Q1. Reduce the following into lowest form. → (10 marks) ←

1. $\frac{P^2-100}{P^2+10}$	2. $\frac{3ab-3a^2}{3a^2+6ab+3ab^2}$	3. $\frac{(a-b)}{(a+b)} \times \frac{(a^2+ab)}{2a^2-2b^2}$	4. $\frac{4x^2+24x+36}{3x^2-27}$	5. $\frac{4t^2-36t+80}{(4t-t^2)(5-t)}$

Q2. Simplify. (any two) → (10 marks) ←

1. $\frac{x-2}{x^2+6x+9} - \frac{x-2}{2x^2-18}$	2. $\frac{4}{z^2-4z-5} + \frac{2}{4z^2-4}$	3. $\frac{4y}{y^2-1} + \frac{y+1}{y-1} + \frac{y-1}{y+1}$

Q3. Perform Indicated Operations and Simplify. (any two) → (10 marks) ←

1. $\frac{8(y+3)}{9} \times \frac{12(y+1)}{4(y+3)} \div \frac{8(y+1)}{5}$	2. $\frac{q^2-25}{q^2-3q} \div \frac{q^2+5q}{q^2-q}$	3. $\frac{4}{z^2-4z-5} \div \frac{2}{4z^2-4}$

Q4. Find the value of $\left(t+\frac{1}{t}\right)$, When $\left(t=\frac{x-y}{x+y}\right)$ → (5 marks) ←

Q5. Find the value of $\left(\frac{3x^2y}{z} - \frac{bc}{x+1}\right)$, if x=2, y=-1, z=3, b=4, c=1/3 → (5 marks) ←

Q6. Find the value of $(a-b)$, when $(a+b=5)$ and $(ab=-6)$ → (5 marks) ←

Q7. Find the value of $\left(a^2+b^2\right)$ and (ab), when $(a+b=5)\ and\ (a-b=3)$ → (5 marks) ←

Q8. Find the value of $(a^2+b^2+c^2)$, when $\left(a+b+c=\frac{1}{3}\right)$ and $\left(ab+bc+ca=\frac{-2}{9}\right)$ → (5 marks) ←

Q9. Find the value of $(ab+bc+ac)$, when $(a+b+c=10\ )$ and $\left(a^2+b^2+c^2=20\right)$ → (5 marks) ←

Q10. Find the value of $(\ 125x^3+y^3\ )$, when $(\ 5x+y=13\ )$ and $(xy=10)$ → (5 marks) ←

Q11. Find the value of $\left(x^3-\frac{1}{x^3}\right)$, when $\left(x-\frac{1}{x}=11\right)$ → (5 marks) ←

Q12. Find the continued product by using relevant formula → (5 marks) ←

$(x-y)(x+y)(x^2+y^2)(x^2+xy+y^2)(x^2-xy+y^2)(x^4+x^2y^2+y^4)$

Q13. Find the product of: $\left(\frac{x^4}{12} - \frac{12}{x^4}\right)\left(\frac{x^8}{144} + \frac{144}{x^8} + 1\right)$ → (5 marks) ←

Q14. Simplify the following. → (20 marks) ←

1. $\left(3\sqrt{27}-5\sqrt{3}\right)+(\sqrt{3}+\sqrt{27})$	2. $\sqrt{250}+\sqrt{490}+3\sqrt{10}$	3. $\frac{\sqrt[6]{4}\times\sqrt[3]{27}\times\sqrt{60}}{\sqrt{180}\times\sqrt[3]{0.25}\times\sqrt[4]{9}}$	4. $\sqrt{\frac{(216)^{\frac{2}{3}}\times(125)^{\frac{1}{2}}}{(0.04)^{\frac{-3}{2}}}}$

Q15. Rationalize the Following denominator of the following: → (10 marks) ←

1. $\frac{11-\sqrt{2}}{\sqrt{2}+11}$	2. $\frac{15}{7-2\sqrt{5}}$	3. $\frac{1}{\sqrt{17}-4}$	4. $\frac{\sqrt{13}+3}{\sqrt{13}-3}$	5. $\frac{1}{4\sqrt{3}-3\sqrt{6}}$

Q16. If $\left(x=3-2\sqrt{2}\ \right)$, Find $\left(x+\frac{1}{x}\right),\ \left(x-\frac{1}{x}\right),\ \left(x^2+\frac{1}{x^2}\right),\left(x^4+\frac{1}{x^4}\right)$ (any three) → (10 marks) ←

Q17. Simplify: (any two) → (10 marks) ←

1. $\frac{6}{12+\sqrt{6}} - \frac{3}{12-\sqrt{6}}$	2. $\frac{10}{6-\sqrt{y^2+36}}$	3. $\frac{\sqrt{x+3}+\sqrt{x-3}}{\sqrt{x+3}-\sqrt{x-3}}$

→ MCQS (10 marks) ←

1. $(a-b)(a+b)(a^2+b^2) =$ _____
   a. $a^4 - b^4$
   b. $a^2 - b^2$
   c. $a^3 - b^3$
   d. $a - b$
2. $(a+b)^2 - (a-b)^2 =$ _____
   a. $(a+b)^2$
   b. $(a+b)^3$
   c. $(a-b)^2$
   d. $(a-b)^3$
3. The degree of polynomial $x^6 + x^2y^5 + y^6$ is
   a. 5
   b. 6
   c. 10
   d. 7
4. The degree of polynomial $x^4 + x^3y^2 + y^2$ is
   a. 5
   b. 4
   c. 3
   d. 2
5. To make $a^2 + \frac{1}{16}$ a perfect square what should be add to it
   a. 1/2
   b. a/2
   c. 1/4
   d. a
6. if $x - \frac{1}{x} = 5$ *then* $x^2 + \frac{1}{x^2} =$ _____
   a. 30
   b. 25
   c. 27
   d. 3
7. $3x^2 - y^2$ is a polynomial of _____ variables?
   a. Three
   b. Four
   c. Two
   d. One
8. $(x+a)(x+b) =$ _____
   a. $x^2 - (a+b)x - ab$
   b. $x^2 + (a+b)x + ab$
   c. $x^2 - (a+b)x + ab$
   d. $x^2 + (a+b)x - ab$
9. A polynomial consisting of two terms Is called a _____
   a. Monomial
   b. Binomial
   c. Trinomial
   d. Multinomial
10. $ax^3 + bx^2 + cx + d$ is an example of _____ polynomial?
    a. Quadratic
    b. Linear
    c. Biquadratic
    d. Cubic