Paasche's index = 112.8 then Fisher's ideal index is equal to
	(A) 112.8 (B) 114.8 (C) 118.8 (D) 115.8
11.	
	(A) $2^2$ (B) $2^3$ (C) $3^2$ (D) $3^3$
12	If $P(A \cap B) = 1/3$ , $P(B) = \frac{1}{2}$ then $P(A/B)$ is equal to
	(A) 1/2 (B) 3/2 (C) 2/3 (D) 1/3
13	Distribution Function is always
	(A) zero (B) one (C) increasing (D) decreasing
14	E[X - E(x)] is equal to
	(A) Variance (B) Standard deviation (C) Mean (D) zero
15	If $Y_i = ax_i + b$ then $Var(Y_i) = \cdot$
	(A) a $Var(x_i)+b$ (B) $Var(x_i)$ (C) a $Var(x_i)$ (D) $a^2 Var(x_i)$
16	If $n = 20$ , $p = 0.6$ then variance of binomial distribution is equal to
	(A) 12 (B) 4.8 (C) 1 (D) zero
17	Hyper-geometric distribution has parameters
	(A) One (B) Two (C) Three (D) Four

# DG Khan Board-2018

(11th CLASS - 12018)

STATISTICS (NEW COURSE)

ACADEMIC SESSION: 2015-2017 TO 2017-2019

TIME: 20 MINUTES

MARKS: 17

## OBJECTIVE Pakcity.org

•	OUI	ESTION NO. 1
_	1	A single numerical fact is called
		(A) Statistics (B) Variable (C) Datum (D) Data
1	2	The process of arranging data into rows and columns is called
		(A) Tabulation (B) Classification (C) Grouped data (D) Frequency distribution
1	3	A pie diagram is represented by
		(A) Square (B) Circle (C) Triangle (D) Rectangle
	4	Sum of deviations is zero when deviations are taken from
	·	(A) Mean (B) Median (C) Mode (D) Geometric Mean
	5	Geometric Mean of two numbers 4 and 16 is
		Geometric Mean of two numbers 4 and 16 is (A) 4 (B) 10 (C) 16 (D) 8
	6	Quartile Deviation of 8,8,8 is
		(A) Zero (B) One (C) Positive (D) Negative
	7	If $SD(x) = 5$ then $SD(2x+1)$ is equal to
		(A) 10 (B) 5 (C) 15 (D) 2
	8	If moment ratio $b_1 = 0$ then distribution is
		(A) Skewed (B) symmetrical (C) J-shaped (D) U-shaped
1	9	An index number computed for a single commodity is called
		(A) Simple index (B) Composite index (C) Weighted index (D) Consumer price index
	10	If Laspeyre's index = 118.8, Paasche's index = 112.8 then Fisher's ideal index is equal to
l		(A) 112.8 (B) 114.8 (C) 118.8 (D) 115.8
	11	A coin is tossed three times, then total number of sample points will be
l		(A) $2^2$ (B) $2^3$ (C) $3^2$ (D) $3^3$
	12	If $P(A \cap B) = 1/3$ , $P(B) = \frac{1}{2}$ then $P(A/B)$ is equal to
1		(A) 1/2 (B) 3/2 (C) 2/3 (D) 1/3
l	13	Distribution Function is always  (A) (B) one (C) increasing (D) decreasing
١	11	(A) zero (B) one (C) increasing (D) decreasing
١	14	E[X-E(x)] is equal to (A) Variance (B) Standard deviation (C) Mean (D) zero
Į	15	If $Y_i = ax_i + b$ then $Var(Y_i) = \cdot$
1	13	(A) a $Var(x_i)+b$ (B) $Var(x_i)$ (C) a $Var(x_i)$ (D) $a^2 Var(x_i)$
	16	If $n = 20$ , $p = 0.6$ then variance of binomial distribution is equal to
	10	(A) 12 (B) 4.8 (C) 1 (D) zero
	17	Hyper-geometric distribution has parameters
	1,	(A) One (B) Two (C) Three (D) Four
- 1		7 7 5787 (80 ) 1 110