حل مشق 6.2

1۔ درج ذیل میں اساس(Base)اور قوت نما(Exponent) لکھیے۔

(i) $16x^3$

حل: اساس = x　　قوت نما = 3

(ii) x^9

حل: اساس = x　　قوت نما = 9

(iii) $(4y)^3$

حل: اساس = 4y　　قوت نما = 3

(iv) $(x - 2)^3$

حل: اساس = x - 2　　قوت نما = 3

(v) $18x^5$

حل: اساس = x　　قوت نما = 5

(vi) $5x^{\frac{3}{2}} \times x^{\frac{1}{2}}$

حل:

$$5x^{\frac{3}{2}} \times x^{\frac{1}{2}} = 5x^{\frac{3}{2}+\frac{1}{2}} = 5x^{\frac{3+1}{2}} = 5x^{\frac{4}{2}} = 5x^2$$

اساس = x　　قوت نما = 2

مختصر کیجیے اور جواب مثبت قوت نما میں لکھیے۔

2. $\sqrt{\left(a^2\, b^3\right)^6}$

حل:

$$\sqrt{\left(a^2\, b^3\right)^6} = \sqrt{\left(a^2\right)^6 \left(b^3\right)^6} = \left(a^{12} b^{18}\right)^{\frac{1}{2}} = \left(a^{12}\right)^{\frac{1}{2}} \left(b^{18}\right)^{\frac{1}{2}} = a^6 b^9$$

3. $\sqrt[9]{\left(x^{-4} y^3\right)^{-3}}$

حل:

$$\sqrt[9]{\left(x^{-4} y^3\right)^{-3}} = \sqrt[9]{\left(x^{-4}\right)^{-3} \left(y^3\right)^{-3}} = \left(x^{12} y^{-9}\right)^{\frac{1}{9}}$$

$$= \left(x^{12}\right)^{\frac{1}{9}} \left(y^{-9}\right)^{\frac{1}{9}} = x^{\frac{4}{3}} y^{-1} = \frac{x^{\frac{4}{3}}}{y}$$

4. $\left(x^a y^{-b}\right)^3 \times \left(x^3 y^2\right)^{-a}$

حل:

$$\left(x^a y^{-b}\right)^3 \times \left(x^3 y^2\right)^{-a} = \left(x^a\right)^3 \left(y^{-b}\right)^3 \times \left(x^3\right)^{-a} \left(y^2\right)^{-a}$$

$$= x^{3a} y^{-3b} \times x^{-3a} y^{-2a} = x^{3a-3a} \times y^{-2a-3b} = x^0 \times y^{-2a-3b} = \frac{1}{y^{2a+3b}}$$

5. $\left(\frac{16x^2}{y^{-2}}\right)^{-\frac{1}{4}}$

حل:

$$\left(\frac{16x^2}{y^{-2}}\right)^{-\frac{1}{4}} = \frac{(16)^{-\frac{1}{4}} \left(x^2\right)^{-\frac{1}{4}}}{\left(y^{-2}\right)^{-\frac{1}{4}}} = \frac{\left(2^4\right)^{-\frac{1}{4}} \cdot x^{-\frac{1}{2}}}{y^{\frac{1}{2}}} = \frac{2^{-1} x^{-\frac{1}{2}}}{y^{\frac{1}{2}}} = \frac{1}{2x^{\frac{1}{2}} y^{\frac{1}{2}}}$$

6. $\left(\frac{27x^3}{8a^{-3}}\right)^{-\frac{2}{3}}$

حل:

$$\left(\frac{27x^3}{8a^{-3}}\right)^{-\frac{2}{3}} = \frac{(27)^{-\frac{2}{3}} \left(x^3\right)^{-\frac{2}{3}}}{(8)^{-\frac{2}{3}} \left(a^{-3}\right)^{-\frac{2}{3}}} = \frac{\left(3^3\right)^{-\frac{2}{3}} \cdot x^{-2}}{\left(2^3\right)^{-\frac{2}{3}} a^2} = \frac{3^{-2} x^{-2}}{2^{-2} a^2} = \frac{2^2}{3^2 a^2 x^2} = \frac{4}{9a^2 x^2}$$

