

I PUC STATISTICS SYLLABUS & QUESTIONS BLUE PRINT: March 2023

Name of units		Questions					Total Questions	Total Marks
		ObA	SA	LA	ET	LA		
I	Introduction to statistics and Some basic concepts	1	1	1	-	-	3	8
II	Organization of data	1	1	1	-	-	3	8
III	Classification and Tabulation of data	4	1	1	-	1	7	16
IV	Diagrammatic and Graphical representation of data	4	1	1	-	1	7	16
V	Analysis of univariate data	4	1	1	2	1	9	36
VI	Analysis of bivariate data	1	1	2	1	-	5	23
VII	Association of attributes	-	1	1	-	-	2	7
VIII	Interpolation and Extrapolation	1	-	1	-	-	2	6
IX	Theory of probability	1	1	2	a		4+	18
X	Random variables and Mathematical expectation	3	-	1	b	x	4+	18
Total Questions		(15+1*)=16	8	12	4	4	44	
Total Marks		(15+5*)=20	16	60	40	20	-	156

Note: *In the ObA Question Number 6 has 5 sub questions, each sub question carries 1 mark.

Question Type	Marks
ObA : Objective Answer	1
SA : Short Answer	2
LA : Long Answer	5
ET : Essay Type	10

Note: (1) Graph sheets and statistical tables will be supplied on request.

(2) Scientific calculators may be allowed.

(3) All working steps should be shown clearly.

(4) Section – A should be written in the beginning of the answer booklet.

SECTION – A

I. Choose the correct answer.

(5 X 1 = 5)

- 1) Which of the following statement is false?
 - a) Statistics is derived from the Latin word 'Status'
 - b) Statistics is derived from the Italian word 'Statista'
 - c) Statistics is derived from the French word 'Statistik'
 - d) None of these

- 2) 'Stub' of a table is the
 - a) Left part of the table describing the columns
 - b) Right part of the table describing the columns
 - c) Right part of the table describing the rows
 - d) Left part of the table describing the rows

- 3) Multiple bar diagram is a type of,

a) One dimensional diagram	b) Two dimensional diagram
c) Three dimensional diagram	d) Cartograms

- 4) GM of 8, 4, 2 is,

a) 4	b) 2	c) 8	d) 6
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- 5) If a and b are constants then $V(aX + b)$ is equal to

a) $a V(X)$	b) $a^2 V(X)$	c) $a^2 V(X) + b$	d) None of these
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II. Match the following.

(5 X 1 = 5)

- 6)

(i) Direct personal observation	(a) $H - L$.
(ii) $10 - 20$	(b) Primary data.
(iii) Cumulative frequency distribution	(c) mid-point is 5.
(iv) Range	(d) Perfect positive correlation.
(v) In the rank correlation $\sum d^2 = 0$	(e) Less than ogive.

III. Fill in the blanks by choosing appropriate answer from those given in the bracket. (5 X 1 = 5)

(Histogram, Bell, 36, 0, open-end)

- 7) In a class, if the lower or upper limit of the class is not specified such a class is called _____ class.
- 8) Mode can be obtained graphically by using _____.
- 9) When the symmetric distribution is plotted on a graph, we get a _____ shaped curve.
- 10) In interpolation of binomial expansion method, $(y-1)^n =$ _____.
- 11) In throwing '2' dice, total number of possible outcomes is _____.

IV. Answer the following questions. (5 X 1 = 5)

- 12) Define frequency.
- 13) Mention a need of diagram.
- 14) If SD = 4 cms, find variance.
- 15) What is the value of $E(8)$, if 8 is a constant.
- 16) Define discrete random variable.

SECTION – B

V. Answer any FIVE of the Questions. (5 X 2 =10)

- 17) Mention two functions of Statistics.
- 18) Mention two causes of sampling errors.
- 19) Mention the four types of classification.
- 20) Mention the limitations of diagrams and graphs.
- 21) The arithmetic mean and median of a slightly skewed distribution are 11 cm and 11.7 cm respectively. Find the mode of the distribution.
- 22) If $b_{xy} = 0.75$ and $b_{yx} = 0.33$ then find r_{xy} .
- 23) What is the difference between coefficient of correlation and association of attributes?
- 24) If A and B are two independent events and $P(A) = 0.6$, $P(B) = 0.5$, then find $P(A \cup B)$.

