**MATHEMATICS**

ALGEBRAIC EXPRESSIONS

**1.** Simplify: 81a<sup>2</sup>b<sup>2</sup>c<sup>2</sup> + 64a<sup>6</sup>b<sup>2</sup> - 144a<sup>4</sup>b<sup>2</sup>c

 (A) 

 (B) 

 (C) 

 (D) None

ANS . C

**2.** Simplify: (a<sup>2</sup>+b<sup>2</sup> + 2ab) + (a<sup>2</sup> + b<sup>2</sup> - 2ab)

 (A) – 2a2 + 2b2

 (B) 2a2 – 2b2

 (C) 2a2 + 2b2

 (D) (2a2 – 2b2)

ANS . C

**3.** Simplify: 2x – [3y – {2x – (y – x)}]

 (A) 5x + 4y

 (B) 5x – 4y

 (C) – 5x – 4y

 (D) – 5x + 4y

ANS . B

**4. **

 (A) 2n (B) 3n

 (C) – 2n (D) – 3n

ANS . C

**5.** Simplify : 

 (A) 

 (B) 

 (C) 

 (D) 

ANS . A

**6.** Subtract 2x<sup>3</sup> + x<sup>2</sup> - 4x – 1 from 5x<sup>3</sup> + 5x<sup>2</sup> + 9

 (A)  (B) 

 (C)  (D) 

ANS. B

**7.** a4 + 4a2b2 + b4 is more than

 a4 – 8a2b2 + b4 by -

 (A) 12a2b2

 (B) – 12a2b2

 (C) 2a4 + 2b4

 (D) None

ANS . A

**8.** The value of (x + 2y + 2z)<sup>2</sup> + (x – 2y – 2z)<sup>2</sup> is -

 (A) 2x<sup>2</sup> + 8y<sup>2</sup> + 8z<sup>2</sup>

 (B) 

 (C)  (D) 

ANS . D

**9.** Simplify : 

 (A) 

 (B) 

 (C) 

 (D) xy + 2zx – 3y

ANS . D

**10.** Simplify : 

 (A) 5 (a – b + 1)

 (B) 5 (a + b + 1)

 (C) 5 (a + b – 1)

 (D) 5 (a – b – 1)

ANS . D

**11.** If a = – 2, b = 3 and c = 4, then the value of a<sup>3</sup> + b<sup>3</sup> + 3a<sup>2</sup>c – 4bc<sup>3</sup> is -

 (A) 107 (B) – 107 (C) 701 (D) – 701

ANS . D

**12.** P = a³ - 4b³ + 3a² b, Q = -4a³ + 13a² b + 7b³, R = - 4a² b + 8b³ + 3a³ and S = 12a² b-5b³+ 9a³ and P – Q + R – S is equal to -

 (A) 

 (B) 

 (C) 

 (D) 

ANS . A

**13.** Simplify :

 7 – [3x + {– 2y + 3z – (3y + 5z) + 8} – (3y2 + 7x) + 9]

 (A) – 1 + 4x – 3y – 3z + 3y2

 (B) – 10 + 4x + 5y + 2z + 3y2

 (C) – 10 – 4x + 5y – 2z + 3y2 (D) – 1 + 14x – 5y + 2z + 3y2

ANS . B



**14.** If and 3 (m + n) = 13 then find the value of x -

 (A) 6 (B) 8

 (C) 10 (D) 16

ANS . B

****

**15.** If P = x + 1 and then the value of x is -

 (A) 1 (B)

 (C) 2 (D) – 1

ANS . A

****

**16.** If then x =

 (A) 

 (B) 

 (C) 

 (D) 

ANS , D

**17.** If the present age of Jacob’s father is three times that of Jacob, after five years, sum of their ages would be 70 years, then the present age of Jacob’s father is -

 (A) 39 years

 (B) 45 years

 (C) 54 years

 (D) 60 years

ANS . B

**18.** The population of town A is 4800 more than town B. If 3100 people move from town B to town A, the population of town A will be 11 times that of town B. The original total population of the two towns is -

