

TILAK MAHARASHTRA UNIVERSITY
Bachelors of Business Administration (Distance)

Home Assignment - IInd year – Semester III

Marks : 80

Code : 71315

Business Mathematics

Note:

- ❖ The Paper consists of two sections I & II
- ❖ Attempt any 4 questions from Section I
- ❖ Questions from Section I carry equal marks
- ❖ Section II is Compulsory

Section- I

Q.1 a) If $A = \begin{bmatrix} 1 & 5 & 8 \\ 7 & 9 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 6 & 2 \\ 1 & 5 & 6 \end{bmatrix}$ 15

Find the value of $3A + 2B$. &
Compute inverse of

$$\begin{bmatrix} 2 & 0 & -3 \\ -3 & 3 & 6 \\ 4 & -2 & 4 \end{bmatrix}$$

OR

b) Solve the following equation :-

$$9X + 3Y - 4Z = 35$$

$$X + Y - Z = 4$$

$$2X - 5Y - YZ + 48 = 0$$

Q. 2 a) Differentiate the following W.R.T. X 15

i) $X^4 - 4X^2 + \frac{7}{X} + 3\sqrt{X-5}$

ii) $(X^2 + 4) (6X - 2)$

iii) $(3X - 2) (X^2 + 1)^2$

iv) $4 \sin X \cos X$

v) $X^2 \cos X - 3X^4 \tan X$

OR

b) Integrate the following w.r.t. X

i) $X(X^2 - 1)^2$

ii) $(X^2 + 4)(X - 3)$

iii) $\frac{X^4 - 3X^2 + 4X}{X}$

Q.3 a) Simplify $\frac{(67)^{1/2} \times (0.079)^{1/4} \times (40)^{1/6}}{0.0052 \times (25.09)^{-1/3}}$ by logarithm method. 15

b) Three numbers whose sum is 15 are in A.P. If 1, 4 & 19 are added to them respectively, the result are in G.P. Find the Nos.

Q. 4 Write short notes on (Any 3) :- 15

- a) Venn Diagram
- b) Set & subset
- c) Arithmetic progression
- d) Complex number
- e) De Moivre's theorem

Section - II

Q. 5. Multiple choice: 20

1. Find the sum of the series $2 + 3\frac{1}{2} + 5 + 6\frac{1}{2} + \dots$ to 25 term.

- a) 440 b) 500 c) 220 d) 600

2. Find the sum of following series

$8 + 4 + \sqrt{2} + 4 + \dots$ to ∞

- a) $8(2 + \sqrt{2})$ b) $3(2 + \sqrt{2})$ c) $4(2 + \sqrt{2})$ d) $10(2 + \sqrt{2})$

3. Find the logarithm of $1/324$ to the base $3\sqrt{3}$.

- a) 10 b) 40 c) 20 d) -4

4. Pick up the correct logarithmic form of $10^3 = 1000$

- a) $\log_{1000} 10 = 3$ b) $\log_3 10 = 1000$ c) $\log_{10} 1000 = 3$
d) $\log_{10} 3 = 1000$

5. Classify the following matix.

$(7 \ 9 \ 10 \ 12)$

- a) Lower Triangular b) Identity c) row matix d) column matrix

6. A matrix obtained by deleting some rows or columns or both of a given matrix will be called:-
 a) Square Matrix b) Identity Matrix c) Least Matrix d) Sub- Matrix

7. Is it true that $\frac{d}{dX} \tan X = \sec^2 X$? $\therefore \int \sec^2 x dx = \tan x$

- a) Can't say b) Yes c) No

8. Is it true if $f(X) = X$ than $f'(X) = 1$?

- a) Can't say b) Yes c) No

9. Let $Y = \frac{(1-X)^2}{X^2}$ Find $\frac{dy}{dx}$?

- a) $\frac{-2}{X^2} + \frac{3}{X^2}$ b) $\frac{-2}{X^3} + \frac{2}{X^2}$ c) $\frac{2}{X^3} + \frac{-2}{X^4}$ d) $\frac{-4}{X^2} + \frac{13}{X^2}$

10. Obtain the conjugates of $2-3i$

- a) $4 + 3i$ b) $2 + 3i$ c) $-3i$ d) $1 + 3i$

11. Find the sum of $3 + i$ & $-2 + 4i$

- a) $1 + 2i$ b) $1 + 5i$ c) $1 + 3i$ d) $1 + 2i$

12. Solve $5X + 2Y = 8$ & $9X - 5Y = 23$

- a) $Y=1, X=2$ b) $Y = -1, X = 2$ c) $Y = 2, X = 2$
 d) $Y = 15, X=15$

13. Solve & find roots of $\sqrt{\frac{X}{Y}} + \sqrt{\frac{Y}{X}} = \frac{5}{2}$ ----- (i)

$X + Y = 10$ -----(ii)

- a) $X = 8, Y = 2$ b) $X = 12, Y=10$ c) $X = 18, Y = 12$
 d) $X = 2.5, Y = 3.2$

14. Find the sum of natural numbers from 1 to 200 excluding those divisible by 5

- a) 1600 b) 160 c) 160000 d) 16000.

15. A matrix in which the No. of rows is equal to No. of Columns is called

- a) Row matrix b) Square Matrix c) Columns
 d) Least Matrix

16. Singular matrix has its determinant zero

- a) Yes b) No c) Can't say

17. Modulus of $Z = 3+4i$ is _____

- a) 2 b) 4 c) 5 d) 7

18. For what value of k & m

$$K+3i = \frac{1}{2} + im$$

- a) $K = \frac{1}{2}$ $m=4$
- b) $K = \frac{1}{2}$ $m=3$
- c) $K = \frac{1}{2}$ $m=2$
- d) $K = \frac{1}{2}$ $m=10$

19. Find the sum of the series

$$1+3 -5+7+9 - 11 +13 +15 -17 + \dots - 3n \text{ form}$$

- a) $2n^2 - 2n$
- b) $3n^2 - 4n$
- c) $n^2 - 2n$
- d) $4n - 2n^2$

20. A square matrix when given in the form of a scalar multiplication to an identity matrix will be called :

- a) Sub-matrix
- b) Least matrix
- c) Identity matrix
- d) Scalar matrix.