QUESTIONS

1. Which of the following statements is incorrect?

(a) The terms $4x^2y$ and $3xy^2$ are like terms.

(b) The coefficient of y^2 in the expression $-2x^2y+8xy^2+39$ is $8x$.

(c) 3, x, x^2 and y are factors of $3x^2y$.

(d) The expression $15p^2q+8pq^2+42pq+99$ contains 4 terms.

2. What is the difference between $a+b$ and $a-b$

(a) $2b$ (b) $2a$ (c) $2a+2b$ (d) $2a-2b$

3. The length and breadth of a rectangular plot are 1 and b. Two rectangular paths each of width 'r' run inside the plot one parallel to the length and the other parallel to the breadth. What is the total area of the paths?

(a) $(1+r)(b+r)-1b$ (b) $1b-(1-r)$(b– r)

(c) $(1+b-r)r$ (d) $1b-(1-2r)(b-2r)$

4. In a two digit number, the units digit is n and tens digit is $(n-1)$. What is the value of the number? (Where $n \le 9$).

(a) $kn-1$ (b) $2n+3$ (c) $3+n$ (d) $11n-10$

5. P_1 and P_2 are polynomials and each is the additive inverse of the other, what does it mean?

(a) $P_1=P_2$ (b) P_1+P_2 is a zero polynomial

(c) P_1-P_2 is a zero polynomial. (d) $P_1-P_2=P_2-P_1$

6. Four pairs of terms are given as:

(i) a^2 and 3ab (ii) 3yz and 6zy

(iii) b^2 and $-11b^2$ (iv) a^2b and $3ab^2$

Which two given pairs are pairs of unlike terms?

(a) (ii) and (iii) (b) (ii) and (iv) (c) (i) and (iii) (d) (i) and (iv)

7. Which algebraic expression correctly represents the statement twice the number Z subtracted from one -half the product of x and y?

(a) $\frac{xy}{2}=2Z$ (b) $\frac{xy}{2}-2Z$ (c) $2xy-\frac{Z}{2}$ (d) $\frac{Z}{2}-2xy$

8. Which algebraic expression correctly represents the statement: the square of the product of numbers x and y subtracted from the square of their sum?

(a) $x^2+y^2-x^2y^2$ (b) $x^2y^2-\left(x^2+y^2\right)$

(c) $\left(x+y\right)^2-x^2y^2$ (d) $x^2y^2-\left(x+y\right)^2$

9. If $\left(a-\frac{1}{a}\right)=7$, then the value $a^2+\frac{1}{a^2}$ is:

(a) 50 (b) 51 (c) 49 (d) 47

10. The product of $1\times(x-y)\,(x+y)(x^2+y^2)$ is

(a) x^2-y^2 (b) x^4+y^4 (c) x^4-y^4 (d) x^2+y^2

11. If $m=\dfrac{ab}{a-b}$, then b equals.....

(a) $\dfrac{m(a-b)}{a}$ (b) $\dfrac{ab-ma}{m}$ (c) $\dfrac{1}{1+1}$ (d) $\dfrac{ma}{m+a}$

12. Simplify the following expression.

$x(y-z)+y(z-x)+z(x-y)$

(a) 0 (b) $2y(z-x)$ (c) $2x(z-y)$ (d) $2z(x-y)$

13. What is the 6th term of a pattern described by the expression n^2-1?

(a) 33 (b) 35 (c) 37 (d) 6

14. What is the expression related to the pattern 7, 11, 15,.....?

(a) $2n-1$ (b) $4n+3$ (c) $4n+1$ (d) n^2-1

15. Which expression gives the predecessor of a natural number 'n'?

(a) $2n-1$ (b) $n+1$ (c) $n-1$ (d) $2n+1$

16. For any natural number n, what does $2n+1$ denote?

(a) An even number (b) An odd number

(c) A composite number (d) A prime number

17. If $a+\dfrac{1}{a}=6$, then the value of $\left(a-\dfrac{1}{a}\right)$ is

(a) $\sqrt{32}$ (b) $\sqrt{49}$ (c) $\sqrt{140}$ (d) None of these

18. What is the value of ax^2+bx+c at $x=\dfrac{+b}{a}$?

(a) a (b) b^2-4ac (c) $c+\dfrac{2b^2}{a}$ (d) $25x^2+\dfrac{1}{4x^2}$

19. On simplification the product $\left(x-\dfrac{1}{x}\right)\left(x+\dfrac{1}{x}\right)\left(x^2+\dfrac{1}{x^2}\right)$ is

(a) $x^3-\dfrac{1}{x^3}$ (b) $x^3+\dfrac{1}{x^3}$ (c) $x^4-\dfrac{1}{x^4}$ (d) $x^4+\dfrac{1}{x^4}$