 (A) 12580

 (B) 12780

 (C) 13200

 (D) 13300

ANS . C

**19.** If the sum of two numbers is 184 and one-third of the smaller number exceeds one-seventh of the larger number by 8, then the larger number is -

 (A) 112

 (B) 72

 (C) 104

 (D) 80

ANS . A

**20.** A person has only 25 paise and 50 paise coins. In total he has 40 coins and the value of them is Rs. 12.50. Find the number of 50 paise coins he has -

 (A) 10

 (B) 15

 (C) 25

 (D) 20

ANS . A



**21.** Value of x in the equation is -

 (A) 2 (B) 4

 (C) 6 (D) 8

ANS . C

**22.** Simplify:

 (A) a²b² [9c + 8a²]²

 (B) –a²b² [9c – 8a²]²

 (C) 

 (D) None

ANS . C

23 The degree of 3x2–9 is

 (A) 1 (B) 2 (C) 3 (D) 4

ANS . B

24 The expression x + y + 2 is

 (A) Monomial (B) Binomial (C) Trinomial (D) None of these

ANS . C

25 The expression xyz is

 (A) Monomial (B) Binomial (C) Trinomial (D) None of these

ANS . A

26 Add 5a2b, –8a2b and 7a2b

 (A) –10a2b (B) 4a2b (C) 20a2b (D) 10a2b

ANS . B

27 Subtract (a2 + b2 – 2ab) from (a2 + b2 + 2ab)

 (A) –4ab (B) –2ab (C) 4ab (D) 2ab

Sol. (a2 + b2 + 2ab) – (a2 + b2 – 2ab) = a2 + b2 + 2ab – a2 – b2 + 2ab = 4ab

ANS . C

28 The degree of a polynomial ax5 – bx4 + c is

 (A) 9 (B) 5 (C) 4 (D) 1

ANS . B

29 The experession 4 (x –2) + 3 (x –1) is equal to

 (A) 7x – 11 (B) 7x + 11 (C) 6x – 10 (D) 6x +10

Sol. 4x – 8 + 3x – 3 = 7x – 11

ANS . A

30 Which expression is equal to 5 (2x + 1 – x – 4) ?

 (A) 9x – 3 (B) 5x – 15 (C) 5x – 3 (D) 5x + 25

Sol. 5 (x – 3) = 5x – 15

ANS . B

31 Which one of the following is equivalent to the expression (25) (26)?

 (A) 2048 (B) 230 (C) 411 (D) 430

ANS . A

32 A tanker contains 500 litres of water. Due to a small hole in the tanker, the quantity of water is decreasing at the rate of 9 litres every hour. What will be the quantity of water in the tank after 10 hours?

 (A) 410 litres (B) 491 litres (C) 400 litres (D) 90 litres

ANS . A

33 Subtract the sum of (8a – 6a2 + 9) and (–10a – 8 + 8a2) from – 3 is

 (A) 2a2 – 2a – 2 (B) 2a2 – 2a + 4 (C) –2a2 + 2a – 4 (D) –2a2 + 2a – 2

Sol. –3 – (8a – 6a2 + 9 – 10a – 8 + 8a2) = –2a2 + 2a – 4

ANS . C

34 An expression is taken away from 3x2 – 4y2 + 5xy + 20 to obtain – x2 – y2 + 6xy + 20, then the expression is

 (A) 4x2 – 3y2 – xy (B) 2x2 – 5y2 + xy + 40

 (C) 3y2 – xy – 4x2 (D) 4x2 + 3y2 + xy

Sol. (3x2 – 4y2 + 5xy + 20) + X = –x2 – y2 + 6xy + 20

  X = 4x2 – 3y2 – xy

ANS . A

35 By how much is a4 + 4a2b2 + b4 more than a4 – 8a2b2 + b4 ?

 (A) 12 a2b2 (B) –12a2b2 (C) 2a4 + 2b4 (D) 10a2b2

Sol. a4 + 4a2b2 + b4 – (a4 – 8a2b2 + b4) = 12 a2b2

ANS . A

36 Simplify (a3 – 2a2 + 4a – 5) – (–a3 – 8a + 2a2 + 5)

 (A) 2a3 + 7a2 + 6a – 10 (B) 2a3 + 7a2 + 12 a – 10

 (C) 2a3 – 4a2 + 12a – 10 (D) 2a3 – 4a2 + 6a – 10

Sol. a3 – 2a2 + 4a – 5 + a3 + 8a – 2a2 – 5 = 2a3 – 4a2 + 12a – 10

ANS . C

37 Simplify the following expression x(y –z) – y (z – x) – z (x – y)

 (A) 2x (y – z) (B) 2y (z – x) (C) 2x (z – y) (D) None of these

Sol. xy – xz – yz + xy – xz + yz = 2x(y – z)

