Factorisation

Check Your Concepts

Q.3. *True / False*:

Directions: *Read the following statements and mark your response as true or false.*

1. $\left(\frac{1}{3}x-1\right)\left(\frac{1}{3}x+1\right)=\frac{1}{9}x^2+1$. [ ]

2. $(r+s)^2=(r+s)(r+5)$. [ ]

3. $(p+q)^2=(p+q)(p-q)$. [ ]

4. Expression 2x+4y can be written as $2(x+2y)$. [ ]

5. $(5x+3y)^2=25x^2-30xy-9y^2$. [ ]

6. An irreducible factor is a factor which cannot be expressed as a product of factors. [ ]

7. If the given expression is the difference of two squares, then to factories it, we use the formula: $a^2-b^2=(a-b)^2$. [ ]

8. If the given expression is in the form $x^2+(a+b)x-ab$, then we factories it in the form $(x-a)(x-b)$. [ ]

9. When an expression is the product of two or more expressions then each of these expressions is called a factor of the given expression. [ ]

10. The process of writing a given expression as the product of two or more factors is called factorization. [ ]

Q.4. *Multiple choice questions*:

Directions: *Read the following questions and choose the answer that best answers the questions.*

1. If $x+a$ is a factor of, then the value of a is

(a) 0 (b) 1 (c) 2 (d) 3

2. If $(x+1)$ is a factor of $x^2-3ax+3a-7$, then the value of a is -

(a) 1 (b) – 1 (d) 0 (c) – 2

3. The polynomial, x^6+64y^6 on factorization gives

(a) $\left(x^2+4y^2\right)\left(x^4-4y^4\right)$ (b) $\left(x^2+4y^2\right)\left(x^4-4x^2y^2+16y^4\right)$

(c) $\left(x^2-4y^2\right)\left(x^4+4y^4\right)$ (d) $\left(x^2+4y^2\right)\left(x^4+4x^2y^2+16y^4\right)$

4. When x^3-3x^2+5x-3 is divided by x^2-2 the quotient is

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

5. If $p(x)=3x^3-2x^2+7x+5$ and $g(x)=x^2-2$. If $p(x)$ is divided by $g(x)$ then remainder is

(a) $2x+13$ (b) $13x+1$ (c) $2x-3$ (d) $x-13$

6. Consider the following statements:

1. x^2-9 is a factor of $\left(x^3+5x^2-9x-45\right)$.

2. $f\left(\frac{a}{b}\right)$ is the remainder when the polynomial $f(x)$ is divided by $ax+b$.

3. $f\left(-\frac{a}{b}\right)$ is the remainder when the polynomial $f(x)$ is divided by $ax+b$.

4. 0 is the remainder when the polynomial $f(x)$ is divided by a linear factor $x-a$.

(a) 1 and 2 are correct (b) 1 alone is correct

(c) 3 alone is correct (d) 3 and 4 are correct

7. The quotient when $3x^4-5x^3+10x^2+11x-61$ is divided by $(x-3)$ is

(a) $3x^3+4x^2+22x+77$ (b) $77x^3+22x^2+4x+3$

(c) $3x^2+4x^3+22x+77$ (d) $3x^3+4x+22x^2+11$

8. Which one of the following is a factor of $x^3-19x+30$?

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

9. If quotient $=3x^2-2x+1$, remainder $=2x-5$ and divisor $=x+2$, then the dividend is

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

Q.5. ***Subjective questions*:**

1. Factories: $x^2 - \frac{13}{24} \times \frac{1}{12}$.

Ans. .....

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2. Find the remainder when $f(x) = x^3 - 6x^2 + 2x - 4$ is divided by $g(x) = 1 - 2x$.

Ans. .....

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3. Divide $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$, and verify the division algorithm.

Ans. .....

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4. Simplify and factories $y(2-y)(3-y) + y^2(y+5)$.

Ans. .....

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