Exercise 4.3

Question Number 1:-

Find HCF of the following monomials by completing the table below.

Monomials	HCF of numerical coefficients	HCF of 'p'	HCF of 'q'	HCF of 'r'	Required HCF
$16p^3q, 9pq^2r$	1	p	q	1	pq
$10p^3q^2r, 5p^2qr, 15p^2qr^2$	5	p^2	q	r	$5p^2qr$
$14p^4qr^4, 28p^3qr^2, 7p^2qr^2, 21p^2q^2r^4$	7	p^2	q	r^2	$7p^2qr^2$

Question No 1(b):

If all common factors with least power of three unknown polynomials are 2^2, 3, pq and $(p+q)^2$ then what would be their HCF?

$HCF = 2^2 \times 3 \times pq \, (p+q)^2$

$HCF = 4 \times 3 \, pq \, (p+q)^2$

$HCF = 12pq \, (p+q)^2$

Question No 1(c):

Write any two polynomial of your choice having HCF of 1.

$Polynomials = 4xy, \, 3ab$

Question No 1(d):

The only comman factor of two polynomial is (m – n) and the only uncommon factor is $m^2 + n^2$, can you guess the unknown polynomials?

$First \; Polynomial = m-n$

$Second \; Polynomial = (m-n)(m^2+n^2)$

Can you guess HCF of two polynomials $x^3 + 5x + 1$ and $1 + 5x + x^3$ without any procedure?

$$Yes, \; HCF = x^3 + 5x + 1$$

Find HCF of the following by factorization

② $(x+y)^2, \; x^2 - y^2$

$(x+y)^2$ | $x^2 - y^2$

$(x+y)(x+y)$ | $(x+y)(x-y)$

$$HCF = (x+y)$$

③ $(a-b)^3, \; a^2 - 2ab + b^2$

$(a-b)^3$ | $a^2 - 2ab + b^2$

$(a-b)(a-b)(a-b)$ | $(a-b)^2$

| $(a-b)(a-b)$

$$HCF = (a-b)(a-b)$$

$$HCF = (a-b)^2$$

$$HCF = a^2 + b^2 - 2ab$$

④ $a^3b - ab^3$, $a^5b^2 - a^2b^5$

$a^3b - ab^3$	$a^5b^2 - a^2b^5$
$ab(a^2 - b^2)$	$a^2b^2(a^3 - b^3)$
$ab(a+b)(a-b)$	$(ab)(ab)[(a-b)(a^2+b^2+ab)]$

HCF = $ab(a-b)$

⑤ $x^2 - 49$, $x^2 - 4x - 21$

$x^2 - 49$	$x^2 - 4x - 21$
$(x)^2 - (7)^2$	$x^2 - 7x + 3x - 21$
$(x+7)(x-7)$	$x(x-7) + 3(x-7)$
	$(x-7)(x+3)$

HCF = $x - 7$

⑥ $12x^2 + x - 1$, $15x^2 + 8x + 1$

$12x^2 + x - 1$	$15x^2 + 8x + 1$
$12x^2 + 4x - 3x - 1$	$15x^2 + 5x + 3x + 1$
$4x(3x+1) - 1(3x+1)$	$5x(3x+1) + 1(3x+1)$

$$(3x+1)(4x-1) \qquad (3x+1)(5x+1)$$

HCF = $(3x+1)$

⑦ $c^2 x^2 - d^2 \quad , \quad acx^2 - bcx + adx - bd$

$c^2x^2 - d^2$	$acx^2 - bcx + adx - bd$
$(cx)^2 - (d)^2$	$cx(ax - b) + d(ax - b)$
$(cx + d)(cx - d)$	$(ax - b)(cx + d)$

HCF = $(cx + d)$

⑧ $m^2 - n^2, \; m^4 - n^4, \; m^6 - n^6$

$m^2 - n^2$	$m^4 - n^4$	$m^6 - n^6$
$(m+n)(m-n)$	$(m^2)^2 - (n^2)^2$	$(m^3)^2 - (n^3)^2$
	$(m^2 + n^2)(m^2 - n^2)$	$(m^3 + n^3)(m^3 - n^3)$
	$(m^2 + n^2)(m+n)(m-n)$	$(m+n)(m^2 + n^2 - mn)(m-n)(m^2 + n^2 + mn)$

HCF = $(m+n)(m-n)$ OR $m^2 - n^2$

$ax^2 + 2a^2x + a^3$	$2ax^2 - 4a^2x - 6a^3$	$3(ax + a^2)^2$
$a(x^2 + 2ax + a^2)$	$2a(x^2 - 2ax - 3a^2)$	$3a^2(x + a)^2$
$a(x + a)^2$	$2a(x^2 - 3ax + ax - 3a^2)$	$3a^2 \cdot a (x + a)(x + a)$
$a(x + a)(x + a)$	$2a[x(x - 3a) + a(x - 3a)]$	
	$2a(x + a)(x - 3a)$	

$$HCF = a(x + a)$$