ANS . A

38 The coefficient of x2 in the expression 3x3 –7x2 + 5x + 9 is

 (A) 3 (B) 7 (C) –7 (D) 5

ANS . C

39 Subtract (2a – 3b + 4c) from the sum of (a + 3b – 4c), (4a – b + 9c) and (–2a + 3c – b)

 (A) a – 4b + 4c (B) a + 4b – 4c (C) –a + 4b + 4c (D) a + 4b + 4c

Sol. (a + 3b – 4c) + (4a – b + 9c) + (–2a + 3c – b) – (2a – 3b + 4c)

 = (3a + b + 8c) – (2a – 3b + 4c) = 3a + b + 8c – 2a + 3b – 4c = a + 4b + 4c

ANS . D

40 If the value of 2x3 – 2x2 + x – a equals to 5, when x = 2, then the value of ‘a’ is

 (A) 4 (B) 5 (C) 3 (D) 6

Sol. 2(2)3 – 2(2)2 + 2 – a = 5  2(8) – 2(4) + 2 – a = 5  a = 5

ANS . B

41 The value of (0.05)3 is

 (A) 0.000125 (B) 0.00125 (C) 0.0125 (D) 0.125

ANS . A

42 The value of 7.75  0.25 is

 (A) 31 (B) 0.0031 (C) 0.31 (D) 3.1

ANS , A

43 Simplify –

 (A) 4xy (B) 8x2 + 18y2 (C) 8xy (D) 24xy

Sol. (4x2 + 12xy + 9y2) – (4x2 – 12xy + 9y2) = 24 xy

ANS . D

44 The product of (a – b) (a + b) (a2+b2) is

 (A) a2 – b2 (B) a5 – b3 (C) a4 – b4 (D) a2 + b4

Sol. (a2 – b2) (a2 + b2) = a4 – b4

ANS . C

45 What is the missing term in the following product ?

 (2a3 – 3) (5a3–2) = 10a6 + ........+ 6

 (A) 19a3 (B) –19a3 (C) 16a3 (D) –16a3

ANS . B

46 The value of n3 + 5n2 + 5n – 2 when n = –2 is

 (A) 16 (B) 0 (C) –40 (D) 10

Sol. (–2)3 + 5(–2)2 + 5(–2) – 2 = 0

ANS . B

47 The value of 9x2 + 49y2 – 42xy when x = 15 and y = 3 is

 (A) 636 (B) 576 (C) 456 (D) 386

Sol. 9x2 + 49y2 – 42xy = (3x – 7y)2 = (3 (15) – 7(3))2 = (45 – 21)2 = 576

ANS . B

48 Simplify : 4st (s – t) – 6s2 (t – t2) – 3t2 (2s2–s) + 2st (s – t)

 (A) –st2 (B) –2st2 (C) –3st2 (D) –4st2

Sol. 4s2t – 4st2 – 6 s2t + 6s2t2 – 6s2t2 + 3st2 + 2s2t – 2st2 = –3st2

ANS . C

49 Divide 2x3 – 4x2 by 2x

 (A) x2 – 2x (B) –x2 + 4 (C) –x2 + 4x (D) x2 + 4

Sol. 

