E 1493 (Pages : 2) Reg. No.....

Name.....

C.B.C.S.S.—B.B.M. DEGREE EXAMINATION, APRIL 2011

Second Semester

Complementary Course—MANAGERIAL APPLICATION OF MATHEMATICS

Time : Three Hours Maximum Weight : 25

Part A

Answer all *questions.*
Each bunch of four *questions carries a weight of* 1.

I. 1 A scalar matrix in which diagonal elements are equal ———.

2 A square matrix A is singular if $|A|$ = ———.

3 A square matrix $A = \left[a_{ij}\right]$, then ——— is defined as the determinant of submatrix formed by deleting i^{th} row and j^{th} column.

4 The transpose of matrix A, is denoted by ———.

II. 5 A ——— vector is a vector whose elements are random variables.

6 $\lim_{x \to k} \frac{f(x)}{g(x)} =$

7 A function that is not algebraic is a ——— function.

8 A function whose domain and range are set of real numbers is called as ———.

III. 9 Analytical geometry is also known as ———.

10 The graph of a linear function $ax + by + c = 0$, where a, b, c are real numbers is ———.

11 The slope of a line is defined by m = ———.

12 The intercepts of identical lines are ———.

IV. 13 A function $f(x)$ is said to an even function if for every x in a certain range $f(x)$ = ———.

14 The derivative of x^n with respect to x is ———.

15 The integral of adu is ———.

16 The integral of $2 + 3e^x$ is ———.

(4 × 1 = 4)

Turn over

Part B

Answer any **five** *questions.*
Each question carries a weight of 1.

17 Indefinite integral.
18 Dot product of a vectors.
19 Eigen vector.
20 Distance formula.
21 Rank of a matrix.
22 Integration of substitution.
23 Slope of a straight line.
24 Limit of a function.

(5 × 1 = 5)

Part C

Answer any **four** *questions.*
Each question carries a weight of 2.

25 Evaluate $\lim_{x \to 4} \frac{\left(x^3 - 64\right)}{\sqrt{x^2 + 9} - 5}$.

26 Prove that diagonals of a parallelogram bisect each other.

27 Find the inverse of matrix $A = \begin{bmatrix} 1 & 5 & -7 \\ 2 & 3 & -4 \\ -1 & -3 & -9 \end{bmatrix}$.

28 Differentiate x^x with respect of x.

29 For the cost function $y = 10\, e^{3x}$, find the marginal cost and marginal average cost.

30 $\int \frac{dx}{x \log x}$.

(4 × 2 = 8)

Part D

Answer any **two** *questions.*
Each question carries a weight of 4.

31 Find the rank of the matrix $A = \begin{bmatrix} 1 & 3 & 5 \\ 2 & 7 & 9 \\ 8 & 5 & 6 \end{bmatrix}$.

32 Solve the following equation using matrices :—

$$x + 2y - z = 2$$
$$3x - 4y + 2z = 1$$
$$-x + 3y - z = 4.$$

33 $\int \frac{e^{\sqrt{x}}}{\sqrt{x}}\, dx = 2\, e^{\sqrt{x}} + c$.

(2 × 4 = 8)