7. $\left(\frac{a^{-\frac{1}{2}}}{4c^2}\right)^{-2}$

حل:

$$\left(\frac{a^{-\frac{1}{2}}}{4c^2}\right)^{-2} = \frac{\left(a^{-\frac{1}{2}}\right)^{-2}}{(4)^{-2}\left(c^2\right)^{-2}} = \frac{a^1}{\left(2^2\right)^{-2}c^{-4}} = \frac{a}{2^{-4}c^{-4}} = 2^4 ac^4 = 16ac^4$$

8. $\sqrt{a^{-2}b} \times 3\sqrt{ab^{-3}}$

حل:

$$\sqrt{a^{-2}b} \times 3\sqrt{ab^{-3}} = \left(a^{-2}b\right)^{\frac{1}{2}} \times 3\left(ab^{-3}\right)^{\frac{1}{2}} = \left(a^{-2}\right)^{\frac{1}{2}}(b)^{\frac{1}{2}} \times 3a^{\frac{1}{2}}b^{-\frac{3}{2}}$$

$$= 3a^{-\frac{1}{2}}b^{\frac{1}{2}-\frac{3}{2}} = 3a^{-\frac{1}{2}}b^{-\frac{2}{2}} = 3a^{-\frac{1}{2}}b^{-1} = \frac{3}{a^{\frac{1}{2}}b}$$

9. $\left(\frac{a^{-3}}{b^{-\frac{2}{3}}c}\right)^{-\frac{3}{2}} \div \frac{ab^2c}{a^2c}$

حل:

$$\left(\frac{a^{-3}}{b^{-\frac{2}{3}}c}\right)^{-\frac{3}{2}} \div \frac{ab^2c}{a^2c} = \frac{\left(a^{-3}\right)^{-\frac{3}{2}}}{\left(b^{-\frac{2}{3}}\right)^{-\frac{3}{2}}c^{-\frac{3}{2}}} \times \frac{a^2c}{ab^2c} = \frac{a^{\frac{9}{2}}}{bc^{-\frac{3}{2}}} \times \frac{a}{b^2} = \frac{a^{\frac{9}{2}+1}}{b^{1+2}} = \frac{a^{11/2}c^{\frac{3}{2}}}{b^3}$$

10. $\frac{\left(a^4\right)^3\left(a^{-1}b\right)^{10}}{a^2b^7}$

حل:

$$\frac{\left(a^4\right)^3\left(a^{-1}b\right)^{10}}{a^2b^7} = \frac{a^{12}\left(a^{-1}\right)^{10}(b)^{10}}{a^2b^7} = \frac{a^{12}a^{-10}b^{10}}{a^2b^7}$$

$$= a^{12-10-2}b^{10-7} = a^{12-12}b^3 = a^0b^3 = b^3$$

11. $\frac{\left(x^3y\right)^3(2xy)^{-2}}{4x^{-4}y^{-5}}$

حل:

$$\frac{\left(x^3y\right)^3(2xy)^{-2}}{4x^{-4}y^{-5}} = \frac{\left(x^3\right)^3(y)^3(2)^{-2}(x)^{-2}(y)^{-2}}{4x^{-4}y^{-5}}$$

$$= \frac{x^9y^3x^{-2}y^{-2}}{4(2)^2x^{-4}y^{-5}} = \frac{x^{9-2+4}y^{3-2+5}}{4\times 4} = \frac{x^{11}y^6}{16}$$

