Topic: LCM and HCF

Sub: Mathematics **Assignment: 05** Prof. Chetan Sir

Que 1: Solve the following

1. Find the HCF of 36 and 48 using the prime factorization method.
(A) 18 (B) 36 (C) 12 (D) 24

2. Find the LCM of 8, 12, and 18.
(A) 216 (B) 72 (C) 288 (D) 144

3. The HCF of two numbers is 6, and their LCM is 180. If one number is 30, find the other number.
(A) 48 (B) 54 (C) 42 (D) 36

4. Find the HCF of 315 and 495 using Euclid's division algorithm.
(A) 15 (B) 105 (C) 45 (D) 75

5. Two numbers are in the ratio 3:4, and their HCF is 5. Find the numbers.
(A) 25, 30 (B) 30, 40 (C) 15, 20 (D) 20, 25

6. Find the greatest number that divides 42, 70, and 112 without leaving a remainder. (Find HCF)
(A) 14 (B) 21 (C) 28 (D) 7

7. Find the smallest number that is divisible by 15, 20, and 24. (Find LCM)
(A) 360 (B) 120 (C) 180 (D) 240

8. The HCF of two numbers is 12, and their LCM is 144. If one number is 36, find the other number.
(A) 54 (B) 72 (C) 48 (D) 60

9. The product of two numbers is 2028, and their HCF is 13. Find their LCM.
(A) 208 (B) 182 (C) 169 (D) 156

10. Find the HCF of $2^3 \times 3^2 \times 5$ and $2^2 \times 3^3 \times 7$.
(A) $2^2 \times 3^2$ (B) $2^2 \times 3^3$ (C) $2^3 \times 3^3$ (D) $2^3 \times 3^2$

11. Find the LCM of $2^4 \times 3^2 \times 5$, $2^3 \times 3^3 \times 7$, and $2^2 \times 5^2 \times 7^2$.
(A) $2^4 \times 3^3 \times 5^2 \times 7$ (B) $2^2 \times 3^2 \times 5^2 \times 7^2$ (C) $2^4 \times 3^3 \times 5^2 \times 7^2$ (D) $2^3 \times 3^2 \times 5 \times 7$

12. Find the LCM of $\frac{3}{4}$ and $\frac{5}{6}$.
(A) $\frac{15}{4}$ (B) $\frac{15}{2}$ (C) $\frac{5}{2}$ (D) $\frac{3}{2}$

13. Find the HCF of $\frac{3}{4}$ and $\frac{5}{6}$.
(A) $\frac{15}{12}$ (B) $\frac{15}{2}$ (C) $\frac{1}{2}$ (D) $\frac{1}{12}$

14. If the GCD (HCF) of a number n and 91 is 1, which of the following could be n?
(A) 30 (B) 21 (C) 26 (D) 35

15. The LCM of a number n and 18 is 72. Which of the following can be n?
(A) 24 (B) 48 (C) 16 (D) 36

16. The least number that is divisible by all the numbers from 1 to 10 (both inclusive).
(A) 10 (B) 100 (C) 504 (D) 2520

Answer Key (Que 1)

1 (C)	**2** (B)	**3** (D)	**4** (C)	**5** (C)	**6** (A)	**7** (B)	**8** (C)	**9** (D)	**10** (A)
11 (C)	**12** (B)	**13** (D)	**14** (A)	**15** (A)	**16** (D)				

