Paper: _____Mathematics_____

Month Test: __3ʳᵈ Term_____

Theme/Unit: ____6,7_____

Objective/Subjective:

Name: _____

ID: _____

class: _____9th_____

Total Marks: ____75_____

Obt. Marks: _____

Grand Total: _____

Time: _____

Section: _____

Q#1: Circle the correct option.   1*15=15

1- If two or more algebraic expressions are given then their common factor of highest power is called:

   a- L.C.M   b- H.C.F

   c- Both a & b   d- None of these

2- H.C.F of $5x^2y^2$ and $20x^2y^4$ is………..

   a- $5x^2y^2$ b- $20x^3y^3$

   c- $100x^5y^5$ d- $5xy$

3- H.C.F of $x^2 - 5x + 6$ and $x^2 - x - 6$ is ...

   a- $x - 3$ b- $x + 2$

   c- $x^2 - 4$ d- $x - 2$

4- The product of two algebraic expressions is equal to the _____ of their H.C.F and L.C.M.

   a- Sum   b- Difference

   c- Product   d- Quotient

5- Simplify $\left(\frac{2x+y}{x+y} - 1\right) \div \left(1 - \frac{x}{x+y}\right) =$ _____.

   a- $\frac{x}{x+y}$ b- $\frac{y}{x+y}$

   c- $\frac{y}{x}$ d- $\frac{x}{y}$

6- What should be added to complete the square of $x^4 + 64$?

   a- $8x^2$ b- $-8x^2$

   c- $16x^2$ d- $4x^2$

7- The square root of $a^2 - 2a + 1$ is_____

   a- $\pm(a + 1)$ b- $\pm(a - 1)$

   c- $a - 1$ d- $a + 1$

8- When the variable in an equation occurs under a radical, the equation is called____.

   a- Linear equation   b- quadratic equation

   c- radical equation   d- None

9- $|x| = 3$ is equivalent to:_____

   a- $x = 3$ or $x = \pm3$ b- $x = 3$ or $x = -3$

   c- $x = -3$ or $x = -3$ d- $x = 3$ or $x = 3$

10- The equation $|x - 4| = -4$ has _____ solution.

   a- One   b- two

   c- zero   d- no

11- The inequality symbols $<$ and $>$ were introduced by an English mathematician _____.

   a- Thomas Harriot   b- Thomas Hirriculus

c- Thomas Phini   d- Thomas Harry

12-$x =$ _____ is a solution of the inequality $-2 < x < \frac{3}{2}$.

   a- -5   b- 3

   c- 0   d- $\frac{3}{2}$

13-$x = 0$ is a solution of the inequality_____.

   a- $x > 0$ b- $3x + 5 < 0$

   c- $x + 2 < 0$ d- $x - 25 < 0$

14-If x is no longer than 10, then _____.

   a- $x \geq 10$ b- $x \leq 10$

   c- $x < 10$ d- $x > 10$

15-The inequalities $x > y$ and $x < y$ are known as_____.

   a- Strict or strong   b- non-strict or weak

   c- Both a & b   d- None of these

Q#1: Solve the following questions.   **2*6=12**

    (i)   Define L.C.M with example.

    (ii)   Find H.C.F of $39x^7y^3z \ and \ 91x^5y^6z^7$.

    (iii)   Find H.C.F by factorization $18(x^3 - 9x^2 + 8x), \ 24(x^2 - 3x + 2)$.

    (iv)   Find L.C.M by factorization $x^2 + 4x + 4, x^2 - 4, 2x^2 + x - 6$.

    (v)   For what value of k is $(x + 4)$ the H.C.F of $x^2 + x - (2k + 2) \ and \ 2x^2 + kx - 12$.

    (vi)   Simplify $A - \frac{1}{A}$, where $A = \frac{a+1}{a-1}$.

Q#2: Solve the following questions.   **2*6=12**

    (i)   Simplify to lowest form $\frac{x^3-8}{x^4-4} \times \frac{x^2+6x+8}{x^2-2x+1}$.

    (ii)   Define square root of algebraic expression with example.

    (iii)   Use factorization to find square root of $4x^2 - 12xy + 9y^2$.

    (iv)   To make the expression $9x^4 - 12x^3 + 22x^2 - 13x + 12$ a perfect square what should be added to it?

    (v)   Solve $\frac{3x-1}{3} - \frac{2x}{x-1} = x, x \neq 1$.

    (vi)   Solve and check for extraneous solution, if any $\sqrt{x-3} - 7 = 0$.

Q#3: Solve the following questions.   **2*6=12**

    (i)   Define Linear Equation with example.

    (ii)   Solve and check $|3x + 10| = 5x + 6$.

    (iii)   State the trichotomy property of inequality.

    (iv)   The formula relating degrees Fahrenheit to degrees Celsius is $F = \frac{9}{5}C + 32$. For what value of C is $F < 0$.

    (v)   Solve $4 - \frac{1}{2}x \geq -7 + \frac{1}{4}x$.

    (vi)   Solve $3 \geq \frac{7-x}{2} \geq 1$.

- Long Questions.

    Q#1: (a) Let $p(x) = 10(x^2 - 9)(x^2 - 3x + 2) \ and \ q(x) = 10x(x + 3)(x - 1)$, find their L.C.M.   (4)

    (b) Simplify: $\frac{x+3}{x^2-3x+2} + \frac{x+2}{x^2-4x+3} + \frac{x+1}{x^2-5x+6}, \ x \neq 1, 2, 3$.   (4)

    Q#2: (a) Find square root by division method: $\frac{4x^2}{y^2} + \frac{20x}{y} + 13 - \frac{30y}{x} + \frac{9y^2}{x^2}, \ (x, y \neq 0)$.   (4)

    (b) Solve and check for the extraneous solution, if any $\sqrt{2t + 6} - \sqrt{2t - 5} = 0$.   (4)

    Q#3: (a) Solve for x, $|x + 2| - 3 = 5 - |x + 2|$.   (4)

    (b) Solve the inequality, $3x - 2 < 2x + 1 < 4x + 17$.   (4)