12. $\dfrac{\left(a^{-5}\right)^3 \times (ab)^{15}}{a^{-1}b^2}$

حل:

$$\frac{\left(a^{-5}\right)^3 \times (ab)^{15}}{a^{-1}b^2} = \frac{a^{-15}a^{15}b^{15}}{a^{-1}b^2} = a^{-15+15+1}b^{15-2} = ab^{13}$$

13. $a^5b^4c^2 \div abc$

حل:

$$a^5b^4c^2 \div abc = \frac{a^5b^4c^2}{abc} = a^{5-1}b^{4-1}c^{2-1} = a^4b^3c$$

14. $\left(2ab^2\right)^2\left(3abc^2\right)^{-2} \div (ab)^{-4}(bca)^5$

حل:

$$\left(2ab^2\right)^2\left(3abc^2\right)^{-2} \div (ab)^{-4}(bca)^5$$

$$= \frac{(2)^2(a)^2\left(b^2\right)^2(3)^{-2}(a)^{-2}(b)^{-2}\left(c^2\right)^{-2}}{(a)^{-4}(b)^{-4}(b)^5(c)^5(a)^5} = \frac{4a^2b^4a^{-2}b^{-2}c^{-4}}{3^2a^{-4}b^{-4}b^5c^5a^5}$$

$$= \frac{4}{9}a^{2-2+4-5}b^{4-2+4-5}c^{-4-5} = \frac{4}{9}a^{-1}b^1c^{-9} = \frac{4b}{9ac^9}$$

15. $\dfrac{2^3 \times 6^5}{3^{-3} \times 4^{-4}}$

حل:

$$\frac{2^3 \times 6^5}{3^{-3} \times 4^{-4}} = 2^3 \times 6^5 \times 3^3 \times 4^4 = 2^3 \times 3^3 \times 4^4 \times 6^5 = 2^3 \times 3^3 \times 2^4 \times 2^4 \times 2^5 \times 3^5$$

$$= 2^{3+4+4+5} \times 3^{3+5} = 2^{16} \times 3^8$$

16. $\dfrac{2^5 \times 9^{-1}}{27^{-3} \times 8^{-3}}$

حل:

$$\frac{2^5 \times 9^{-1}}{27^{-3} \times 8^{-3}} = \frac{2^5 \times \left(3^2\right)^{-1}}{\left(3^3\right)^{-3} \times \left(2^3\right)^{-3}} = \frac{2^5 \times 3^{-2}}{3^{-9} \times 2^{-9}} = 2^{5+9} \times 3^{-2+9} = 2x^{14}3^7$$

17. $(2^{-3}a^4b)^{-1} \times (4^{-2}b^{-5})$

حل:

$$\begin{aligned}
(2^{-3}a^4b)^{-1} \times (4^{-2}b^{-5}) &= (2^{-3})^{-1}(a^4)^{-1}(b)^{-1} \times (4)^{-2}(b^{-5}) \\
&= 2^3 \times a^{-4} \times b^{-1} \times (2^2)^{-2} \times b^{-5} \\
&= 2^3 \times 2^{-4} \times a^{-4} \times b^{-1} \times b^{-5} \\
&= 2^{3-4} \times a^{-4} \times b^{-1-5} \\
&= 2^{-1} \times a^{-4} \times b^{-6} \\
&= \frac{1}{2a^4b^6}
\end{aligned}$$

ل کیجیے۔

18. $\left(3^2\right)^5 \div 9^3 \times 27^{-1}$ حل:

$\left(3^2\right)^5 \div 9^3 \times 27^{-1}$

$= 3^{10} \times 9^{-3} \times 27^{+1} = 3^{10} \times \left(3^2\right)^{-3} \times \left(3^3\right)^{+1} = 3^{10} \times 3^{-6} \times 3^{+3} = 3^{10-6+3} = 3^7 = 2187$

19. $\left(\frac{3}{4}\right)^{-2} \div \left(\frac{4}{9}\right)^3 \times \left(\frac{27}{16}\right)^{-1}$ حل:

