

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BCom DEGREE EXAMINATION DECEMBER 2024
(First Semester)**

Branch – **COMMERCE (COST AND MANAGEMENT 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	What is the ratio of 4 to 8? a) 1:4 b) 2:4 c) 1:2 d) 4:1	K1	CO1
	2	The solution of the quadratic equation $x^2 - 7x + 10 = 0$ is: a) $x = 2, 5$ b) $x = 3, 4$ c) $x = 1, 10$ d) $x = 0, 10$	K2	CO1
2	3	Which of the following is the derivative of $f(x) = x^2 + 3x + 5$? a) $2x + 3$ b) $2x - 3$ c) $2x + 5$ d) $x + 3$	K1	CO2
	4	The integral of $\int x^3 dx$ is: a) $x^4 + c$ b) $4x^2 + c$ c) $x^3 / 3 + c$ d) $x^4 / 4 + c$	K2	CO2
3	5	Which measure of central tendency is affected most by extreme values? a) Mode b) Median c) Mean d) Range	K1	CO3
	6	A bar graph is used to represent: a) Continuous data b) Categorical data c) Both a and b d) None of the above	K2	CO3
4	7	Which of the following represents a perfect positive correlation? a) +1 b) 0 c) -1 d) 0.5	K1	CO4
	8	Coefficient of Correlation lies between a) 0 to 1 b) -1 to 1 c) 0 to ∞ d) $-\infty$ to ∞	K2	CO4
5	9	In probability, the sum of the probabilities of all possible outcomes of a random experiment is: a) -1 b) 0 c) ∞ d) 1	K1	CO5
	10	The chance that a non-leap year contains 53 Mondays is a) 1/7 b) 2/7 c) 1/365 d) 2/365	K2	CO5

Cont...

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.	Describe the various operations in set theory with examples.	K2	CO1
		(OR)		
	11.b.	Define and explain the ratios and proportions with suitable examples		
2	12.a.	Define limit of a function and evaluate $\lim_{x \rightarrow \infty} \frac{5x^2 - 3x + 1}{2x^2 + x}$	K1	CO2
		(OR)		
	12.b.	Find the partial derivatives $\frac{\partial z}{\partial x}, \frac{\partial z}{\partial y}$ of the function $z = x^2y + 3xy^2 + y^3$		
3	13.a.	Discuss on the computation of any two measures of central tendency and its need.	K3	CO3
		(OR)		
	13.b.	Describe the construction of frequency polygon, frequency curve and Ogives.		
4	14.a.	Elucidate the concept of correlation and its types with examples.	K3	CO4
		(OR)		
	14.b.	Explain the types of regression equations and its uses.		
5	15.a.	Elaborate the following with suitable examples: i) mutually exclusive events ii) independent events iii) conditional probability iv) axiomatic probability	K3	CO5
		(OR)		
	15.b.	Box A contains 5 red and 3 white marbles and Box B contains 2 red and 6 white marbles. If a marble is drawn from each box then what is the probability that they are both of same colour.		

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	a) A sum of ₹10,000 is lent for 3 years at 10% per annum compounded annually. Calculate the compound interest and the total amount after 3 years	K2	CO1												
		b) Find the determinant of the following 3x3 matrix: $\begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & 3 \\ 1 & 5 & 4 \end{bmatrix}$														
2	17	a) Identify the maxima and minima of the function $f(x)=x^3-6x^2+9x+15$	K1	CO2												
		b) Evaluate $\int_0^1 (e^x + x^2) dx$														
3	18	Compute Mean deviation, Quartile deviation and Standard deviation.	K3	CO3												
		<table><tr><td>X</td><td>25-50</td><td>50-75</td><td>75-100</td><td>100-125</td><td>125-150</td><td>150-175</td></tr><tr><td>F</td><td>15</td><td>14</td><td>21</td><td>13</td><td>17</td><td>19</td></tr></table>			X	25-50	50-75	75-100	100-125	125-150	150-175	F	15	14	21	13
X	25-50	50-75	75-100	100-125	125-150	150-175										
F	15	14	21	13	17	19										
4	19	Find out the linear regression from the following data:	K3	CO4												
		<table><tr><td>X</td><td>15</td><td>20</td><td>25</td><td>30</td><td>35</td><td>40</td><td>45</td></tr><tr><td>Y</td><td>8</td><td>14</td><td>20</td><td>26</td><td>32</td><td>38</td><td>44</td></tr></table>			X	15	20	25	30	35	40	45	Y	8	14	20
X	15	20	25	30	35	40	45									
Y	8	14	20	26	32	38	44									
5	20	State Addition, Multiplication and Bayels theorem.	K3	CO5												

Z-Z-Z

END