

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 $A = [a_{ij}]$, 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 $\lim_{x \rightarrow k} \frac{f(x)}{g(x)} =$ ———.
- 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 $\sin x$ 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 $\lim_{x \rightarrow 4} \frac{(x^3 - 64)}{\sqrt{x^2 + 9} - 5}$.
- 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 :—

$$\begin{aligned} x + 2y - z &= 2 \\ 3x - 4y + 2z &= 1 \\ -x + 3y - z &= 4. \end{aligned}$$
- 33 $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx = 2 e^{\sqrt{x}} + c$.

(2 × 4 = 8)