

**TILAK MAHARASHTRA VIDYAPEETH, PUNE**  
**BACHELOR OF SCIENCE (B.Sc.) – GAME ART AND DESIGN**  
**EXAMINATION: DECEMBER- 2023**  
**THIRD SEMESTER**  
**Sub.: Mathematics (BAGD19-306)**

**Date: 21/12/2023**

**Total Marks: 40**

**Time: 2.00 pm to 4.00 pm**

**Instructions: All questions are compulsory.**

**Q. 1. Solve the following (Any 2) (10)**

1. Draw Venn Diagram for  $A \cup B$  and  $A \cap B$
2. Solve :  $(2+i)(3-5i)$
3. If A and B are two events such that  $P(A) = 0.8$ ,  $P(B) = 0.6$  and  $P(A \cap B)$

**Q. 2. Solve the following (Any 2) (10)**

1. Find the image of the following function:  $f(x) = 2x^2 - 3x + 4$ . Find  $f(1)$ ,  $F(0)$ ,  $f(-1)$ ,  $f(-2)$ ,  $f(2)$
2.  $\begin{matrix} 2 & 3 & 4 \\ 4 & 0 & -5 \end{matrix}$  Find the Transpose of the given matrix
3. Solve the following:  $(3+i)/(2-i)$
4. Solve:  $6x^2 - 13x - 63$

**Q. 3. Solve the following (Any 2) (20)**

1. Solve the following system of linear equations:  
 $x + y + 4z = 4$   
 $2x + 3y + 6z = 5$   
 $-3x + 2y + z = -4$
2. Two unbiased dice are thrown in air. Find the probability in each of the following events:
  - i) Score is a perfect square
  - ii) Score is a multiple of five
  - iii) Score on Each dice is same
  - iv) Score on second Dice is greater than the score on first dice
3. Given  $f(x) = x^2 + 6$  and  $g(x) = 2x - 1$ , find
  - a)  $(f \circ g)(x)$
  - b)  $(g \circ f)(x)$
4. Each student in a class of 40 plays at least one indoor game Chess, carom and scrabble. 18 play chess, 20 play scrabble and 27 play carom. 7 play chess and scrabble, 12 play scrabble and carom and 4 play chess, carom and scrabble. Find the number of students who play
  - (i) Chess and carom.
  - (ii) Chess, carom but not scrabble.