1. $\frac{(-6)^{-4}}{(-6)^{-7}} =$

(i) $(-9)^3$ (ii) $(-6)^2$ (iii) $(-6)^4$ (iv) $(-6)^3$ (v) $(-3)^3$

2. $\frac{\left(\frac{-5}{7}\right)^{-4}}{-7} =$

(i) $\left(\frac{-5}{7}\right)^{4}$ (ii) $\left(\frac{-5}{7}\right)^{2}$ (iii) $(-1)^3$ (iv) $\left(\frac{-3}{7}\right)^{3}$ (v) $\left(\frac{-5}{7}\right)^{3}$

3. $\frac{\left(\frac{-4}{3}\right)^{(-2)}}{\left(\frac{4}{3}\right)^{(-2)}} =$

(i) $\left(\frac{-8}{3}\right)^{(-2)}$ (ii) $\left(\frac{-8}{3}\right)^{(-5)}$ (iii) $(-2)^{-4}$ (iv) $(-2)^{-2}$ (v) $\left(\frac{-12}{5}\right)^{(-2)}$

4. $\frac{\left(\frac{-2}{7}\right)^{(5/3)}}{\left(\frac{-2}{7}\right)^{5}} =$

(i) $\left(\frac{-4}{7}\right)^{(-10/3)}$ (ii) $\left(\frac{-2}{7}\right)^{-4}$ (iii) $\left(\frac{-2}{7}\right)^{(-8/3)}$ (iv) $\left(\frac{-2}{7}\right)^{(-10/3)}$ (v) $\left(\frac{-2}{7}\right)^{(-16/5)}$

5. $[7^4]^5 =$

(i) 5^{20} (ii) 9^{20} (iii) 7^{19} (iv) 7^{21} (v) 7^{20}

6. $[(-5)^2]^{-4/3} =$

(i) $\left(\frac{-8}{3}\right)_{(-7)}$ (ii) $\left(\frac{-8}{3}\right)_{(-2)}$ (iii) $\left(\frac{-8}{3}\right)_{(-5)}$ (iv) $(-5)^{-4}$ (v) $\left(\frac{-12}{5}\right)_{(-5)}$

7. $[5^3]^{-2} =$

(i) 5^{-6} (ii) 3^{-6} (iii) 7^{-6} (iv) 5^{-5} (v) 5^{-7}

8. $\left[\left(\frac{-5}{3}\right)_{(-2)}\right]^{5/4} =$

(i) $\left(\frac{-29}{14}\right)_{(-2)}$ (ii) $\left(\frac{-25}{12}\right)_{(-2)}$ (iii) $\left(\frac{-25}{12}\right)_{(-4)}$ (iv) 1 (v) $\left(\frac{-21}{10}\right)_{(-2)}$

9. $\left[\left(\frac{-8}{9}\right)^{-3}\right]^{-3} =$

(i) $\left(\frac{-8}{9}\right)^{9}$ (ii) $\left(\frac{-10}{9}\right)^{9}$ (iii) $\left(\frac{-8}{9}\right)^{10}$ (iv) $\left(\frac{-2}{3}\right)^{9}$ (v) $\left(\frac{-8}{9}\right)^{8}$

10. $[7^5]^{5/4} =$

(i) $\left(\frac{25}{4}\right)_{5}$ (ii) $\left(\frac{37}{6}\right)_{7}$ (iii) $\left(\frac{25}{4}\right)_{10}$ (iv) $\left(\frac{13}{2}\right)_{7}$ (v) $\left(\frac{25}{4}\right)_{7}$

11. $\left[\left(\frac{9}{5}\right)^{(-5/3)}\right]^{2} =$

(i) $\left(\frac{9}{5}\right)^{(-10/3)}$ (ii) $\left(\frac{9}{5}\right)^{(-16/5)}$ (iii) $\left(\frac{9}{5}\right)^{-4}$ (iv) $\left(\frac{11}{5}\right)^{(-10/3)}$ (v) $\left(\frac{7}{5}\right)^{(-10/3)}$

