22CRM206N/ 22FSU206N/ 22FTU206N

PSG COLLEGE OF ARTS & SCIENCE

(AUTONOMOUS)

BCom DEGREE EXAMINATION MAY 2025

(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	To express $\frac{a}{b}$ as a percentage, we multiply it by _____ and simplify. a) 10 b) 100 c) 10^{-1} d) 100^{-1}	K1	CO1
	2	Any term starting from the second term can be obtained by multiplying the previous term by a constant is called _____series. a) Harmonic b) Geometric c) Arithmetic d) Constant	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	A^{-1} exists only if _____ matrix. a) $\|A\| \neq 0$ b) $\|A\| \neq 0 \leq$ c) $\|A\| = 0$ d) $\|A\| \neq 0 \geq$	K2	CO2
3	5	Derivative of logx is _____. a) 1 b) -1 c) $\frac{1}{x}$ d) $-\frac{1}{x}$	K1	CO3
	6	The second order condition for y being maximum is _____. a) $\frac{d^2y}{dx^2} > 0$ b) $\frac{d^2y}{dx^2} \neq 0$ c) $\frac{d^2y}{dx^2} = 0$ d) $\frac{d^2y}{dx^2} < 0$	K2	CO3
4	7	$\int x^n \, dx$ _____. a) $\frac{x^n}{n+1} + c$ b) $\frac{x^{n+1}}{n+1} + c$ c) $\frac{x^{n-1}}{n-1} + c$ d) $\frac{x^n}{n} + c$	K1	CO4
	8	$\int_a^b f(x)dx$ denotes a _____ integral. a) Riemann b) double c) definite d) triple	K2	CO4
5	9	_____method gives solution of an L.P.P in which there are only two variables. a) simplex b) Big M c) Dual Simplex d) graphical	K1	CO
	10	The optimality condition for simplex method is _____. a) $z_j - c_j \leq 0$ b) $z_j - c_j \neq 0$ c) $z_j - c_j \geq 0$ d) $z_j - c_j = 0$	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.	Find the interest value of Rs.2000 due in 8 months at 16% simple interest.	K3	CO1
		(OR)		
	11.b.	How many annual payments of Rs.50 each are needed to accumulate Rs.1000, if the interest is 5% compounded annually?		

Cont...

2	12.a.	Verify commutative property for addition. $A=\begin{pmatrix}2 & 3\\ -1 & 4\end{pmatrix}$; $B=\begin{pmatrix}5 & -2\\ -1 & 6\end{pmatrix}$ $C=\begin{pmatrix}0 & 2\\ 1 & -3\end{pmatrix}$	K3	CO2
		(OR)		
	12.b.	Solve : $3x+2y=14$; $3x+3y=18$.		
3	13.a.	Find $\frac{d(x^n)}{dx}$ and $\frac{d(\log_e x)}{dx}$ from first principle.	K3	CO3
		(OR)		
	13.b.	Compute $\frac{dy}{dx}$ when $x=4t$ and $y=2t^2$.		
4	14.a.	Compute $\int_0^2 (x^2-4x+5)dx$	K3	CO4
		(OR)		
	14.b.	Evaluate $\int x\,e^{mx}\,dx$		
5	15.a.	An animal feed company must produce atleast 200kg of a mixture consisting of ingredients A and B daily. A costs Rs.3 per kg and B costs Rs.5 per kg. Not more than 80kg of A can be used and atleast 60kg of B must be used. Formulate this as L.P.P to find the minimum cost mixture.	K3	CO5
		(OR)		
	15.b.	Solve graphically, *Max* $z=3x_1+2x_2$, subject to $x_1-x_2\le 1$; $x_1+x_2\ge 3$; $x_1,x_2\ge 0$		

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	The annual increase of a population of a city is found to be 4% approximately. The population of the city was 25 lakhs at the end of 1975. What will be the population at the end of 1985?	K3	CO1
2	17	Consider an economy of 2 industries P and Q, where the data in millions of Rs. is given below: PRODUCER: P — P: 14, Q: 6, FINAL DEMAND: 8, TOTAL OUTPUT: 28 PRODUCER: Q — P: 7, Q: 18, FINAL DEMAND: 11, TOTAL OUTPUT: 36	K3	CO2
3	18	Determine for what values of x, $2x^3-21x^2+36x-20$ is maximum and minimum respectively? Also find the maximum and minimum values.	K3	CO3
4	19	Evaluate $\int x^2e^x dx$	K3	CO4
5	20	Solve *Min* $z=-x_1+2x_2$, subject to, $-x_1+x_2\le 10$; $x_1+x_2\le 6$; $x_1-x_2\le 2$; $x_1,x_2\ge 0$	K3	CO5

Z-Z-Z END