E 2447

Reg. No.......................

Name.......................

B.C.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2015

First Semester

MATRICES, CALCULUS AND LAPLACE TRANSFORMS

(Complementary Mathematics for B.C.A.)

[2013 Admission onwards]

Time : Three Hours

Maximum : 80 Marks

Part A (Short Answer Questions)

Answer all questions.
Each question carries 1 mark.

1. Define rank of a matrix.

2. Write the system of equations in matrix form $x + z = 1, 2x - y = 2, - 2y - z = 0$.

3. Find the characteristic equation of the matrix $A = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$

4. Find $\lim\limits_{x \to 5} \dfrac{x-5}{x^2-25}$.

5. Does the curve $y = x^3$ ever have a negative slope ? Give reason for your answer.

6. State the mean value theorem.

7. Derive a partial differential equation by eliminating A and B from $z = Ax + By + A^2 + B^2$.

8. Eliminate the arbitrary function f from $z = f\left(x^2 - y^2\right)$.

9. Applying the definition of Laplace transform obtain $L (\sin a\, t)$.

10. Find the inverse Laplace transform of $\dfrac{s^2 - 3s}{s^3}$.

$(10 \times 1 = 10)$

Turn over