20. The real factors of x^4+9 are

(a) $\left(x^2+3\right)\left(x^2+3\right)$ (b) $\left(x^2+3\right)\left(x^2-3\right)$

(c) $\left(x^2+2x+3\right)\left(x^2-3x+3\right)$ (d) Does not exist

ANSWER - KEY				
1. A	**2.** A	**3.** C	**4.** D	**5.** B
6. D	**7.** B	**8.** C	**9.** B	**10.** C
11. D	**12.** A	**13.** B	**14.** B	**15.** C
16. B	**17.** A	**18.** C	**19.** C	**20.** D

SOLUTIONS

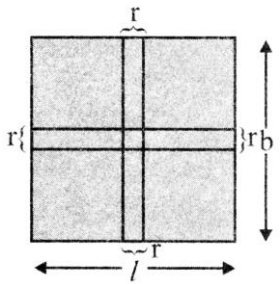
1. Two terms are called like terms only when their variable part is the same. In $4x^2y$, variable is x^2y whereas in $3xy^2$, variable is xy^2.

2. $(a+b)+(a-b)=a+b-a+b$

$=b+b=2b$

It is a good idea to memorizes $(a+b)+(a-b)=2a$ and $(a+b)-(a-b)$. This will be helpful to expedite your calculations now and also in higher classes.

3.



Area of the path along length $=l\times r$

Area of the path along breadth $=b\times r$

The common area of the paths $=b^2$

$\therefore$ Total area of the path

$=lr+lr-r^2=(l+b-r)r$

4. Value of number $=10\times(n-1)$ tens place + unit place $n=10n-10+n=11n-10$

5. Not Available

6. Not Available

7. One half of product of x and y $=xy/^2$

Twice of $\not{Z}=2\not{Z}$

$\Rightarrow \quad \left(\frac{xy}{2}-2Z\right)$

8. Square of sum $=(x+y)^2$

Square of product $=(xy)^2=x^2y^2$

$\Rightarrow (x+y)^2-x^2y^2$

9. $\left(a-\frac{1}{a}\right)^2=a^2-2+\frac{1}{a^2}=49$

$\Rightarrow a^2+\frac{1}{a^2}=49+2=51$

10. $(x-y)(x+y)=x^2-y^2$

$\therefore (x-y)(x+y)(x^2+y^2)=(x^2-y^2)(x^2+y^2)=x^4-y^4$

11. $m=\frac{ab}{a-b}\Rightarrow\frac{1}{m}=\frac{a-b}{ab}\Rightarrow\frac{1}{m}=\frac{1}{b}-\frac{1}{a}\Rightarrow\frac{1}{b}=\frac{1}{m}+\frac{1}{a}\Rightarrow\frac{1}{b}=\frac{a+m}{ma}\Rightarrow b=\frac{ma}{m+a}$

12. $x(y-z)+y(z-x)+z(x-y)$

$=0$

13. First term means $n=1$

second term means $n=2$

and so on.

substitute $n=6$ in n^2-1 and simplify.

$n^2-1=(6)^2=1=36-1=35$

14. These problems are solved by observations.

$T_1=7,\ T_2=11,\ T_3=15\Rightarrow$ Regular difference of 4.

For $n=1: T_1=4\times1+3=7,3; T_2=4\times2+3=11$ and so on.

15. Not Available

16. $2n+1$ denotes an odd number since it leaves a remainder 1 when divided by 2.

17. $6=a+\frac{1}{a}=\left(\sqrt{a}\right)^2-2+\left(\frac{1}{\sqrt{a}}\right)^2+2=\left(\sqrt{a}-\frac{1}{\sqrt{a}}\right)^2+2\ \therefore\left(\sqrt{a}-\frac{1}{\sqrt{a}}\right)^2=4$

Now, $\left(a-\frac{1}{a}\right)=\left(\sqrt{a}\right)^2+2+\left(\frac{1}{\sqrt{a}}\right)^2$

18. $x=\frac{b}{a}$

$\Rightarrow a\left(\frac{b^2}{a^2}\right)+b\left(\frac{b}{a}\right)+c$

$=\frac{b^2}{a}+\frac{b^2}{a}+c$

$=c+\frac{2b^2}{a}$

19. Product $=\left[x^2-\left(\frac{1}{x}\right)^2\right]\left(x^2+\frac{1}{x^2}\right)=\left(x^2-\frac{1}{x^2}\right)\left(x^2+\frac{1}{x^2}\right)=x^4-\frac{1}{x^4}$

20. x^4 is always positive for all values of x.

$\therefore x^4+9$ is also always positive and never zero.