ANS . A

50 Divide –15x5y4z3 + 10x4y4z4 + 20x3y2z by 5xyz

 (A) –3x4 y3 z2 – 2x3 y3 z3 + 4x2 y (B) –3x4 y3 z2 + 2x3 y3 z3 + 4x2 y

 (C) –3x4 y3 z2 + 2x3 y3 z3 – 4x2 y (D) 3x4 y3 z2 – 2x3 y3 z3 – 4x2 y

Sol.  = –3x4 y3 z2 + 2x3 y3 z3 + 4x2 y

ANS . B



51. The value of the expression when n = 12 is

(A) 76 (B) 74 (C) 78 (D) 72

ANS . C



52. If is a polynomial, then the zero of the polynomial is

 (A)  (B)  (C) 0 (D) – 2

ANS . A

53. If the zero of the polynomial in ‘x’ is  , then the polynomial is

 (A) 4x – 5 (B) 5x – 4 (C) 5x + 4 (D) 4x + 5

ANS . C

54. If A = – 8x2 – 6x + 10, then its value when ‘x’  is

 (A) 6 (B) 4 (C) 5 (D) 7

ANS . C

55. The third degree polynomial among the following is

 (A) 2x3 – 1 + 3x2 – 1 + 5 (B) 3x4 – 1 + 2x3 – 1 + 6x2 – 1 + 8

 (C) 3x– 2 – 1 + 4x– 2 + 5 (D) 2x5 – 3 + 3x4 – 3 + 7

ANS . B

56. Among the following the expression which is not a monomial is

 (A)  (B) – 147 x3y2 (C)  (D) x3y5z12

ANS . C

57. If , then the value of 4x2 + 8x + 18 is

 (A) a2 + 2a + 8 (B) a2 + 3a + 18 (C) a2 + 4a + 18 (D) a2 + 5a + 18

ANS . C

58. The value of the expression when x = 9/13 is

(A) – 8 (B) – 10 (C) – 9 (D) – 11

ANS . B

59. Degree of the polynomial p + q xm + rxm + 2 + 5xm + 3 + xm + 4 is

 (A) m (B) m + 2 (C) m + 3 (D) m+ 4

ANS . C

60. If represents sum of the squares of first ‘n’ natural numbers, then

 its value when n = 10 is

(A) 365 (B) 375 (C) 395 (D) 385

ANS . D

61. Degree of the polynomial is

 (A) 4 (B) 3 (C) 5 (D) 2

ANS . C

62. Degree of the monomial is

(A) 15 (B) 9 (C) 8 (D) 13

ANS . A

63. In a polynomial 3x + 5 where x = a + 2, then its value when a = 8 is

 (A) 25 (B) 45 (C) 35 (D) 40

ANS . C



64 The sum of is

 (A)  (B)  (C)  (D) 

ANS . C

65 The simplified form of 3x3 – 2x2 – 8x – 6x2 + 7x3 + 9x + 8x3 – 9x2 + 6x is

 (A) – 18x3 – 17x2 + 7x (B) 18x3 – 17x2 – 7x

 (C) 18x3 + 17x2 – 7x (D) 18x3 – 17x2 + 7x

ANS . B

66 The ascending order of the polynomials – 3x3 + 7x2 – 9x4 + 6x – 8 is

 (A) – 8 + 6x + 7x2 – 3x3 + 9x4 (B) – 8 – 6x – 7x2 – 3x3 – 9x4

 (C) – 8 + 6x + 7x2 – 3x3 – 9x4 (D) 8 + 6x + 7x2 + 3x3 + 9x4

ANS . A

67 If A = – 7x – 3x – 5x and B = 9x + 3x + 2x, then A + B is

 (A) 2x (B) – 2x (C) – x (D) – 3x

ANS.C

68 If , then A – B is

(A)  (B)  (C) – 2x (D) 0

ANS . A

69. The equivalent expression of 2x3 – 3x2 – 8x – 3 is

 (A) 3x3 – 5x3 + 7x2 – 5x2 – 8x + 10x – 4 + 1

 (B) 3x3 – x3 – 5x2 + 2x2 – 9x + x – 7 + 4

 (C) 4x3 – 6x2 – 3x3 + 3x2 + x2 – 9x + 3x + 6 – 3

 (D) 4x3 – 2x3 + 3x2 – 5x2 – 8x + 6x + 4 – 1

ANS . A

70 The descending order of 4x2 – 9x3 + 3x2 – 9x4 + 3x3 – 9x2 + 6x – 3x + 5 – 3 is (A) – 9x4 + 6x3 – 2x2 + 3x + 2 (B) – 9x4 – 6x3 + 2x2 – 3x + 2

