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(FOR THE CANDIDATES ADMITTED

24UIT1A1

DURING THE ACADEMIC YEAR 2024 onwards)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER 2024

B.Sc INFORMATION TECHNOLOGY

MAXIMUM MARKS: 75

SEMESTER : I

TIME : 3 HOURS

PART - III

24UIT1A1- ALLIED I: MATHEMATICS – I (STATISTICS)

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. Which one is not central tendency?

- a) Mean b) Median c) Mode d) Range

2. Range =

- a) $L - S$ b) $L + S$ c) LS d) L/S

3. r lies between

- a) -1 to +1 b) 1 to 0 c) -1 to 0 d) -2 to +2

4. If A and B are not mutually exclusive then $P(A \cup B) =$

- a) $P(A) + P(B)$ b) $P(A) + P(B) - P(A \cap B)$
c) $P(A) - P(B)$ d) $P(A) - P(B) + P(A \cap B)$

5. If sample size is less than 30, the sample is called

- a) Small sample b) Large sample c) Both (a) or (b) d) Population

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. Write the Empirical relation.

7. What is another name of second quartile?

8. Define positive correlation.

9. State addition theorem for probability.

10. Write the formula for χ^2 - test.

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K3)

11. a) Find the median from the following

57 58 61 42 38 65 72 66

(OR)

(CONTD 2)

b) Calculate geometric mean.

Weight (lbs)	130	135	140	145	146	148	149	150	157
No. of Persons	3	4	6	6	3	5	2	1	1

12. a) Obtain quartile deviation and its coefficient.

239 250 251 251 257 258 260 261 262 262 273 275

(OR)

b) Calculate mean deviation about mean for the following:

100 150 200 250 360 490 500 600 671

13. a) Following are the rank obtained by 10 students in two subjects, Statistics and Mathematics. To what extent the knowledge of the students in the two subjects is related?

Statistics	1	2	3	4	5	6	7	8	9	10
Mathematics	2	4	1	5	3	9	7	10	6	8

(OR)

b) Write the difference between correlation and regression.

14. a) In how many ways can the letters of the word DAUGHTER be arranged so that the vowels may never be separated ?

(OR)

b) Two students X and Y work independently on a problem. The probability that X will solve it is $\frac{3}{4}$ and the probability that Y will solve it is $\frac{2}{3}$. What is the probability that the problem will be solved?

15. a) In 600 throws of a six faced dice, odd points appeared 360 times. Would you say that the dice is fair at 5% level of significance?

(OR)

b) Four coins were tossed 160 times and the following results were obtained.

No. of Heads	0	1	2	3	4
Observed frequencies	17	52	54	31	6

Under the assumption that coins are balanced, find the expected frequencies of getting 0, 1, 2, 3 or 4 heads and test the goodness of fit.

SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Calculate mean, median and mode.

C-I	10-13	13-16	16-19	19-22	22-25	25-28	28-31	31-34	34-37	37-40
f	8	15	27	51	75	54	36	18	9	7

(OR)

(CONTD 3)

b) Calculate Harmonic mean.

Marks	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	15	13	8	6	15	7	6

17. a) Obtain the coefficient of variation of the following:

40 41 45 49 50 51 55 59 60 60

(OR)

b) Calculate the standard deviation.

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	12	17	14	9	7	4

18. a) Find correlation coefficient from the following data.

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

(OR)

b) In a correlation analysis, between production and price of a commodity, the following constants were obtained:

	Production Index	Price Index
Arithmetic Mean	110	98
Standard Deviation	12	5
r between production and price	0.4	

Write down the regression equation of price on production and calculate the price index when the production index is 116.

19. a) Two cards are drawn from a back of cards at random. What is the probability that it will be (a) a diamond and a heart (b) a king and a queen (c) two kings?

(OR)

b) An urn contains 8 white and 3 red balls. If two balls are drawn at random, find the probability that (a) both are white (b) both are red and (c) one is of each colour.

20. a) An operative claims that he produces 40 articles in an hour. A sample of 10 random hours shows the turns out as 43, 45, 38, 37, 41, 42, 4, 39, 43 and 38. Is the claim of the operative reasonable at 5% significant level? Assume the distribution of hour turnout of the operative to be normal and critical region at 5% level employing one – tailed test for 9 df to be 1.833.

(OR)

b) Out of sample of 120 persons in a village, 76 were administered a new drug for preventing influenza and out of them 24 persons were attacked by influenza. Out of those who were not administered the new drug, 12 persons were not affected by influenza. (i) Prepare 2 x 2 tables showing the actual and expected frequencies (ii) Use Chi – square – Test for finding out whether the new drug is effective or not. (At 5% level for one degree of freedom, the value of Chi – square is 3.84).