$\left(\frac{3}{4}\right)^{-2} \div \left(\frac{4}{9}\right)^3 \times \left(\frac{27}{16}\right)^{-1} = \left(\frac{3}{4}\right)^{-2} \times \left(\frac{4}{9}\right)^{-3} \times \left(\frac{27}{16}\right)^{-1} = \frac{3^{-2}}{4^{-2}} \times \frac{4^{-3}}{\left(3^2\right)^{-3}} \times \frac{\left(3^3\right)^{-1}}{\left(4^2\right)^{-1}}$

$= \frac{3^{-2}}{4^{-2}} \times \frac{4^{-3}}{3^{-6}} \times \frac{3^{-3}}{4^{-2}} = 3^{-2-3+6} \times 4^{-3+2+2} = 3^{-5+6} \times 4^{-3+4}$

$= 3^1 \times 4^1 = 3 \times 4 = 12$

20. $\left(\frac{2}{3}\right)^{-1} \div \left(\frac{4}{9}\right)^{-2} \times 27$ حل:

$\left(\frac{2}{3}\right)^{-1} \div \left(\frac{4}{9}\right)^{-2} \times 27 = \left(\frac{2}{3}\right)^{-1} \times \left(\frac{4}{9}\right)^{2} \times 27 = \frac{2^{-1}}{3^{-1}} \times \frac{\left(2^2\right)^2}{\left(3^2\right)^2} \times 3^3$

$= \frac{2^{-1}}{3^{-1}} \times \frac{2^4}{3^4} \times 3^3 = 2^{-1+4} \times 3^{3+1-4} = 2^3 \times 3^0 = 8 \times 1 = 8$

21. $\frac{5^4}{3^7} \times \left(\frac{9}{15}\right)^3 \div \frac{27}{25}$ حل:

$\frac{5^4}{3^7} \times \left(\frac{9}{15}\right)^3 \div \frac{27}{25} = \frac{5^4}{3^7} \times \frac{\left(3^2\right)^3}{\left(3 \times 5\right)^3} \times \frac{25}{27} = \frac{5^4}{3^7} \times \frac{3^6}{3^3 \times 5^3} \times \frac{5^2}{3^3}$

$= 5^{4+2-3} \times 3^{6-7-3-3} = 5^{6-3} \times 3^{6-13} = 5^3 \times 3^{-7} = \frac{5^3}{3^7} = \frac{125}{2187}$

22. $a^{\frac{1}{2}} b^{\frac{2}{3}} \times a^{\frac{2}{3}} b^{\frac{1}{4}}$

$a^{\frac{1}{2}} b^{\frac{2}{3}} \times a^{\frac{2}{3}} b^{\frac{1}{4}} = a^{\frac{1}{2}} b^{\frac{2}{3}} \times a^{\frac{2}{3}} b^{\frac{1}{4}} = a^{\frac{1}{2}+\frac{2}{3}} \times b^{\frac{2}{3}+\frac{1}{4}} = a^{\frac{7}{6}} \times b^{\frac{11}{12}}$ حل:

23. $a^{\frac{2}{3}} b^{\frac{5}{6}} \times a^{\frac{1}{2}} b \div (ab)^{\frac{1}{3}}$

$a^{\frac{2}{3}} b^{\frac{5}{6}} \times a^{\frac{1}{2}} b \div (ab)^{\frac{1}{3}} = a^{\frac{2}{3}} b^{\frac{5}{6}} \times a^{\frac{1}{2}} b \times (ab)^{-\frac{1}{3}} = a^{\frac{2}{3}} . a^{\frac{1}{2}} . a^{-\frac{1}{3}} \times b^{\frac{5}{6}} . b^1 . b^{-\frac{1}{3}}$ حل:

$= a^{\frac{2}{3}+\frac{1}{2}-\frac{1}{3}} \times b^{\frac{5}{6}+1-\frac{1}{3}} = a^{\frac{5}{6}} b^{\frac{3}{2}}$

