Roll Number	PR XII (01) 18	Superintendent
In Figures: _____	**STATISTICS**	Signature / Stamp:
In Words: _____	Inter Part-II	_____
_____	(Fresh / Reappear)	
	Fic. No. _____ (For Board's Office use only)	

STATISTICS

Inter Part-II

(Fresh / Reappear)

Fic. No. _____ (For Board's Office use only)

Time Allowed: 3 Hours **Marks:** 85

Note: There are THREE sections in this paper i.e. Section **A, B** and **C.**
Attempt Section-**A** on the same paper and return it to the Superintendent within the given time.
No marks will be awarded for **Cutting, Erasing** or **Overwriting. Marks of Identification** will lead to UFM case, **Mobile Phone** etc are not allowed in the examination hall.

Time Allowed: 20 minutes **Marks:** 18

Q-I Write the correct option i.e. A, B, C or D in the empty box provided opposite to each part.

i.	Normal distribution is a limiting form of.....distribution.	A.	Hyper-geometric	B.	Uniform	C.	Binomial	D.	None of these	C
ii.	Normal distribution has .....parameters.	A.	One	B.	Two	C.	Three	D.	None of these	B
iii.	If mean of normal distribution is 36 then its mode is.....	A.	6	B.	18	C.	36	D.	None of these	C
iv.	As the sample size increases, the standard error of mean.....	A.	Decreases	B.	Increases	C.	Remains the same	D.	None of these	A
v.	The difference between the population mean and a sample mean is.....	A.	Parameter	B.	Sampling error	C.	Standard error	D.	None of these	B
vi.	If the average value of the estimator equals to the true value of the parameter, the property is called.....	A.	Efficiency	B.	Consistency	C.	Unbiased-ness	D.	Sufficiency	C
vii.	.....is known as confidence level.	A.	$1-\alpha$	B.	α	C.	β	D.	None of these	B
viii.	$E(\hat{P}) =$.....	A.	μ	B.	P	C.	δ	D.	None of these	B
ix.	What kind of relationship exists if Y decreases as X increases?	A.	Inverse	B.	Direct	C.	No relationship	D.	None of these	A
x.	If the coefficient of correlation is a positive value, then the slope of the regression line is.....	A.	Also positive	B.	Negative	C.	Zero	D.	None of these	A
xi.	Relationship between two categorical variables is called.....	A.	Correlation	B.	Regression	C.	Association	D.	None of these	A
xii.	For a 4×6 contingency table, the degree of freedom for chi-square test of independence is.....	A.	4	B.	6	C.	15	D.	None of these	C
xiii.	Given the numbers 2,3,7,8,9,10, the semi-averages are.....	A.	(4,9)	B.	(7,8)	C.	(3,9)	D.	None of these	B
xiv.	Those fluctuation in a time series, which follow some regular pattern is called.....	A.	Signal	B.	Noise	C.	Irregular variations	D.	None of these	D
xv.	The graph of time series is called a	A.	Ogive	B.	Histogram	C.	Historigram	D.	None of these	C
xvi.	Which of the given is application software?	A.	Basic	B.	Word processors	C.	Fortran	D.	None of these	B
xvii.	One gigabyte is equal to	A.	1000 mb	B.	1000 kb	C.	1024 mb	D.	1024 kb	C
xviii.	.....number system has base 8.	A.	Octal	B.	Hexadecimal	C.	Decimal	D.	Binary	A

STATISTICS

Inter Part – II
(Fresh / Reappear)

Note: **Time allowed for Section – B and Section – C is 2 Hours and 40 minutes.**

Section – B

Marks: 40

Q-II Answer any TEN parts. Each part carries FOUR marks.

1. What is normal probability distribution?
2. State any four properties of normal distribution.
3. Let x be a normal random variable with mean 48 and standard deviation4. Find P(x > 50).
4. Explain stratified random sampling.
5. Define and distinguish between type-I and type-II errors.
6. What are the properties of the least square regression line?
7. Calculate the co-efficient of correlation from the following information:

   $n = 7 \quad \Sigma x = 1400 \quad \Sigma y = 280 \quad \Sigma xy = 70000 \quad \Sigma x^2 = 350000 \quad \Sigma y^2 = 14000$. Also interpret the result.
8. What is the difference between nominal scale and ordinal scale? Give examples.
9. Rank the data. 23,26,24,25,33,36,40,25,27,19,25,33.
10. What is meant by seasonal variations?
11. Use the method of semi-averages to find trend values for the given data:

Year	1994	1995	1996	1997	1998	1999	2000
Numbers	18.0	22.8	28.4	33.4	23.5	27.4	39.4

12. Differentiate between input and output devices.
13. Convert the given into required base: i. $(117)_{10} = (\ ?\ )_2$ ii. $(4AC)_{16} = (\ ?\ )_2$

Section – C

Marks: 27

Note : **Attempt any THREE questions. All questions carry equal marks.**

Q-III Consider a finite population of size N = 5, whose elements are the numbers 3,5,7,9 and 11. Draw a random sample of size 2 with out replacement from this population and determine the sample mean of each sample. Construct sampling distribution of

(i) $E(\bar{X}) = \mu$. (ii) $\sigma_{\bar{X}}^2 = \frac{\sigma^2}{n}\left(\frac{N-n}{N-1}\right)$

Q-IV (i) Discuss the concept of confidence interval.

(ii) Sample of 400 male students is found to have a mean height of 171.38 cm, can it responsibly be regarded as a sample from a large population with mean height 171.17 cm and standard deviation 3.30cm.

Q-V Explain the meaning of regression of y to x and x on y. Find the regression line from given bivariate data:

X	1	5	3	2	1	1	7	3
Y	6	1	0	0	1	2	1	5

Q-VI If we consider terrorist activity against businesses during the first three-quarters of 1985, in Latin America there are 443 bombings, 56 attacks on installations, and 7 assassinations. In Europe during this same time period, there were 101 bombings, 6 attacks on installations, and 10 assassinations. Perform a chi-square test of independence. Use $\alpha = 0.05$.