SECTION – C

VI. Answer any EIGHT of the following questions. (8 x 5 = 40)

- 25) Mention five characteristics of Statistics.
- 26) Distinguish between census enumeration and sample survey.
- 27) Weights in kg of 50 students of a college are as follows.

42	62	46	54	41	37	54	44	32	45
47	50	58	49	51	42	46	37	42	39
54	39	51	58	47	64	43	48	49	48
49	61	41	40	58	49	59	57	37	34
56	38	45	52	46	40	63	41	51	41

Prepare a frequency distribution table with suitable class intervals.

28) Following figures represent the decadal change of population of a town. Draw a simple bar diagram.

Year	1971	1981	1991	2001	2011
Population(Million)	54	68	84	102	120

29) Compute M.D from mode for the data given below:

x	24	26	28	30	32	34
f	6	10	16	8	3	2

30) Calculate Pearson's coefficient of correlation from the following data.

x	40	42	46	48	50	56
y	10	12	15	23	27	30

31) In a bivariate data, $\sum x = 30$, $\sum y = 40$, $\sum xy = 85$, $\sum x^2 = 196$, $\sum y^2 = 465$ and $n = 10$. Estimate the value of y , when the value of $x = 5$.

32) Compute Yule's coefficient of Association from the following data.

(AB) = 150, N = 1000, (A) = 200, (B) = 300.

33) From the following data interpolate the production of cement in 2007.

Year	2005	2006	2007	2008	2009	2010
Production (lakh tons)	4	9	?	16	27	39

34) State and prove addition theorem of probability for two non – mutually exclusive events.

35) A box contains 6 white, 4 black and 5 green balls. Three balls are drawn at random from this box. Find the probability that they are:

(a) two white and one black balls (b) one white and two are green balls.

36) State and prove multiplication theorem of expectation for two independent random variables X and Y.

SECTION- D

VII. Answer any TWO of the following questions.

(2 x 10 = 20)

37) The number of runs scored by two batsmen A and B in different innings is as follows :

A	12	115	6	73	7	19	119	36	84	29
B	47	12	76	42	4	51	37	48	13	0

Who is better run scorer? Who is more consistent?

38) Calculate Bowley's coefficient of skewness from the data given below.

C.I.	0 – 15	15 – 30	30 – 45	45 – 60	60 – 75
f	31	38	16	10	5

39) Calculate Karl Pearson's coefficient of correlation from the following data and comment on the result.

x	y			
	80 – 90	90 - 100	100 - 110	110 - 120
40 - 44	-	2	4	2
44 - 48	-	2	3	4
48 - 52	-	4	5	1
52 - 56	2	6	4	-
56 - 60	3	4	1	-

40) a) Contents of two boxes are as follows:-

I box: 2 white and 4 black marbles

II box: 3 white and 5 black marbles.

One of the marble is selected from the bag. What is the probability that it is white in colour

b) A random variable assumes the values -1, 0 and 1 with probabilities 0.2, 0.7 and 0.1 respectively.

Find $E(2X)$.

SECTION – E

VIII. Answer any TWO of the Questions.

(2 X 5 = 10)

41) Prepare a blank table to show the distribution of students according to

i. College: Government, Aided, Unaided.

ii. Faculty: Science, Commerce, Arts.

iii. Gender: Boys, Girls.

42) Draw less than Ogive to the following frequency distribution.

Class	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 - 50
Frequency	17	25	40	23	12	8

43) The mean and standard deviation of a distribution of 100 and 150 items are 50, 5 and 40, 6 respectively. Find the standard deviation of all the 250 items taken together.

44) A box contains 8 items of which 2 are defective. A man selects 3 items. Find the expected number of defective items in the selection.
