

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.

B.Com. PA - END SEMESTER EXAMINATIONS - APRIL 2025
SEMESTER - II

24UPAAT2002 - Business Statistics and Logical Reasoning

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **TWENTY** questions ($20 \times 2 = 40$ Marks)

- A sum of money doubles itself in 10 years at SI. The number of years it would triple itself is
 - 25 years
 - 15 years
 - 20 years
 - none
- A polygon has 44 diagonals. Find the number of its sides
 - 10
 - 11
 - 12
 - 14
- If the sum of squares of the rank difference in mathematics and physics marks of 10 students is 22, then the coefficient of rank correlation is
 - 0.267
 - 0.867
 - 0.92
 - None
- 5 friends are seating on a bench. A is to the left of B but on the right of C. D is to the right of B but on the left of E. Who are at the extremes?
 - A, B
 - A, D
 - B, D
 - C, E
- Find $\lim_{x \rightarrow 2} \frac{(x^2 + x - 6)}{(x^2 - x - 2)}$ as $x \rightarrow 2$
 - $\frac{6}{3}$
 - 5
 - $\frac{5}{3}$
 - $\frac{3}{5}$
- If the nominal rate of growth is 17% and inflation is 9% for five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is
 - 1.587 P
 - 1.921 P
 - 1.403 P
 - 2.51 P
- The number of conditions to be satisfied by three events A, B and C for complete independence
 - 2
 - 3
 - 4
 - Any number

Contd...

8. If the regression equations are $x+2y-5=0$ and $2x+3y-8=0$, then the mean of x and mean of y are
- 3 and 4
 - 2 and 4
 - 1 and 2
 - 2 and 1
9. $M \times N$ means M is the daughter of N , $M + N$ means M is the father of N . $M \% N$ means M is the mother of N and $M - N$ means M is the brother of N then $P \% Q + R \times K$ indicates which relation of P to K ?
- Daughter in Law
 - Sister-in-Law
 - Aunty
 - None of these
10. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. The values of m and n are
- 6,3
 - 7,6
 - 5,1
 - 8,7
11. Effective rate of interest does not depend on _____
- Amount of Principal
 - Amount of interest
 - Number of conversion periods
 - None of these
12. If the quartile deviation of a normal curve is 4.05, then its mean deviation is
- 5.26
 - 6.24
 - 4.24
 - 4.80
13. Regression coefficients remain unaffected due to:
- Change of scale
 - Change of origin
 - Both a) and b) above
 - None of the above
14. A is the mother of D and sister of B . B has a daughter C who is married to F . G is the husband of A . How is G related to D ?
- Uncle
 - Husband
 - Son
 - Father
15. In a school, 21 play basketball, 26 play hockey and 29 play football. If 14 play hockey and basketball, 12 play football and basketball, 15 play hockey and football and 8 play all the three games, then the number of players who play only football is:
- 10
 - 20
 - 21
 - 43

Contd...

16. Pravin buys a house paying Rs.50,000 in cash and balance in 20 installments of Rs.8,000 each at the end of each year. If interest is at 16% p.a., how much he should have paid if had purchased it cash down
- A) 85250
 - B) 94730
 - C) 97430
 - D) 87589
17. Ten electric bulbs, of which 3 are defective, are to be tried in three different light points in a dark room. In how many out of the total trials the room shall be lighted?
- A) 120
 - B) 121
 - C) 119
 - D) 122
18. When $r=0$, the regression lines are
- A) Parallel to each other
 - B) Perpendicular to each other
 - C) Coincides
 - D) Either A) or B)
19. Six members of a family namely A, B, C, D, E and F are travelling together. 'B' is the son of C, but C is not the mother of B. A and C are married couple. E is the brother of C. D is the daughter of A. F is the brother of B. How many male members are there in the family?
- A) 3
 - B) 2
 - C) 4
 - D) 1
20. Let $R = (3, 3), (6, 6), (9, 9), (12, 12), (6, 12), (12, 6), (3, 9), (3, 12), (3, 6)$ be a relation on the set $A = 3, 6, 9, 12$. The relation is
- A) An equivalence relation
 - B) Reflexive and transitive only
 - C) Reflexive only
 - D) Reflexive and symmetric only
21. In how many years a sum of money trebles at 5% pa. CI payable on half yearly basis
- A) 18 years 7 months
 - B) 18 years 6 months
 - C) 18 years 8 months
 - D) 22 years 3 months
22. _____ distribution is sometimes known as "distribution of rare events"
- A) Normal distribution
 - B) Poisson distribution
 - C) Binomial distribution
 - D) Chi-square distribution
23. Sum of difference in ranks is always
- A) 1
 - B) 0
 - C) -1
 - D) 2

24. Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle?
 A) S
 B) T
 C) Q
 D) R
25. The number of non-empty subsets of a set consisting of 10 elements is
 A) 1023
 B) 1024
 C) 512
 D) 1022

Section C

Answer any **FOUR** questions ($4 \times 5 = 20$ Marks)

26. (a) If discount rate is 7% pa, how much would you pay to receive 500, growing at 5% annually forever?
 (b) Find Amount of annuity of 6,000 payable at the end of each 3 months for 4 years compounded quarterly at 8% pa.
 (c) A loan of 30,000 at 6% compounded annually is to be amortised by equal payments at the end of each year for 5 years. Find annual payment.
27. (a) The question paper on Mathematics and Statistics contains 10 questions divided into two groups of 5 questions each. In how many ways can an examinee select 6 questions taking at least two questions from each group?
 (b) When can we say two events to be mutually exclusive?
 (c) A person is known to hit 4 out of 5 shots, whereas another person is known to hit 3 out of 4 shots. Find the probability of hitting a target if they both try.
28. (a) Give some characteristics of Poisson Distribution. Also, If the standard deviation of a Poisson variate X is 2, what is $P(1.5 < X < 2.9)$
 (b) If for normal distribution $Q_1 = 54.52$ and $Q_3 = 78.86$ then the median of the distribution
 (c) For a binomial distribution, the mean and standard deviation are 10 and 3 respectively. Find the value of n.
29. (a) The coefficient of concurrent deviation for p pairs of observation was found to be $1/\sqrt{3}$. If the number of concurrent deviations was found to be 6, then the value of p.
 (b) If $4y-6x=18$ is the regression line of y on x and coefficient of correlation between x and y is 0.8. What is the value of regression coefficient of x on y?
 (c) Write any 3 properties of Regression Lines.
30. (a) A is B's brother. C is A's mother. D is C's father, E is B's son. How is D related to A?
 (b) Pointing towards A, B said "your mother is the younger sister of my mother ". How is A related to B?
 (c) A to H are seated in straight line facing North. C sits fourth left of G. D sits second to right of G. Only two people sit between D and A. B and F are immediate neighbours of each other. B is not an immediate neighbour of A. H is not neighbour of D. Who sits third to the right of C?
31. (a) Set X and Y have 6 and 12 elements respectively, what is the maximum and minimum number of elements in XUY?
 (b) Find differential coefficient of $5x^2 + 3x + 2$ at $x=0$.
 (c) Determine $f(x)$, given that $f'(x) = 12x^2 - 4x$ and $f(-3) = 17$.
