

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

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

Common to Branches – **COMMERCE (RM)/ COMMERCE (FS)/ COMMERCE (FT)**

MATHEMATICS FOR COMMERCE

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	The term percentage means _____. a) hundredth b) tenth c) round off to hundred d) round off to 10	K1	CO1
	2	_____ is the money burrowed or lent. a) Principal b) Asset c) Annuity d) interest	K2	CO1
2	3	If $a_{ij} = a_{ji}$, the matrix is said to be _____. a) skew symmetric b) symmetric c) diagonal d) square	K1	CO2
	4	The transpose o f a cofactor matrix is called as _____ matrix. a) trace b) inverse c) determinant d) adjoint	K2	CO2
3	5	Derivative of a constant is _____. a) 1 b) -1 c) 0 d) ∞	K1	CO3
	6	_____ is the rate of change of y with respect to x. a) $\frac{dy}{ds}$ b) $\frac{dy}{dx}$ c) $\frac{dx}{dy}$ d) $\frac{ds}{dy}$	K2	CO3
4	7	Integration is the inverse process of _____. a) division b) product c) differentiation d) addition	K1	CO4
	8	A fraction consisting of two or more factors in the denominator is expressed as a sum or difference of two or more fractions is called the method of _____. a) cross product b) partial fractions c) domination d) linear fraction	K2	CO4
5	9	Formulation of a LPP consists of _____ steps. a) 3 b) 4 c) 5 d) 6	K1	CO
	10	When all the basic variables are non-zero, the basic solution is called _____. a) non- degenerate b) feasible c) degenerate d) non-feasible	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.	Two refrigerators cost Rs.8000 each. The first one is sold at a profit of 15% and 3% is the profit when both the refrigerators are sold. Determine the percentage of loss incurred in the selling the second refrigerator.	K3	CO1
		(OR)		
	11.b.	Find the sum of all numbers between 200 and 400 divisible by 7.		
2	12.a.	If $A = \begin{pmatrix} 2 & -1 & 4 \\ 6 & 2 & 8 \\ 0 & 2 & -1 \\ 3 & -4 & 5 \end{pmatrix}$ $B = \begin{pmatrix} 4 & 1 & 0 & 8 \\ -1 & 6 & 2 & 1 \\ 2 & -7 & -1 & 4 \end{pmatrix}$ Compute AB. Is this possible to find BA?	K3	CO2
		(OR)		
	12.b.	Find the inverse of $\begin{pmatrix} 2 & 2 \\ 3 & 5 \end{pmatrix}$		
3	13.a.	Find the derivative of $y = \frac{3x^2}{4x-1}$	K3	CO3
		(OR)		
	13.b.	Find the elasticity of supply from the supply function $p = -2 + 5x$		
4	14.a.	Integrate $\frac{x^3 - x + 4}{x^2}$ with respect to x.	K3	CO4
		(OR)		
	14.b.	Evaluate $\int x \log x \, dx$		
5	15.a.	A person requires atleast 10, 12, 12 units of the chemicals A, B and C respectively for his garden. A liquid product contains 1,2 and 4 units of A, B and C respectively per jar. A dry product contains 5,2 and 1 units of A, B and C respectively per carton. The liquid product sells for Rs.3 per jar and the dry product sells for Rs.2 per carton. Formulate this as an L.P.P for minimizing the cost and ensuring the requirement.	K3	CO5
		(OR)		
	15.b.	Solve graphically, $Max \, z = 3x_1 + 4x_2$, subject to $4x_1 + 2x_2 \leq 80$; $2x_1 + 5x_2 \leq 180$; $x_1, x_2 \geq 0$		

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 certain amount of money was invested at 8% simple interest and after 9 months an equal amount was invested at 10% simple interest. Find the period in which the amount in each case becomes Rs.2600. How much money was invested in each case?	K3	CO1
2	17	Solve $2x_1 + 3x_2 - x_3 = 9$; $x_1 + x_2 + x_3 = 9$; $3x_1 - x_2 - x_3 = -1$.	K3	CO2
3	18	If $f(x) = \frac{x^3 - 2x^2 + 50}{x^2}$, find $f'(5)$ and $f'(10)$.	K3	CO3
4	19	Evaluate $\int \frac{x dx}{(x-1)(2x+1)}$	K3	CO4
5	20	Solve $Maxz = x_1 + x_2 + 3x_3$, subject to, $3x_1 + 2x_2 + x_3 \leq 3$; $2x_1 + x_2 + 2x_3 \leq 2$; $x_1, x_2, x_3 \geq 0$	K3	CO5

Z-Z-Z

END