PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BCom DEGREE EXAMINATION DECEMBER 2017
(First Semester)

Branch - COMMERCE (BUSINESS ANALYTICS)

MATHEMATICS

Time : Three Hours   Maximum : 75 Marks

SECTION-A (20 Marks!
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (1 0 x 2 = 20)

1   Find the simple interest on the sum of Rs.6,000 at10% p.a,for 3 years.

2   Calculate the total amount that will be received fromthe debtor when the principal Rs. 10,000 is lent to him on interest for 4 years at 9% p.a.

3   Find the sum of first 100 natural numbers.

4   Define sequence and series.

5   Define square matrix with example.

6   If $A = \begin{vmatrix} 4 & -1 & 0 \\ -3 & 5 & -6 \\ 2 & -7 & 8 \end{vmatrix}$ and $B = \begin{vmatrix} -1 & 0 & f \\ 5 & -2 & 2 \\ 3 & 4 & 3 \end{vmatrix}$

7   Differentiate w.r. to x $x^3 - 3x^2 + 4x + 3$.

8   Find the derivative of a^x where a is a constant.

9   Evaluate $\int e^{3x} dx$.

10   Evaluate $\int (x^2 - 4x + 5)\, dx$.

SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a The difference between the compound interest and the simple interest for 3 years at 5% p.a. on certain sum of money was Rs. 610. Find the sum.

OR

   b Find the effective rate of interest equivalent to a nominal rate of 12% p.a. compounded monthly.

12 a   Find the number of terms in the geometric series $0.03 + 0.06 + 0.12 + + 1.92$.

OR

   b The first three terms of a G.P are x, x+3 and x+9. Find the value of x and the sum of the first eight terms.

13 a   Find the inverse of ht matrix $A = \begin{matrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{matrix}$

OR

   b If $A = \begin{vmatrix} 12 & 3 & -4 \\ 16 & 7 & 8 \end{vmatrix}$, $B = \begin{vmatrix} & & \\ & & \end{vmatrix}$ and $C = \begin{vmatrix} 1 & 2 & 3 \\ 5 & -4 & 3 \end{vmatrix}$

   Find A+B-C, B-C+A.

14 a   Find the elasticity of supply from the supply function $p = -2 + 5x$.

OR

b   If $c(x)$ rupees is the total cost of manufacturing x toys & $c(x) =$

$500 + \dfrac{50}{x} + \dfrac{x^2}{10}$, find the average cost and the marginal cost when $x = 20$.

15 a Evaluate by the methods of substitution $\int \dfrac{c - c}{e^x + e^{-x}} dx$.

OR

b Prove that $\int - \dfrac{x}{oi + *2 2} = - \log 2$.

SECTION - C (30 Marks)
Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks ($3 \times 10 = 30$)

16   A bill was drawn on April 1st 1990 at 6 months and discounted on 23rd July, 1990 at 5% p.a. If the banker's discount was Rs. 160, find the value of the bill. How much more would be the bill owner obtaining if it were discounted on July 24, 1990?

17   Find the four numbers forming a geometric progression if the first number exceeds the second by 36 and the third number is greater than the fourth by 4.

18   Using matrix inversion method, solve the following system of equation
$2x - y + 3z = 1$
$x + y + z = 2$
$x - y + z = 4$.

19   If $y = xe^{x^2}$ find $\dfrac{d^2y}{dx^2}$ and $\dfrac{dV}{dx^3}$ '

20   Using partial fractions, solve $\dfrac{(x^2 + x + 1)}{(x-1)^2(x-2)} dx$.

Z-Z-Z   END