

TILAK MAHARASHTRA VIDYAPEETH, PUNE
BACHELOR OF BUSINESS ADMINISTRATION (B.B.A.)

EXAMINATION: MAY/JUNE- 2025

SEMESTER - III

Sub.: Business Mathematics (BBA15-314)

Date : 2/06/2025

Total Marks : 60

Time: 2.00 pm to 4.30pm

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q. 1. Choose the most appropriate option. (05)

1. $a = 14$ and $b = 16$ then A.M.= _____

- a) 15
c) 20
- b) 30
d) 34

2. $S_n = n^2 + 5n - 1$ then $S_{10} =$ _____

- a) 149
c) 150
- b) 120
d) 604

3. $\log_{25} 625 =$ _____

- a) 2 b) 5
c) 4 d) 25

4. $Z = 72 + 6i$ then $\overline{Z} =$ _____

- a) $72 - 6i$
b) $38 - i$
c) $40 - 38i$
d) $40 - i$

5. Every Quadratic equation has _____ roots.

- a) 3 b) 4
c) 2 d) 1

Q. 2. State True / False (05)

1. $3x = 2y$ is quadratic equation.

- a) True b) False

2. If $A = \begin{bmatrix} 21 & 0 & 9 \end{bmatrix}$ is square matrix

- a) True b) False

3. Complex conjugate of the $Z = 10 - 4i$ is $10 + 4i$

- a) True b) False

4. Integration of $x^4 - 3x + 4$ with respect to x is $(x^5/5) - (3/2 x^2) + 4x$

- a) True b) False

5. $A = \begin{bmatrix} 8 & 0 \\ 6 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 2 \\ 1 & 3 \end{bmatrix}$ then $A - B = \begin{bmatrix} 3 & -2 \\ 5 & 2 \end{bmatrix}$

- a) True b) False

Q. 3. Write Short notes on (Any Three) (15)

1. Progressions
2. Set theory
3. Types of Matrices
4. Rules of Logarithms
5. G.M.

Q. 4. Answer in detail (Any Two)

(20)

1. Solve $x^2 + y^2 = 29$ & $x - y = 3$
2. Find the value of $\frac{2 \log 6 + 6 \log 2}{4 \log 2 + \log 27 - \log 9}$
3. Find the 20th term of the arithmetic progression 15, 13, 11, -----
Calculate the number of terms required to make the sum equal to zero.
4. Three numbers whose sum is 15 are in A.P. If 1, 4 and 19 are added to them respectively. The result are in G.P. Find the numbers.

Q. 5. Case study

(15)

Given $A = \begin{bmatrix} 2 & -3 & 1 \\ 4 & 2 & 3 \end{bmatrix}$ & $B = \begin{bmatrix} 3 & -2 & 4 \\ 1 & 3 & -5 \end{bmatrix}$

Question

- 1) Calculate $A+B$
 - 2) Estimate $(A + B)^{-1}$
 - 3) Check $(A + B)^{-1} = A^{-1} + B^{-1}$
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