 (C) – 9x4 – 6x3 – 2x2 + 3x + 2 (D) – 9x4 + 6x3 – 2x2 + 3x – 2

ANS . C

71 If is added to, then the result is

 (A) – 6x3 (B) 6x3 (C) 60x3 (D) 16x3

ANS . B

72 If 2x – 3x + 5x = P, Q = – 8x + 3x + 9x and R = – 8x – 6x – 7x, then (P + Q) – R is (A) 27x (B) 28x (C) 29x (D) 26x

ANS . C

73 If A = – 3x3 – 2x3 + 4x2 – 2x2, B = – 3x2 + 5x2 – 8x + 3x and C = 2x – 9x – 7 + 8,then A + B + C in simplified form is (A) – 5x3 + 4x2 – 12x + 1 (B) 5x3 – 3x2 – 12x + 1

 (C) – 5x3 – 4x2 – 12x – 1 (D) 5x3 + 3x2 + 12x + 1

ANS . A

74. If 4x3y2 + 3x2y3 – 8x2y5 is added – 9x2y3 + 6x2y5 – 9x3y4, then the result is (A) 4x3y2 + 5x2y3 – 2x2y5 – 9x3y4 (B) 4x3y2 – 6x2y3 – 2x2y5 – 9x3y4

 (C) 4x3y2 – 6x2y3 + 2x2y5 – 9x3y4 (D) – 4x2y2 – 6x2y3 – 2y2y5 – 9x3y4

ANS . B

75. If 0.5x3 + 1.85x3 + 2.96x3 – 4.71x3 is added to (1.25 x4 – 2.5x5 + 3.6x4 – 4.71x(D), then the result is

 (A) 0.6x3 + 2.36x4 (B) – 0.6x3 – 2.36x4

 (C) 0.6x3 – 2.36x4 (D) – 0.6x3 + 2.36x4

ANS . C

76. If B = – 9x2 + 3x – 7, then the additive inverse of B is

 (A) 9x2 – 3x – 7 (B) 9x2 – 3x + 7 (C) – 9x2 – 3x – 7 (D) – 9x2 + 3x + 7

ANS . B

77. If A = and B =, then A – B is

 (A) x2 – x + 1 (B) – x2 – x – 1 (C) – x2 + x – 1 (D) x2 + x + 1

ANS . C

78. If P = 2x3 – 3x2 – 5x + 6 and Q =, then Q – P is

(A)  (B) 

 (C)  (D) 

ANS . B

79. If and A + B = 0, then polynomial B is

 (A)  (B) 

 (C)  (D) 

ANS . D

80. If A = 2x3 – 9x2 – 6x + 7 and A + B = 5x3 – 6x2 – 8x + 9, then the polynomial (A + (B) – A is (A) 3x3 – 3x2 – 2x + 2 (B) 3x3 + 3x2 – 2x + 2