24. $\left(a^{\frac{1}{2}}b^{\frac{1}{3}}c^{\frac{1}{4}}\right)^6$

$\left(a^{\frac{1}{2}}b^{\frac{1}{3}}c^{\frac{1}{4}}\right)^6 = \left(a^{\frac{1}{2}}\right)^6\left(b^{\frac{1}{3}}\right)^6\left(c^{\frac{1}{4}}\right)^6 = a^3b^2c^{\frac{3}{2}}$ حل:

25. $\left(a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^4 \div \left(a^{\frac{1}{3}}b^{\frac{1}{4}}\right)^{\frac{1}{2}}$

حل:

$$\left(a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^4 \div \left(a^{\frac{1}{3}}b^{\frac{1}{4}}\right)^{\frac{1}{2}} = \left(a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^4 \times \left(a^{\frac{1}{3}}b^{\frac{1}{4}}\right)^{-\frac{1}{2}} = \left(a^{\frac{1}{2}}\right)^4\left(b^{\frac{1}{3}}\right)^4 \times \left(a^{\frac{1}{3}}\right)^{-\frac{1}{2}}\left(b^{\frac{1}{4}}\right)^{-\frac{1}{2}}$$

$$= a^{\frac{2}{3}}b^{\frac{4}{9}} \times a^{-\frac{1}{6}}b^{-\frac{1}{8}} = a^{\frac{2}{3}-\frac{1}{6}} \times b^{\frac{4}{9}-\frac{1}{8}} = a^{\frac{1}{2}}b^{\frac{23}{72}}$$

26. $a^{\frac{2}{3}} \times a^{\frac{1}{2}} \div a^{\frac{1}{4}}$

$a^{\frac{2}{3}} \times a^{\frac{1}{2}} \div a^{\frac{1}{4}} = a^{\frac{2}{3}} \times a^{\frac{1}{2}} \times a^{-\frac{1}{4}} = a^{\frac{2}{3}+\frac{1}{2}-\frac{1}{4}} = a^{\frac{11}{12}}$ حل:

27. درج ذیل میں سے ہر ایک کو مختصر کیجیے۔

(i) $4^{\frac{3}{5}} \times 4^{\frac{1}{5}}$

$4^{\frac{3}{5}} \times 4^{\frac{1}{5}} = 4^{\frac{3}{5}+\frac{1}{5}} = 4^{\frac{3+1}{5}} = 4^{\frac{4}{5}}$ حل:

(ii) $2^{\frac{1}{8}} \times 2^{\frac{3}{8}}$

$2^{\frac{1}{8}} \times 2^{\frac{3}{8}} = 2^{\frac{1}{8}+\frac{3}{8}} = 2^{\frac{4}{8}} = 2^{\frac{1}{2}}$ حل:

(iii) $x^{\frac{3}{4}} \times x^{\frac{2}{5}}$

حل:

$x^{\frac{3}{4}} \times x^{\frac{2}{5}} = x^{\frac{3}{4}+\frac{2}{5}} = x^{\frac{23}{20}}$

(iv) $5x^{\frac{1}{3}} \times 2x^{\frac{1}{5}}$

حل:

$5x^{\frac{1}{3}} \times 2x^{\frac{1}{5}} = 5 \times 2 \times x^{\frac{1}{3}+\frac{1}{5}} = 10x^{\frac{8}{15}}$

(v) $\frac{1}{2}y^{\frac{3}{7}} \times 4y^{\frac{2}{7}}$

حل:

$\frac{1}{2}y^{\frac{3}{7}} \times 4y^{\frac{2}{7}} = \frac{1}{2} \times 4 \times y^{\frac{3}{7}} \times y^{\frac{2}{7}} = 2y^{\frac{3}{7}+\frac{2}{7}} = 2y^{\frac{5}{7}}$

