TB(1A) Ch.6 Manipulations of Polynomials
Conventional Questions

1. **[16-17 Mid-year Exam, #7]**

(a) Simplify $\dfrac{-2a^4b^5}{8a^2b^5}$. **(1 mark)**

(b) Expand $(2x+5)(7+x)$ and arrange the terms in ascending powers of x. **(2 marks)**

(c) Simplify $(5xy-3y^2+x^2+1)-(2y^2-5x^2+xy)$. **(2 marks)**

2. **[16-17 Mid-year Exam, #13]**

(a) Expand $(1+2y)(m-ny+4y^2)$ and arrange the terms in ascending powers of y. **(2 marks)**

(b) It is given that the coefficients of y and y^2 in the expansion of the expression in **(a)** are 0. Find the values of m and n. **(2 marks)**

(c) Hence, express $1+(2y)^3$ in the form of $(1+2y)(a+by+cy^2)$, where a, b and c are integers. **(2 marks)**

3. **[17-18 Mid-year Exam, #3]**
    Simplify the following expressions.
    (a) $a+a-a \div a+a$ **(2 marks)**
    (b) $3ab^2+ba^2+(2ab)^2$ **(1 mark)**
    (c) $2a^5 \div (-a^3) \times 4a^4$ **(2 marks)**
    (d) $(2x-3)(4x+5)$ **(2 marks)**

4. **[17-18 Mid-year Exam, #13]**
    Find the coefficient of y^2 in $(2-3y^2+y)^2-2(y^3-2y^2+4)$. **(2 marks)**

5. **[17-18 Final Exam, #11]**
    Expand and simplify $(x-2y)(3x+4y)-(3x-4y)^2$, and arrange the terms in ascending powers of x.

    (3 marks)

6. **[18-19 Standardized Test 1, 4]**
    Simplify $(-32x^4) \div (-12x^{11}) \times 15x^5$. **(2 marks)**

7. **[18-19 Mid-year Exam, #13]**

(a) Simplify $\dfrac{15a^2b^7}{6a^7b^2} \times \dfrac{a^3b}{5}$. **(2 marks)**

(b) Expand $(2n-3)(1-6n)$ and express the answer in descending powers of n. **(2 marks)**

(c) Miffy suggests that when $n=\dfrac{3}{2}$, the value of polynomial $-12n^2+20n-3$ is zero. Do you agree? Explain your answer. **(2 marks)**

8.   **[18-19 Mid-year Exam, #15]**

In **Figure 4**, *ABCD* is a rectangle. It is given that the perimeter of the rectangle is 40 cm and $AD = (2a^2 + 1)$ cm.

 (a) Express *AB* in terms of *a*.   **(1 mark)**

 (b) Express the area of triangle *ABC* (not shown in the figure) in terms of *a*.   **(2 marks)**
      (Level 3)

Figure 4

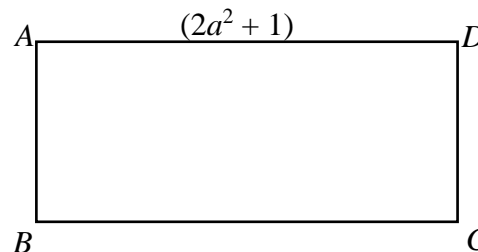**9.**   **[18-19 Final Exam, #1(c)(d)]**

 (c) Simplify $\dfrac{18x^{20}y^2}{-4x^{20}y^8}$.   **(1 mark)**

 (d) Expand $(6x+5)(x+9)$ and arrange the terms in descending powers of *x*.   **(2 marks)**

10.   **[20-21 Mid-year, #3]**

 (a) Simplify $(5 - 6x^2 + 2y) - (2x^2 - 4y + 7xy)$.   **(3 marks)**

 (b) Expand $(6 + 4x)(x + 5)$ and arrange the terms in descending powers of *x*.   **(2 marks)**

11.   **[20-21 Mid-year, #7]**

 (a)   Simplify $\left(\dfrac{x^3}{xy}\right)^2$ and express your answer with positive indices.   **(2 marks)**

 (b)   Simplify $\left(\dfrac{7x^2}{3y^3}\right)^2 \div \left(\dfrac{2x^2}{3y}\right)^3$ and express your answer with positive indices.   **(3 marks)**

12.   **[20-21 Final Exam, #3]**

 Find the value of the polynomial $x^4 - 2x^3 + 6$ when $x = 2$.   **(2 marks)**

13.   **[20-21 Final Exam, #13]**

 Expand and simplify the expression $(4 + y)(y - 5) - (y + 2)^2$.   **(3 marks)**

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