PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCom DEGREE EXAMINATION MAY 2019
(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 (10x2 = 20)

1 Calculate the compound interest for Rs. 20,000 for 5 years at 20% per annum.
2 Define True discount.
3 Find the last term of the series 7+14+21+....20 terms.
4 If the third and the seventh terms of a G.P are 2 and 1/8. Find r.
5 Define symmetric matrix.

hind the inverse of $\begin{pmatrix} 7 & -Uj \\ 12 & 0 \end{pmatrix}$.

7 If $y = 5x^2 + 4x$, find $\frac{dy}{dx}$

8 Write down the addition and the product rule of differentiation.

9 Evaluate : $\int e^{2x} dx$.

10 Integrate $\frac{x^2}{\text{-------}}$ with respect to x.

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

1 1 a A sum of money amounted to Rs. 1,071 in 6 months and Rs. 1,106 in 16 months. Calculate the rate of simple interest.

OR

b Find the cash value of a bill of Rs. 4,200 due 5 months, hence at 7.5% p.a.

12 a Find the sum of all natural numbers between 100 and 1000 which are divisible by 13.

OR

b The sum of 3 numbers in G.P is 35 and their product is 1000. Find the numbers.

13 a If $A = \begin{pmatrix} 3 & 0 \\ 1 & 2 \end{pmatrix}$, show that $A^2 - 5A + 7I = 0$.

OR

Solve the following equations, using determinant method :

$7x - 2y = 3$
$5x + y = 7$

14 a If $y = ae^{mx} + be^{-mx}$, show that $\frac{d^2y}{dx^2} - m^2y = 0$.

OR

Find the derivative of $\frac{7\cos x}{3x - 5}$ with respect to x.

15 a Find the value of $\int_0^1 \frac{1}{1+x^2}\,dx$.

OR

b The marginal cost function for producing x units is y = 23 + 16x - 3x and the total cost for producing 1 unit is 40. Obtain the total cost function and the average cost function.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 A bill for Rs. 1,825 was drawn on 22nd January at 6 months date and discounted on 16th April at the rate of 10% per annum. Find the sum for which the bill was discounted and the banker's gain.

17 If a, b, and c be respectively the sums of p. q and r terms of an A.P, prove that $\frac{a}{p}(q-r) + \frac{b}{q}(r-p) + \frac{c}{r}(p-q) = 0$.

18 Solve the following equations by matrix inverse method :
2x- 3y + 5z = 11
5x+ 2y - 7z = -12
-4x + 3y + z = 5

19 If $y = x^{x^*}$, find $\frac{dy}{dx}$

20 Solve : $\int x^2 e^x dx$.

Z-Z-Z END