

REGULAR QUIZ 02

Form 1 Regular Course
Basic Algebra, Number Pattern

Part A – MC (@2 marks)

1.	D	
2.	B	The five terms are $\frac{x}{3}$, $9y$, -9 , $-3xy$ and $-y^2$
3.	D	$6xy + 13xy^2 - 7yx^2 + 3x^2y - yx$ $= (6xy - xy) + (-7x^2y + 3x^2y) + 13xy^2$ $= 5xy - 4x^2y + 13xy^2$
4.	B	$(-4a^2)(-3ab)(-bc)^2 \div (-2ab)$ $= -\frac{(4a^2)(3ab)(b^2c^2)}{2ab}$ $= -6a^{2+1-1}b^{1+2-1}c^2$ $= -6a^2b^2c^2$
5.	A	$\left(\frac{x^2}{3}\right)(6x - 9x^2 - 12)$ $= \left(\frac{x^2}{3}\right)(6x) - \left(\frac{x^2}{3}\right)(9x^2) - \left(\frac{x^2}{3}\right)(12)$ $= 2x^3 - 3x^4 - 4x^2$ $= -3x^4 + 2x^3 - 4x^2$
6.	C	$-(-x^{2022})(-x)^{2023}$ $= (x^{2022})(-x^{2023})$ $= -x^{2022+2023}$ $= -x^{4045}$
7.	D	
8.	C	Common difference = -2
9.	C	$55 + 89 = 144$

10.	B	I. Common ratio = $\frac{1}{3}$
		II. General term of triangular number sequence = $\frac{n(n+1)}{2}$ $\frac{20(20+1)}{2} = 210$
		III. $27^2 = 729$
11.	B	General Term = $1 + 4n$ 9 th term = $1 + 4(9) = 37$

1. D 2. B 3. D 4. B 5. A
6. C 7. D 8. C 9. C 10. B 11. B

Part B – Short Questions

1. (a) $(-6x^2y^5)(-4x^4y^3z^9)$
 $= 24x^{2+4}y^{5+3}z^9$ 1M
 $= 24x^6y^8z^9$ 1A

(b) $-\frac{12ab^7}{-4a^3b^2}$
 $= \frac{3b^{7-2}}{a^{3-1}}$ 1M
 $= \frac{3b^5}{a^2}$ 1A
(4)

2. (a) $-xy^2 - 3x^2y - yx^2 + 6xy^2$
 $= 5xy^2 - 4x^2y$ 2A

(b) $3(xy - 2x) - 2x^2 + 4x^2 - (7xy - 5x)$
 $= 3xy - 6x - 2x^2 + 4x^2 - 7xy + 5x$ 1M
 $= -4xy - x + 2x^2$ 1A

$$\begin{aligned}
 \text{(c)} \quad & 4(7a^2 - 5) - 3[a + 11(2 - a^2)] \\
 & = 28a^2 - 20 - 3(a + 22 - 11a^2) \\
 & = 28a^2 - 20 - 3a - 66 + 33a^2 \quad 1M \\
 & = 61a^2 - 3a - 86 \quad 1A
 \end{aligned}$$

$$\begin{aligned}
 \text{(d)} \quad & 2a(8a - b - 2c) - a(5a + b - 6c) \\
 & = 16a^2 - 2ab - 4ac - 5a^2 - ab + 6ac \quad 1M \\
 & = 11a^2 - 3ab + 2ac \quad 1A \\
 & \quad (8)
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ (a)} \quad & (4x - 3)(3x - 7) \\
 & = 12x^2 - 28x - 9x + 21 \quad 1M \\
 & = 12x^2 - 37x + 21 \quad 1A
 \end{aligned}$$

$$\begin{aligned}
 \text{(b)} \quad & (5x - 2)^2 \\
 & = (5x - 2)(5x - 2) \\
 & = 25x^2 - 10x - 10x + 4 \quad 1M \\
 & = 25x^2 - 20x + 4 \quad 1A \\
 & \quad (4)
 \end{aligned}$$

$$4. \text{ (a)} \quad a_1 = -\frac{1}{2}, a_2 = -1, a_3 = -\frac{3}{2}, a_4 = -2 \quad \begin{array}{l} 2A \text{ for all correct} \\ (1A \text{ for any two correct}) \end{array}$$

$$\begin{aligned}
 \text{(b)} \quad & a_1 = 4(1)^2 - 1 = 3, a_2 = 4(2)^2 - 1 = 15 \\
 & a_3 = 4(3)^2 - 1 = 35, a_4 = 4(4)^2 - 1 = 63 \\
 & \quad \begin{array}{l} 2A \text{ for all correct} \\ (1A \text{ for any two correct}) \\ (4) \end{array}
 \end{aligned}$$

$$5. \text{ (a)} \quad \text{The } 689^{\text{th}} \text{ term} = \frac{4}{(-1)^{689}} = -4 \quad \begin{array}{l} 1M \text{ for } (-1)^{689} = -1 \\ +1A \end{array}$$

$$\begin{aligned}
 \text{(b)} \quad & \text{The } 10000^{\text{th}} \text{ term} = \frac{4}{(-1)^{10000}} = 4 \quad \begin{array}{l} 1M \text{ for } (-1)^{10000} = 1 \\ +1A \\ (4) \end{array}
 \end{aligned}$$