



I P.U.C. ANNUAL EXAMINATION -2017

I

Time : 3.15 Hours

STATISTICS - 31

Max. Marks : 100

- Note: 1) Graph sheets and Statistical tables will be supplied on request.
2) Scientific calculators may be used.
3) All working steps should be clearly shown.

Section - A**I Answer any Ten of the following questions.****10x1=10**

1. Give an example for continuous variable.
2. What is meant by statistical error?
3. What is Dichotomous classification?
4. Define class mid-value.
5. Name the graphs used to locate mode.
6. Write one limitation of diagrams and graphs.
7. Marks of students is 25, 32, 35, 45, 35, 49, 35. Find the modal mark.
8. State the minimal property of mean.
9. What is the type of correlation when $r = -1$?
10. Write any one assumption made in interpolation.
11. What is the probability of sure event?
12. Find $V(6)$

Section - B**II Answer any Ten of the following questions****10x2=20**

13. Define qualitative and quantitative characteristics.
14. Mention the sources of secondary data.
15. For the following data find frequency density.

CI	0-10	10-30
f	10	15

16. What are captions and steps of a table.
17. Mention any two type of one-dimensional diagram.
18. Write any 2 uses of diagrams and graphs.
19. If the least and the highest value in a data are -8 and 60. Find range and Co-efficient of range.
20. The sum of lower and upper quartiles is 55 and their difference is 15. If the median is 30, find the co-efficient of skewness.
21. If $b_{xy} = \frac{-4}{3}$ and $b_{yx} = \frac{-2}{3}$, find r_{xy}
22. What is the difference between co-efficient of correlation and association of attributes
23. If $P(A \cap B) = \frac{1}{2}$ and $P(B) = \frac{2}{3}$. Find $P(A/B)$
24. In a bivariate data if $E(x) = 5$ $E(y) = 8$ and $E(xy) = 22$. Find $Cov(xy)$

(P.T.O.)

Section - C

8x5=40

III Answer any Eight of the following questions

25. Mention the characteristics of statistics
26. Distinguish between census enumeration and sample survey.
27. Draft a neat blank table to present the data relating to the college students classified according to:
 - i) Faculty : Arts, Commerce, Science
 - ii) Class : I PUC, II PUC
 - iii) Sex : Boys, Girls
28. From the following data, draw a less than ogive curve.

Marks	<10	<20	<30	<40	<50	<60
No. of Students	5	13	24	39	52	60

(For Visually challenged students)

Explain the procedure to draw "Less than ogive curve"

29. Find the Harmonic mean for the following data

CI	10-12	12-24	14-16	16-18	18-20
Frequency	2	18	20	13	7

30. The following are the percentage marks scored by 7 students in English and Statistics.

Marks in English	36	43	47	28	35	50	40
Marks in Statistics	73	44	35	30	20	36	40

Calculate the Co-efficient of rank correlation.

31. In a bivariate data $\sum^1 x=10$, $\sum^1 y=210$, $\sum^1 x^2 = 14$, $\sum^1 y^2=5340$, $\sum xy = 180$ and $n=10$. Find the regression equation of x on y
32. Calculate Yule's Co-efficient of association between literacy and employment from the following data and conclude.

	Employed	Unemployed
Literate	80	40
Illiterate	70	10

33. Use the binomial expansion method to estimate the index number for the year 2004

Year	2000	2001	2002	2003	2004
Index Number	100	107	124	157	—

34. State and prove addition theorem of probability for two non-mutually exclusive events.
35. The odds favouring the event of a person hitting a target are 3 to 5. The odds against the event of another person hitting the target are 3 to 2. If each of them fire once at the target, find the probability that both of them hit the target.

36. If 'X' is a random variable. Let 'a' be any constant. Then prove that

- i) $E(ax) = a E(x)$
- ii) $V(ax) = a^2 v(x)$

Section - D

IV Answer any two of the following questions

2x10=20

37. Following data gives marks of 2 students in Statistics.

Student A	30	35	36	32	38	40
Student B	42	21	19	36	35	29

Find (i) Who is better scorer?

(ii) Who is more consistent?

38. Calculate Karl Pearson's Co-efficient of skewness from the following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	10	40	20	0	10	12

39. Calculate the co-efficient of correlation between 'X' and 'Y' for the following data

Y \ X	115	120	125	130
10	—	6	11	3
20	2	4	—	10
30	—	—	3	1
40	10	4	5	—

40. a) The probability of 2 persons A and B solving a problems are $\frac{1}{2}$ and $\frac{2}{3}$. If both of them independently try to solve, what is the probability that the problem is solved?

b) A person enters into a competition of hitting a target. If he hits the target he gets 10 rupees.

Otherwise he has to pay 5 rupees. If the probability of his hitting the target is $\frac{3}{10}$, find his expectation.

Section - E

V Answer any two questions of the following questions.

2x5=10

41. Following is the data regarding the IQ of 30 children of a school

106	118	112	120	103	105	99	139	65	113	108	116
93	100	120	100	108	100	112	110	109	117	98	103
99	110	95	101	105	98						

(P.T.O.)

Prepare a frequency distribution with class intervals less than 90
90-110, 110-120, more than or equal to 120

42. Represent the following data by using Pie diagram.

Heads of Expenditure	Agriculture	Industry	Irrigation	Education
Expenditure (Rs in crores)	600	400	450	550

(For Visually challenged students)

Explain the steps for construction of Pie diagram.

43. The median for the following distribution is 26. Find the missing frequency.

C.I.	0-10	10-20	20-30	30-40	40-50
Frequency	3	5	—	6	4

44. For the following probability distribution find (i) $E(2x-4)$ ii) $\text{Var}(x)$

x	-2	0	1	2
p(x)	0.2	0.4	0.3	0.1