



**The Islamia University of Bahawalpur**  
**Department of URDU**  
**Semester – II**

**Paper: Mathematics-II**

**Term: Mid Term Exam Marks: 10)**

**Name:** \_\_\_\_\_

**Roll No:** \_\_\_\_\_

**Part – I (15 minutes)**

**NOTE: Attempt all parts. Each part carries one mark.**

**Q.1:** 1) If  $z$  is a complex number then  $|z|^2$  is \_\_\_\_\_.

- (a)  $z^2$       (b)  $(\bar{z})^2$       (c)  $z \cdot \bar{z}$       (d)  $\frac{z}{\bar{z}}$

2) Factor of  $3x^2 + 3y^2$  is

- a)  $(\sqrt{3}x + \sqrt{3}y)(\sqrt{3}x - \sqrt{3}y)$       b)  $3(x + iy)(x - iy)$   
c)  $3(x + y)(x - y)$       d)  $a(x + iy)(x - iy)$

3)  $(-1)^{-21/2} =$

- a)  $-i$       b)  $i$       c)  $1$       d)  $-1$

4) The roots of  $ax^2 + bx + c = 0$  are

- (a)  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2b}$       (b)  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2c}$   
(c)  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$       (d)  $\frac{-b \pm \sqrt{b^2 + 4ac}}{2b}$

5) Sum of all the cube roots of unity is

- a)  $1$       b)  $0$       c)  $\omega^2$       d)  $\omega$

6) Remainder obtained when  $f(x)$  is divided by  $x - a$  is same as the value of the polynomial  $f(x)$  at  $x = a$ .

*T / F*

7) The polynomial  $x - a$  is a factor of the polynomial  $f(x)$  if and only if  $f(a) \neq 0$ .

*T / F*

8) If  $\omega$  is a cube root of unity then  $\omega^2 = \omega^{-1}$ .

*T / F*

9) The quadratic equation  $Ax^2 + Bx + C = 0$  become linear equation if \_\_\_\_\_

10) The short cut method for division of polynomial is called \_\_\_\_\_



# The Islamia University of Bahawalpur

Department of URDU

Semester – II

Paper: Mathematics-II

Term: Mid Term Exam Marks: 20

Name: \_\_\_\_\_

Roll No: \_\_\_\_\_

Part-II (25 +35 minutes)

NOTE: Attempt all parts.

(2x5=10)

Q.2:

a) Simplify  $(\omega)^{101}$  and  $a^4 + b^4$ .

b) Simplify  $\frac{3}{\sqrt{6}-\sqrt{-12}}$  by expressing in the form  $a+bi$ .

c) Prove that:  $\left(\frac{1+\sqrt{-3}}{2}\right)^9 + \left(\frac{1-\sqrt{-3}}{2}\right)^9 = -2$ .

d) Using De Moivre's theorem, find out real and imaginary parts of the complex number  $(\sqrt{3}+i)^3$ .

e) Show that the root of the equation  $(p+q)x^2 - px - q = 0$  will be rational.

Q.3:

a) Using synthetic division to find the value of p and q if  $x+1$  and  $x-2$  are the factor of the polynomial  $x^3 + px^2 + qx + 6$ . (03)

b) Solve the equation  $x^3 + x^2 + x + 1 = 0$ . (03)

c) Solve the system of equations:  $x + y = a + b$ ;  $\frac{a}{x} + \frac{b}{y} = 2$ . (04)