Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be UniversityEstd. u/s 3 of UGC Act 1956, Category 'A' by MHRD)
Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination - November 2024

I Semester

Class : I UG
Major : B.Com PA

Time : 3 Hours
Max. Marks : 100

23BCPC03 Business Mathematics and Logical Reasoning and Statistics

Course Outcomes:

CO1: Apply the Logarithm Techniques and its Mathematical Equation for Business
CO2: Prepare the Permutation and Combination Sequences Series for Business Situations
CO3: Acquire the Logical Reasoning and Syllogism Skill Sets
CO4: Apply Statistical Techniques for Data Analysis and Interpretations
CO5: Application of Correlation and Regression Techniques in Business Decision Making.

Part A **10 x 1 = 10**

Choose the Correct Answer

1. Find the value of Indices $a^m a^n$ CO1K1
   a. a^{m+n} b. a^{mn}
   c. a^{2mn} d. a^{m-n}

2. Find log 10100 CO1K1
   a. 2 b. 100
   c. 10 d. 1

3. Find the value of $^4P_4$ CO2K1
   a. 1 b. 24
   c. 0 d. 12

4. Identify which of the following is the common difference of the sequence 1,4,7,10, in AP CO2K1
   a. 3 b. 4
   c. 7 d. 1

5. Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next? CO3K1
   a. 7 b. 10
   c. 12 d. 13

6. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then, how is A related to D? CO3K1
   a. Grandfather b. Grandmother
   c. Granddaughter d. Daughter

7. Identify the shape of pie diagram CO4K1
   a. Square b. Conical
   c. Circular d. Rectangle

8. Identify the name of the value which occurs most often _____. CO4K1
   a. mean b. median
   c. mode d. quartile

9. The approximation of binomial when n is large and p is close to zero _____. CO5K1
   a. normal distribution b. binomial distribution
   c. poisson distribution d. sampling

10. Locate the region of coefficient of correlation lies between CO5K1
    a. -1 and +1 b. 1 and -1
    c. -1 and 0 d. 2 and +1

Part B — 5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. The monthly incomes of two persons are in the ratio 4:5 and their monthly expenditures are in the ratio 7:9. If each saves Rs.50 per month, find their monthly incomes. CO1K3

(or)

11.b. Solve the following equation $2x + 3y + 3z = 2; x - y + z = 4; 4x + 2y - z = 9.$ CO1K3

12.a. Show that (i)10!=8! +2!. (ii) 0! is 1. CO2K2

(or)

12.b. Compute the 45^{th} term of an AP where 10^{th} term of an AP is 184 and16^{th} term is 160. CO2K2

13.a.(i) If South-East becomes North, North-East becomes West and so on. What will West become?
(ii) One morning after sunrise, Suresh was standing facing a pole. The shadow of the pole fell exactly to his right. To which direction was he facing CO3K4

(or)

13.b. A is the father of C and D is the son of B. E is the brother of A if C is the sister of D, how is B related to E? CO3K4

14.a. Draw a Histogram for the following data : CO4K3

Class	0-10	10 - 20	20 - 30	30 - 40	40 - 50	50-60
Frequency	4	6	14	14	8	5

(or)

14.b. Determine the Standard deviation for the following data: CO4K3

Size	10	11	12	13	14	15	16
Frequency	2	7	10	15	10	4	1

15.a. A random sample of size 100 articles is taken from a batch of 2000 articles showed that the average of the articles 0.354 with S.D 0.048. Find 95% confidence interval for the average of this batch of 100 articles. CO5K3

(or)

15.b. Compute the coefficient of correlation between X and Y from the following data. CO5K3

X	5	10	5	11	12	4	3	2	7	1
Y	1	6	2	8	5	1	4	6	5	2

Part C — 5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. Explain the methods of Simultaneous Linear equations with examples. CO1K1

(or)

16.b. Draw the graphs of the following linear and inequalities. CO1K2

$5x + 8y \leq 2000, x \leq 175, x \geq 0$

$7x + 4y \leq 1400, y \leq 225, y \geq 0$

17.a. How many numbers of three digits can be formed with digits 1,3,5,7, and 9? CO2K2

(or)

17.b. Compute the sum of n terms of the following series:7+77+777+.... CO2K2

18.a. Find the number which will come in the place of the question mark in the given series CO3K3
(i) 4, 18, ? , 100, 180, 294, 448 (ii) 2, 5, 12.5, ?, 78.125, 195.3125 (iii) 7, 10, 8, 11, 9, 12, ...

(or)

18.b. (i) Pointing to a girl in the photograph, Ajay said, "Her mother's brother is the only son of my mother's father." How is the girl's mother related to Ajay? CO3K3
(ii) Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle." How is the boy related to the girl?

19.a. Draw a circular diagram from the following data: CO4K3

Type of commodity	Expenditure in rupees	
	Family A	Family B
Food	300	500
Rent	200	350
Clothes	125	250
Education	110	225
Miscellaneous	75	125
Savings	90	150

(or)

19.b. Solve the Mean, Median and Mode from the following data: CO4K3

Class	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Frequency	3	7	13	17	12	8	8	6	6

20.a. For a Binomial distribution with parameters n= 5, p= 0.3. Find the probabilities getting (i) at least 3 successes (ii) at most 3 successes (iii) exactly 3 failures. CO5K3

(or)

20.b. Ten competitors in a beauty contest are ranked by three judges in the following order. CO5K3

J_1	1	5	4	8	9	6	10	7	3	2
J_2	4	8	7	6	5	9	10	3	2	1
J_3	6	7	8	1	5	10	9	2	3	4

Use rank correlation coefficient to Compute which pair of judges have the nearest approach to common taste in beauty.

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