



**Mathematics-9**  
Unit 5 – Review Exercise

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- The factor of  $x^2 - 5x + 6$  are \_\_\_\_\_ (U.B)

(a)  $x+1, x-6$  (b)  $x-2, x-3$   
 (c)  $x+6, x-1$  (d)  $x+2, x+3$
- Factors of  $8x^3 + 27y^3$  are \_\_\_\_\_ (RWP 2013, SWL 2013) (U.B)

(a)  $(2x-3y), (4x^2+9y^2)$  (b)  $(2x-3y), (4x^2-9y^2)$   
 (c)  $(2x+3y), (4x^2-6xy+9y^2)$  (d)  $(2x-3y), (4x^2+6xy+9y^2)$
- Factors of  $3x^2 - x - 2$  are \_\_\_\_\_ (U.B)

(a)  $(x+1), (3x-2)$  (b)  $(x+1), (3x+2)$   
 (c)  $(x-1), (3x-2)$  (d)  $(x-1), (3x+2)$
- Factors of  $a^4 - 4b^4$  are \_\_\_\_\_ (U.B)

(FSD 2014, 17, MTN 2015, SWL 2016, 17)

(a)  $(a-b), (a+b), (a^2+4b^2)$  (b)  $(a^2-2b^2), (a^2+2b^2)$   
 (c)  $(a-b), (a+b), (a^2-4b^2)$  (d)  $(a-2b), (a^2+2b^2)$
- What will be added to complete the square of  $9a^2 - 12ab$  ?..... (K.B)

(a)  $-16b^2$  (b)  $16b^2$   
 (c)  $4b^2$  (d)  $-4b^2$
- Find m so that  $x^2 + 4x + m$  is a complete square (K.B)

(a) 8 (b) -8  
 (c) 4 (d) 16
- Factors of  $5x^2 - 17xy - 12y^2$  are \_\_\_\_\_ (K.B)

(a)  $(x+4y), (5x+3y)$  (b)  $(x-4y), (5x-3y)$   
 (c)  $(x-4y), (5x+3y)$  (d)  $(5x-4y), (x+3y)$
- Factors of  $27x^3 - \frac{1}{x^3}$  are (SWL 2014) (K.B)

(a)  $\left(3x - \frac{1}{x}\right), \left(9x^2 + 3 + \frac{1}{x^2}\right)$  (b)  $\left(3x + \frac{1}{x}\right), \left(9x^2 + 3 + \frac{1}{x^2}\right)$   
 (c)  $\left(3x - \frac{1}{x}\right), \left(9x^2 - 3 + \frac{1}{x^2}\right)$  (d)  $\left(3x + \frac{1}{x}\right), \left(9x^2 - 3 + \frac{1}{x^2}\right)$

**ANSWERS KEYS**

1	2	3	4	5	6	7	8
b	c	d	b	c	c	c	a



## Unit - 5

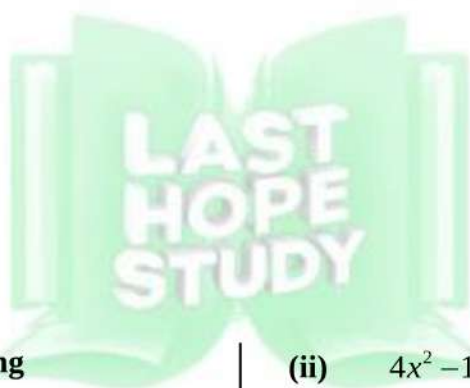
## Factorization

### Q.2 Completion items

- (i)  $x^2 + 5x + 6 =$  \_\_\_\_\_ (U.B)
- (ii)  $4a^2 - 16 =$  \_\_\_\_\_ (U.B)
- (iii)  $4a^2 + 4ab + (\text{_____})$  is a complete square. (U.B)
- (iv)  $\frac{x^2}{y^2} - 2 + \frac{y^2}{x^2} =$  \_\_\_\_\_ (K.B)
- (v)  $(x+y)(x^2 - xy + y^2) =$  \_\_\_\_\_ (K.B)
- (vi) Factored form of  $x^4 - 16$  is \_\_\_\_\_ (K.B)
- (vii) If  $x-2$  is factor of  $P(x) = x^2 + 2kx + 8$  then = \_\_\_\_\_ (K.B)