 (C) 3x3 + 3x2 + 2x + 2 (D) – 3x3 – 3x2 – 2x + 2

ANS . B

81. If A = 4x3 – 9x2 – 9x – 8 and A – B = – 2x3 – 8x2 – 6x – 2, then the polynomial B = A – (A – (B) is

 (A) 6x3 – x2 – 3x – 6 (B) 6x3 + x2 + 3x + 6

 (C) 6x3 + x2 + 3x – 6 (D) – 6x3 – x2 – 3x – 6

ANS . A

82 Given A = 2x3 – 3x2 + 6x + 7 and B = 4x3 – 9x2 – 3x + 7, If C, D are additive inverses of A and B, then D – C is

 (A) – 2x3 + 6x2 + 9x (B) – 2x3 + 5x2 + 9x

 (C) – 2x3 – 6x2 + 9x (D) – 2x3 – 6x2 – 9x

ANS . A

83. If A – B = 2x3 – 3x2 + 8x – 7 and B = 5x3 – 9x2 + 6x – 8, where A = (A – (B) + B, then the polynomial A is

 (A) 7x3 – 12x2 + 14x + 18 (B) 7x3 – 12x2 + 14x – 15

 (C) 7x3 – 12x2 – 14x + 15 (D) – 7x3 + 12x2 – 14x – 15

ANS . B

84 Given and C + A = 0. If is added to A, then

 the result is

(A) x2 – x + 1 (B) – x2 – x – 1 (C) x2 + x – 1 (D) x2 – x + 1

ANS . C

85. If A = 7x3 – 2x2 – 9x + 6, B = 2x3 – 8x2 + 3x – 5, C = 2x3 – 4x2 – 8x + 7, and D = – 3x3 – 5x2 + 6x + 7, then (A – (C) – (B – (D) is

 (A) 5x2 – 2x – 11 (B) 5x2 + 2x + 11 (C) 5x2 – 2x + 11 (D) – 5x2 – 2x – 11

ANS . B

86. The value of (3p – (A)3p + 5 is =\_\_\_\_\_\_\_

 (A) 9p2–12p+5 (B) 9p2+12p–5 (C) 4p2+12p–5 (D)9p2–12p–5

ANS . D

87. The value of (t/2+6)(t/3–(B) is =\_\_\_\_\_\_\_

 (A)  (B)  (C)  (D) 

ANS . B

88.  The value of (497)2 is \_\_\_\_( using the indentity )

 (A) 247006 (B) 247009 (C) 257006 (D) 2578009

ANS . B

89 The expansior of is \_\_\_\_\_\_\_\_\_

 (A)  (B) 

 (C)  (D) 

ANS . B

90 The expanssion of (3.2d–5f)2 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (A) 10.24d2+32df+25f2 (B) 10.24d2–25f2+32df

 (C) 10.24d2–32df+25f2 (D)10.24d2–32df–25f2

ANS . C

91. Without actual multiplication, the value of (1001×1007) is =\_\_\_\_\_\_\_

 (A) 10008007 (B) 1080007 (C) 10080007 (D) 1008007

ANS . D

92. Without actual multiplication, the value of

 (79.01×79.0(A)+2×79.01×20.99+(20.99×20.99) is =\_\_\_\_\_\_

 (A) 10009 (B) 1000.05 (C) 10000 (D) 10007

ANS . C

93. If (4x – 3 – 2x + 7)( – 3x – 4 + 5x + (A) is simplified, then the answer is \_

 (A) 4x2 + 2x – 12 (B) 14x2 – 22x + 12 (C) 4x2 + 2x + 12 (D) – 14x2 – 2x – 12

ANS . A

94 If (x + 7)(x + (C) + (x – (B)(x + 5) is simplified , then the answer is \_\_\_\_\_\_\_

 (A) 2x2 + 13x + 11 (B) 2x2 – 13x + 11 (C) 2x2 – 13x – 11 (D) – 2x2 – 13x – 11

ANS . A

95. (12x3+(A)2+(6x3–(C)2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (A) 180x6–12x3+10 (B) 180x6+12x3+10 (C) 180x6–12x3–10 (D) 180x6+12x3–10

ANS . A

96. If A= 1002+100(5+(C)+5×3 and B= 1002–100(8+(C)+8×3, then A+B=\_\_\_\_\_

 (A) 19735 (B) 19736 (C)19739 (D)19732

ANS . C

97. For the product is the value obtained by using the identity is \_\_\_\_\_

 (A)  (B)  (C)  (D) 

ANS . C

98. Using the identity the value obtained from the product 25.4×24.6 is

 (A) 62.84 (B) 624.84 (C) 642.84 (D)264.84

ANS . B

99. Using the identity (a+b)(a–b) = a2 – b2, the value obtained from the product (2/5+x)(2/5–x)(4/25+x(B) is \_\_\_\_

 (A)  (B) (C) (D) 

ANS . A

100. If (x – 3y)(x + 3y)(x2 + 9y(B) is simplified, then the answer is \_\_\_\_\_

 (A) x4 + 81y4 (B) – 81y4 + x4 (C)x4 – 81y4 (D) – x4 – 81y4

ANS . C