Que 2: Simplifying the following Algebraic Fractions

1. $\frac{2x+1}{y} - \frac{3x+2}{2y}$
2. $\frac{2a-3b}{a} + \frac{4a^2-5b^2}{ab}$
3. $\frac{a+3b}{(a-b)^2} + \frac{a-3b}{a^2-b^2}$
4. $\frac{5a^2-b^2}{ab} - \frac{3a-2b}{b}$
5. $\frac{x}{ac} - \frac{x}{bc} + \frac{x}{ab}$
6. $\frac{a}{bc} + \frac{b}{ac} + \frac{c}{ba}$
7. $\frac{1}{x^2y^3} + \frac{2}{x^3y^4}$
8. $\frac{x+1}{x^2+1} - \frac{x+2}{2x^2-2}$
9. $\frac{a+1}{a^2-a} - \frac{a+2}{2a^2-2}$
10. $\frac{2x-3y}{x^2y} - \frac{4x-5y}{xy^2}$
11. $\frac{2a^2+3a-5}{a^2b} - \frac{1-4a}{ab}$
12. $\frac{1}{a-b} - \frac{1}{a+b}$
13. $\frac{5}{x-y} - \frac{3}{2x-2y}$
14. $\frac{4}{a-b} - \frac{1}{b-a}$
15. $\frac{4}{r+2} + \frac{3}{r-2} - \frac{7r}{r^2-4}$
16. $\frac{7a^2}{a^2-9} + \frac{5a}{a-3} + \frac{a}{a+3}$
17. $\frac{a-b}{2a+2b} + \frac{a^2+b^2}{a^2-a}$
18. $\frac{7x-1}{2x^2-6x} - \frac{3x-5}{x^2-9}$
19. $\frac{3a-b}{3a^2b} + \frac{a^2+b^2}{2a^2b^2} - \frac{a+b}{2ab^2}$
20. $\frac{3x}{4a^2b} - \frac{7}{6ab^5} - \frac{5x}{2ab^2}$
21. $\frac{5}{t-3} - \frac{t-2}{t^2-9} + \frac{t-1}{2t+6}$
22. $\frac{5}{a+2} + \frac{2a}{a^2+4a+4} - \frac{4}{a-2}$
23. $\frac{(a-1)a}{a^2-25} + \frac{a-2}{5-a} - \frac{a-3}{a+5}$
24. $\frac{2x-1}{2x} - \frac{2x}{2x-1} - \frac{1}{2x-4x^2}$
25. $\frac{r+1}{r^2-2r} + \frac{r+1}{r^2+2r} - \frac{2r}{r^2-4}$
26. $\frac{a+b}{2(a-b)} - \frac{a-b}{2(a+b)} - \frac{2b^2}{b^2-a^2}$
27. $\frac{2x-y}{10x} - \frac{y}{2x} + \frac{2y-x}{15x}$
28. $\frac{3}{x+1} - \frac{2}{x-1} + \frac{5}{x^2-1}$
29. $\frac{4a}{a^2-b^2} + \frac{2b}{b^2-a^2}$
30. $\frac{1}{x^2-4} - \frac{1}{x^2+4x+4}$
31. $\frac{2}{x^2-9} + \frac{3}{x^2+3x}$
32. $\frac{5}{x^2-x-2} - \frac{3}{x^2+x-6}$
33. $\frac{a}{a^2-4} + \frac{b}{b^2-4}$
34. $\frac{2x}{x^2-1} - \frac{3}{x+1} + \frac{1}{x-1}$
35. $\frac{4}{x^2-2x} + \frac{3}{x^2+2x} - \frac{2}{x^2-4}$
36. $\frac{1}{x^2+x} - \frac{1}{x^2-x} + \frac{2}{x^2-1}$
37. $\frac{3a}{a^2-a-2} + \frac{2}{a^2+a-2}$
38. $\frac{5}{x^2-5x+6} - \frac{2}{x^2-4x+3}$
39. $\frac{2x}{x^2-9} + \frac{3}{x-3} - \frac{1}{x+3}$
40. $\frac{4}{x^2-1} - \frac{2}{x^2+2x+1} + \frac{3}{x^2-x-2}$
41. $\frac{3}{x^2-x} + \frac{2}{x^2+x} - \frac{1}{x^2-1}$
42. $\frac{4}{x^2-4x+3} - \frac{2}{x^2-x-6} + \frac{1}{x^2+2x-3}$

Que 2: Answers

1. $\frac{x}{2y}$
2. $\frac{2(2a^2+ab-4b^2)}{ab}$
3. $\frac{2(a^2+3b^2)}{(a-b)^2(a+b)}$
4. $\frac{2a^2+2ab-b^2}{ab}$
5. $\frac{x(b-a+c)}{abc}$
6. $\frac{a^2+b^2+c^2}{abc}$
7. $\frac{xy+2}{x^3y^4}$
8. $\frac{x^3-3x-4}{2(x^2+1)(x-1)(x+1)}$
9. $\frac{a^2+2a+2}{2a(a-1)(a+1)}$
10. $\frac{-4x^2+7xy-3y^2}{x^2y^2}$
11. $\frac{6a^2+2a-5}{a^2b}$
12. $\frac{2b}{a^2-b^2}$
13. $\frac{7}{2(x-y)}$
14. $\frac{5}{a-b}$
15. $\frac{-2}{r^2-4}$
16. $\frac{13a^2+12a}{a^2-9}$
17. $\frac{3a^3+a^2b-a^2+ab+2ab^2+2b^3}{2a(a-1)(a+b)}$
18. $\frac{x^2+30x-3}{2x(x-3)(x+3)}$
19. $\frac{3a+b}{6a^2b}$
20. $\frac{9xb^4-14a-30axb^3}{12a^2b^5}$
21. $\frac{t^2+4t+37}{2(t^2-9)}$
22. $\frac{3a^2-20a-36}{(a+2)^2(a-2)}$
23. $\frac{-(a^2-4a+5)}{(a-5)(a+5)}$
24. $-\frac{1}{x}$
25. $\frac{2}{r^2-4}$
26. $\frac{2b}{a-b}$
27. $\frac{2x-7y}{15x}$
28. $\frac{x}{x^2-1}$
29. $\frac{2(2a-b)}{a^2-b^2}$
30. $\frac{4}{(x-2)(x+2)^2}$
31. $\frac{5x-9}{x(x^2-9)}$
32. $\frac{2(x+6)}{(x-2)(x+1)(x+3)}$
33. $\frac{ab^2-4a+a^2b-4b}{(a-2)(a+2)(b-2)(b+2)}$
34. $\frac{4}{x^2-1}$
35. $\frac{5x+2}{x(x^2-4)}$
36. $\frac{2}{x(x+1)}$
37. $\frac{3a^3+5a^2-8a-4}{(a^2-1)(a^2-4)}$
38. $\frac{3x-1}{(x-1)(x-2)(x-3)}$
39. $\frac{4}{x-3}$
40. $\frac{5x^2+2x-15}{(x-1)(x+1)^2(x-2)}$
41. $\frac{4x+1}{x(x^2-1)}$
42. $\frac{3x+7}{(x-1)(x-3)(x+2)}$