12. $\left[\left(\frac{-8}{5}\right)^{(3/2)}\right]^{-3/2}$ =

(i) $(-2)^{\left(\frac{-9}{4}\right)}$ (ii) $\left(\frac{-6}{5}\right)^{(-9/4)}$ (iii) $\left(\frac{-8}{5}\right)^{(-13/6)}$ (iv) $\left(\frac{-8}{5}\right)^{(-9/4)}$ (v) $\left(\frac{-8}{5}\right)^{(-5/2)}$

13. Simplify the expression $2^4 \times 2^4$

(i) 2^7 (ii) 5^8 (iii) 2^9 (iv) 2^8 (v) $(-1)^8$

14. Simplify the expression $7^{-5} \times 7^{-5} \times 7^{-5}$

(i) 7^{-14} (ii) 10^{-15} (iii) 7^{-16} (iv) 7^{-15} (v) 5^{-15}

15. Simplify the expression $(-7)^8 \times (-7)^8 \times (-7)^8$

(i) $(-10)^{24}$ (ii) $(-4)^{24}$ (iii) $(-7)^{24}$ (iv) $(-7)^{23}$ (v) $(-7)^{25}$

16. Simplify the expression $(-3)^{-4} \times (-3)^{-4} \times (-3)^{-4}$

(i) $(-3)^{-11}$ (ii) $(-3)^{-13}$ (iii) $(-3)^{-12}$ (iv) $(-6)^{-12}$ (v) $(-1)^{-12}$

17. Simplify $\frac{3^2}{5^{-2}}$

(i) 15^3 (ii) 15^2 (iii) 15 (iv) 18^2 (v) 13^2

18. Simplify $\frac{(-2)^2 \times (-3)^2}{3^2 \times 4^2}$

(i) $(-1)^{-2}$ (ii) 2^{-1} (iii) 2^{-2} (iv) 2^{-3} (v) 4^{-2}

19. Simplify $\frac{3^{-2} \times 4^{-2} \times 5^{-2}}{(-5)^{-2} \times 4^{-2} \times (-4)^{-2}}$

(i) $\frac{4}{3}$ (ii) $\left(\frac{2}{3}\right)^2$ (iii) $\left(\frac{4}{3}\right)^3$ (iv) $\left(\frac{4}{3}\right)^2$ (v) 2^2

20. Simplify $\frac{3^{-2}\times4^{-2}\times(-2)^{2}\times(-5)^{-2}}{2^{-2}\times(-5)^{-2}\times(-5)^{2}\times(-2)^{-2}}$

(i) $\left(\frac{2}{15}\right)^{-1}$ (ii) $\left(\frac{4}{15}\right)^{2}$ (iii) $\left(\frac{2}{15}\right)^{2}$ (iv) $\frac{2}{15}$ (v) $\left(\frac{2}{15}\right)^{3}$

21. Simplify $\frac{2^{-2}\times4^{-3}}{(-5)^{3}\times2^{-2}}$

(i) $\frac{-1\times1}{2^{6}\times5^{3}}$ (ii) $\frac{(-1)^{2}\times1}{2^{6}\times5^{3}}$ (iii) $\frac{-1\times1}{4^{6}\times5^{3}}$ (iv) $\frac{-2\times1}{2^{6}\times5^{3}}$ (v) $\frac{-1\times1}{(-1)^{6}\times5^{3}}$

22. Simplify $\frac{(-5)^{-2}\times5^{3}\times3^{-2}}{3^{-2}\times5^{3}\times5^{-2}}$

(i) 3 (ii) -1 (iii) 2 (iv) 1 (v) 0

23. Simplify $\frac{(-2)^{3}\times2^{2}\times4^{3}}{(-4)^{3}\times(-5)^{3}\times3^{3}\times3^{3}}$

(i) $\frac{(-1)^{2}\times2^{11}}{2^{6}\times3^{6}\times5^{3}}$ (ii) $\frac{-1\times2^{11}}{2^{6}\times3^{6}\times8^{3}}$ (iii) $\frac{-1\times2^{11}}{2^{6}\times3^{6}\times2^{3}}$ (iv) $\frac{-1\times2^{11}}{2^{6}\times3^{6}\times5^{3}}$ (v) $\frac{-2\times2^{11}}{2^{6}\times3^{6}\times5^{3}}$