### Answer Keys

- (i)  $(x+3)(x+2)$
- (ii)  $(2a+4)(2a-4) = 4(a+2)(a-2)$
- (iii)  $(b)^2$
- (iv)  $\left(\frac{x}{y} - \frac{y}{x}\right)^2$
- (v)  $x^3 + y^3$
- (vi)  $(x+2)(x-2)(x^2+4)$
- (vii)  $-3$



### Q.3 Factorize the following

(i)  $x^2 + 8x + 16 - 4y^2$

**Solution:**

$$\begin{aligned} & x^2 + 8x + 16 - 4y^2 \\ &= [x^2 + 8x + 16] - 4y^2 \\ &= [(x)^2 + 2(x)(4) + (4)^2] - (2y)^2 \\ &\because a^2 + 2ab + b^2 = (a+b)^2 \\ &= (x+4)^2 - (2y)^2 \\ &\because a^2 - b^2 = (a+b)(a-b) \\ &= (x+4+2y)(x+4-2y) \\ &= (x+2y+4)(x-2y+4) \end{aligned}$$

(ii)  $4x^2 - 16y^2$

**Solution:**

$$\begin{aligned} & 4x^2 - 16y^2 \\ &= 4[x^2 - 4y^2] \\ &= 4[(x)^2 - (2y)^2] \\ &\because a^2 - b^2 = (a+b)(a-b) \\ &= 4(x-2y)(x+2y) \end{aligned}$$

(iii)  $9x^2 + 24x + 3x + 8$

**Solution:**

$$\begin{aligned} & 9x^2 + 24x + 3x + 8 \\ &= 3x(3x+8) + 1(3x+8) \\ &= (3x+8)(3x+1) \end{aligned}$$

## Unit - 5

## Factorization

(iv)  $1 - 64z^3$

**Solution:**

$$\begin{aligned} & 1 - 64z^3 \\ &= (1)^3 - (4z)^3 \\ \therefore a^3 - b^3 &= (a - b)(a^2 + ab + b^2) \\ &= (1 - 4z) \left[ (1)^2 + (1)(4z) + (4z)^2 \right] \\ &= (1 - 4z)(1 + 4z + 16z^2) \end{aligned}$$

(v)  $8x^3 - \left(\frac{1}{3y}\right)^3$

$$\begin{aligned} &= (2x)^3 - \left(\frac{1}{3y}\right)^3 \\ \therefore a^3 - b^3 &= (a - b)(a^2 + ab + b^2) \\ &= \left(2x - \frac{1}{3y}\right) \left(4x^2 + \frac{2x}{3y} + \frac{1}{9y^2}\right) \end{aligned}$$

(vi)  $2y^2 + 5y - 3$

**Solution:**

$$\begin{aligned} & 2y^2 + 5y - 3 \\ &= 2y^2 + 6y - y - 3 \\ &= 2y(y + 3) - 1(y + 3) \\ &= (2y - 1)(y + 3) \end{aligned}$$

(vii)  $x^3 + x^2 - 4x - 4$

**Solution:**

$$\begin{aligned} & x^3 + x^2 - 4x - 4 \\ &= x^2(x + 1) - 4(x + 1) \\ &= (x + 1)(x^2 - 4) \\ \therefore a^2 - b^2 &= (a + b)(a - b) \\ &= (x + 1)(x - 2)(x + 2) \end{aligned}$$

(viii)  $25m^2n^2 + 10mn + 1$

**Solution:**

$$\begin{aligned} & 25m^2n^2 + 10mn + 1 \\ &= (5mn)^2 + 2(5mn)(1) + (1)^2 \\ \therefore a^2 + 2ab + b^2 &= (a + b)^2 \\ &= (5mn + 1)^2 \end{aligned}$$

(ix)  $1 - 12pq + 36p^2q^2$

**Solution:**

$$\begin{aligned} & 1 - 12pq + 36p^2q^2 \\ &= (1)^2 - 2(1)(6pq) + (6pq)^2 \\ \therefore a^2 - 2ab + b^2 &= (a - b)^2 \\ &= (1 - 6pq)^2 \end{aligned}$$