PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCom DEGREE EXAMINATION DECEMBER 2023
(First Semester)
Branch - COMMERCE (COST MANAGEMENT AND ACCOUNTING)

BUSINESS MATHEMATICS AND STATISTICS

Time: Three Hours　　　　　　　　　　　　　　　　　　Maximum: 75 Marks

SECTION-A (10 Marks)
Answer ALL questions
ALL questions carry EQUAL marks　　　　　　(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following relation is true? a. $nCr = \frac{nPr}{r!}$ b. $nCr = nPr * r$ c. $nPr = \frac{nCr}{r!}$ d. $nPr = nCr/r$	K1	CO1
	2	Find the amount to be paid back on a loan of Rs. 18000 at a simple interest of 5.5% for three years? a. 20970　　b.20900　　　　c.2970　　d.2000	K2	CO1
2	3	Find the value of $\frac{d(3e^{-3x})}{dx} =$ a. e^{-3x}　　　b. $-e^{-3x}$　　　c. e^{-x}　　　d. $-e^{-x}$	K1	CO2
	4	Find $\lim\limits_{x \to a} \frac{x^2 - a^2}{x-a} =$ a. x+a　　　　b. 2a　　　　c. a　　d. 0	K2	CO2
3	5	Which of the following is not a one dimensional diagram? a. Multiple bar diagram.　　b. Subdivided bar diagram c. Simple bar diagram　　　d. Pie diagram	K1	CO3
	6	If the upper limit of a particular class is not equal to the lower limit of its succeeding class, the class intervals are called----- a. Continuous interval　　b. Exclusive interval c. Inclusive interval　　　　d. Open intertval	K2	CO3
4	7	If the variables X and Y are related as Y= X/2+4, the Karl Pearsons coefficient of correlation is – a .0　　　b. -1　　　c. 1　　　d. <0	K1	CO4
	8	If all the points on a scatter diagram fall on a straight line, what is the type of correlation? a. High negative　　b. Negative　　c. Linear　　d. Low positive	K2	CO4
5	9	If A and B are mutually exclusive , then P(A ∩B) is a. 0.5　　b. 0　　c. 1　　d. P(A)* P(B)	K1	CO5
	10	If E(X)=3, what is E(3X+10)? a. 10　　b. 10　　c.19　　d. 13	K2	CO5

SECTION - B (35 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks　　　(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	In a party of 60 people, 35 had vanilla ice cream and 30 had Chocolate Ice cream. If all the people had atleast one of the flavors, find the number of people who liked both the flavors. Also find the number of people who liked only vanilla ice-cream?	K2	CO1

11. Cont...

1	11.b.	(OR)		K2	CO1
		Out of seven Science teachers and 4 maths teachers , a panel of 3 Science teachers and 2 maths teachers should be formed. Find the number of ways in which the panel can be constituted.			

2	12.a.	Find the maximum value of $f(x) = 3 + 14x - 5x^2$	K3	CO2
		(OR)		
	12.b.	Find$\frac{d}{dx}\left(\frac{1-3x}{1+3x}\right)$		

	13.a.	Find the coefficient of Quartile deviation						K3	CO3

Values	100	200	400	500	600
Frequency	5	8	21	12	6

(OR)

13.b. Compute the standard deviation.

X	6	9	12	15	18
f	7	12	19	10	2

4	14.a.	Explain the types of correlation using Scatter digram.	K4	CO4
		(OR)		
	14.b.	If 9X-3Y=165 and 3X-4Y=40 are the regression lines, compute the value of r.		

5	15.a.	Find the chance that the sum of outcomes is greater than 10 when two dice are rolled simultaneously.	K4	CO5
		(OR)		
	15.b.	The probability of occurrence of an occupational disease to a worker of a chemical factory is ¼. Find the probability that 2 out of 5 workers chosen at random will suffer from this disease.		

SECTION -C (30 Marks)
Answer ANY THREE questions
ALL questions carry EQUAL Marks   (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Verify whether $(A + B)^2 = A^2 + B^2 + 2AB$ where $A = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$ and $B = \begin{pmatrix} 3 & 4 \\ 5 & 1 \end{pmatrix}$	K4	CO1
2	17	$If\ y = v^3 + 2v^2 + 5, v = 3u + 1,$ $u = 9x + 1\ , find\ dy/dx$ at x=10	K4	CO2
3	18	Calculate the mode.	K4	CO3

C.I	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16
f	45	50	65	70	30	25	20	18

4	19	Find the Regression lines.	K4	CO4

X	6	8	10	18	20	23
Y	40	36	20	14	10	2

5	20	Bag I contains 5 green balls and 6 Yellow balls. Bag II contains 6 green balls and 8 yellow balls. One ball is selected at random from Bag I and is shifted to Bag II. Then a ball is selected at random from BagII. What is the chance that the second ball is a green ball?	K4	CO5

Z-Z-Z   END