24. Simplify $\frac{4^{-2}\times(-3)^{-3}\times4^{-3}\times3^{-2}}{(-2)^{-3}\times4^{-3}\times(-5)^{-3}}$

(i) $\frac{-1\times2^{9}\times5^{3}}{2^{10}\times3^{5}}$ (ii) $\frac{-1\times2^{8}\times5^{3}}{2^{10}\times3^{5}}$ (iii) $\frac{-1\times2^{9}\times5^{3}}{(-1)^{10}\times3^{5}}$ (iv) $\frac{-1\times2^{9}\times5^{3}}{2^{10}\times5^{5}}$ (v) $\frac{-1\times2^{9}\times5^{4}}{2^{10}\times3^{5}}$

25. Which of the following statements are true?

a) $a.x^{m} = a^{m}.x^{m}$

b) $a^{0} = 1 \ (a\neq0)$

c) $\left(x^{m}\right)^{n} = x^{(m+n)}$

d) $\left(x^{m}\right)^{n} = \left(x^{n}\right)^{m}$

e) $a^{m}.a^{n} = a^{mn}$

f) $\frac{x^{m}}{x^{n}} = x^{\frac{m}{n}}$

(i) {c,d} (ii) {a,b} (iii) {b,d} (iv) {e,f,b} (v) {a,d,b}

26. Find the reciprocal of 6^8

(i) $\left(\frac{1}{6}\right)^9$ (ii) $\left(\frac{1}{6}\right)^7$ (iii) $\left(\frac{1}{2}\right)^8$ (iv) $\left(\frac{-1}{6}\right)^8$ (v) $\left(\frac{1}{6}\right)^8$

27. Find the reciprocal of $\left(\frac{-3}{8}\right)^7$

(i) $\left(\frac{-8}{3}\right)^7$ (ii) $\left(\frac{-8}{3}\right)^8$ (iii) $\left(\frac{-8}{3}\right)^6$ (iv) $(-2)^7$ (v) $\left(\frac{-10}{3}\right)^7$

28. $\left(7^2 \times 5^3\right)^7 =$

(i) $7^2 \times 5^{21}$ (ii) $7^{21} \times 5^{14}$ (iii) $7^{14} \times 5^3$ (iv) $7^2 \times 5^3$ (v) $7^{14} \times 5^{21}$

29. $\frac{\left(4^{(-4)}\right)^{-3} \times \left(6^6\right)^{-5} \times \left(8^6\right)^3}{\left(4^6\right)^{-4} \times \left(6^6\right)^4 \times \left(8^{(-3)}\right)^{-2}} =$

(i) $4^{36} \times 6^{(-54)} \times 8^{13}$ (ii) $4^{37} \times 6^{(-54)} \times 8^{12}$ (iii) $4^{36} \times 6^{(-53)} \times 8^{12}$ (iv) $4^{36} \times 6^{(-54)} \times 8^{12}$

30. $\left[\left(9^2\right)^5 \times \left(9^2\right)^5\right] \div 9^{20}$

(i) 9 (ii) 4 (iii) 2 (iv) 0 (v) 1

31. $\left[\left(\frac{2}{8}\right)^{-2} \times \left(\frac{3}{7}\right)^{-2}\right] \div \left[\left(\frac{8}{2}\right)^2 \times \left(\frac{7}{3}\right)^2\right] =$

(i) $\frac{2}{8}$ (ii) 1 (iii) 0 (iv) $\frac{3}{7}$ (v) (-1)

Assignment Key

1) (iv)	2) (v)	3) (i)	4) (iv)	5) (v)	6) (iii)
7) (i)	8) (ii)	9) (i)	10) (v)	11) (i)	12) (iv)
13) (iv)	14) (iv)	15) (iii)	16) (iii)	17) (ii)	18) (iii)
19) (iv)	20) (iii)	21) (i)	22) (iv)	23) (iv)	24) (i)
25) (iii)	26) (v)	27) (i)	28) (v)	29) (iv)	30) (v)
31) (ii)					