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PRACTICE PAPER 05 (2023-24)

ALGEBRAIC EXPRESSIONS

SUBJECT: MATHEMATICS **MAX. MARKS : 40**

CLASS : VII **DURATION : 1½ hr**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **6 MCQs** of **1 mark** each. **Section B** comprises of **1 CCT question** of **4 marks** each which contains **4 MCQs**. **Section C** comprises of 3 questions of **2 marks** each. **Section D** comprises of 4 questions of **3 marks** each and **Section E** comprises of 3 questions of **4 marks** each.

SECTION – A

Questions 1 to 6 carry 1 mark each.

1. The sum of $x^4 - xy + 2y^2$ and $-x^4 + xy + 2y^2$ is

(a) Monomial and polynomial in y (b) Binomial and Polynomial

(c) Trinomial and polynomial (d) Monomial and polynomial in x

2. Which of the following is a pair of like terms?

(a) $-7xy^2z, -7x^2yz$ (b) $-10xyz^2, 3xyz^2$

(c) $3xyz, 3x^2y^2z^2$ (d) $4xyz^2, 4x^2yz$

3. The side length of the top of square table is x. The expression for perimeter is:

(a) 4 + x (b) 2x (c) 4x (d) 8x

4. What must be subtracted from 2a + b to get 2a – b

(a) 2b (b) 4a (c) 0 (d) 4a + 4b

5. The value of $3x^2 - 5x + 3$ when x = 1 is

(a) 1 (b) 0 (c) –1 (d) 11

6. The value of 21b – 32 + 7b – 20b is

(a) 48b – 32 (b) –8b – 32 (c) 8b – 32 (d) 28b – 52

SECTION – B(CCT Questions)

Questions 7 to 10 carry 1 mark each.

CCT Question

In Class VII-A, one day Maths teacher explaining the topic formation of algebraic expression and find the value of expression. He explained that Variables and numbers are used to construct terms. These terms along with a combination of operators constitute an algebraic expression. The algebraic expression has a value that depends on the values of the variables. He explained example, let $6p^2 - 3p + 5$ be an algebraic expression with variable p

The value of the expression when p = 2 is, $6(2)^2 - 3(2) + 5$

$\Rightarrow 6(4) - 6 + 5 = 23$

Answer the following questions based on the above information:

7. The value of expression 4x – 3 at x = 2 is

(a) –4 (b) 5 (c) 4 (d) 2

8. The value of expression $5n^2 + 5n - 2$ for n = –2 is

(a) 13 (b) 3 (c) 8 (d) 12

9. The value of expression $2a^2 + 2b^2 – ab$ for a = 2, b = 1is
(a) 2 (b) 8 (c) 6 (d) 10

10. The value of $x + 7 + 4(x – 5)$ for x = 2
(a) –3 (b) 31 (c) 12 (d) 37

SECTION – C

Questions 11 to 13 carry 2 marks each.

11. Get the algebraic expressions in the following cases using variables, constants and arithmetic operations.
(i) Numbers x and y, both squared and added
(ii) Number 5 added to three times the product of numbers m and n
(iii) Product of numbers y and z subtracted from 10
(iv) Sum of numbers a and b subtracted from their product.

12. Identify like terms in the following: 10pq, 7p, 8q, $– p^2q^2$, – 7qp, – 100q, – 23, $12q^2p^2$, $– 5p^2$, 41, 2405p, 78qp, $13p^2q$, qp^2, $701p^2$

13. Simplify combining like terms: 3a – 2b – ab – (a – b + ab) + 3ab + b – a

SECTION – D

Questions 14 to 17 carry 3 marks each.

14. What should be the value of a if the value of $2x^2 + x – a$ equals to 5, when x = 0?

15. Identify terms which contain y^2 and give the coefficient of y^2.
(i) $8 – xy^2$ (ii) $5y^2 + 7x$ (iii) $2x^2y – 15xy^2 + 7y^2$

16. Find the values of the following expressions for x = 2.
(i) x + 4 (ii) 4x – 3

17. Simplify the expression and find its value when a = 5 and b = – 3.
$2(a^2 + ab) + 3 – ab$

SECTION – E

Questions 18 to 20 carry 4 marks each.

18. (i) If *z* = 10, find the value of *z*3 – 3(*z* – 10).
(ii) If *p* = – 10, find the value of *p*2 – 2*p* – 100

19. Identify the terms and their factors in the expressions: (i) $5xy^2 + 7x^2y$ (ii) $– ab + 2b^2 – 3a^2$
Show the terms and factors by tree diagrams.

20. If p = – 2, find the value of:
(i) $– 3p^2 + 4p + 7$ (ii) $– 2p^3 – 3p^2 + 4p + 7$