(vi) $5x^{\frac{3}{2}} \times x^{\frac{1}{2}}$

حل:

$5x^{\frac{3}{2}} \times x^{\frac{1}{2}} = 5 \times x^{\frac{3}{2}+\frac{1}{2}} = 5x^{\frac{4}{2}} = 5x^2$

درج ذیل میں سے ہر ایک کو مختصر کیجیے۔

(i) $a^{\frac{2}{3}}b^{\frac{3}{4}} \times a^{\frac{1}{3}}b^{\frac{3}{4}}$

حل:

$a^{\frac{2}{3}}b^{\frac{3}{4}} \times a^{\frac{1}{3}}b^{\frac{3}{4}} = a^{\frac{2}{3}}a^{\frac{1}{3}} \times b^{\frac{3}{4}}b^{\frac{3}{4}} = a^{\frac{2}{3}+\frac{1}{3}} \times b^{\frac{3}{4}+\frac{3}{4}}$

$= a^{\frac{3}{3}} \times b^{\frac{6}{4}} = ab^{\frac{3}{2}}$

(ii) $x^{\frac{3}{5}}y^{\frac{2}{9}} \times x^{\frac{1}{5}}y^{\frac{1}{3}}$

حل:

$x^{\frac{3}{5}}y^{\frac{2}{9}} \times x^{\frac{1}{5}}y^{\frac{1}{3}} = x^{\frac{3}{5}}.x^{\frac{1}{5}} \times y^{\frac{2}{9}}.y^{\frac{1}{3}} = x^{\frac{3}{5}+\frac{1}{5}} \times y^{\frac{2}{9}+\frac{1}{3}} = x^{\frac{4}{5}}y^{\frac{5}{9}}$

(iii) $2ab^{\frac{1}{3}} \times 3a^{\frac{3}{5}}b^{\frac{4}{5}}$

حل:

$2ab^{\frac{1}{3}} \times 3a^{\frac{3}{5}}b^{\frac{4}{5}} = 2 \times 3a \times a^{\frac{3}{5}} \times b^{\frac{1}{3}} \times b^{\frac{4}{5}} = 6a^{1+\frac{3}{5}}b^{\frac{1}{3}+\frac{4}{5}} = 6a^{\frac{8}{5}}b^{\frac{17}{15}}$

(iv) $6x^{\frac{3}{7}} \times \frac{1}{3}x^{\frac{1}{4}}y^{\frac{2}{5}}$

حل:

$6x^{\frac{3}{7}} \times \frac{1}{3}x^{\frac{1}{4}}y^{\frac{2}{5}} = 6 \times \frac{1}{3}x^{\frac{3}{7}}.x^{\frac{1}{4}}.y^{\frac{2}{5}} = 2x^{\frac{3}{7}+\frac{1}{4}}y^{\frac{2}{5}} = 2x^{\frac{19}{28}}y^{\frac{2}{5}}$

(v) $x^3y^{\frac{1}{2}}z^{\frac{1}{3}} \times x^{\frac{1}{6}}y^{\frac{1}{3}}z^{\frac{1}{2}}$

حل:

$x^3y^{\frac{1}{2}}z^{\frac{1}{3}} \times x^{\frac{1}{6}}y^{\frac{1}{3}}z^{\frac{1}{2}} = x^{3+\frac{1}{6}}y^{\frac{1}{3}+\frac{1}{2}}z^{\frac{1}{3}+\frac{1}{2}} = x^{\frac{19}{6}}y^{\frac{5}{6}}z^{\frac{5}{6}}$

درج ذیل میں سے ہر ایک کو مختصر کیجیے۔

(i) $3^{\frac{1}{2}} \div 3^{\frac{1}{3}}$

حل:

$3^{\frac{1}{2}} \div 3^{\frac{1}{3}} = 3^{\frac{1}{2}} \times 3^{-\frac{1}{3}} = 3^{\frac{1}{2}-\frac{1}{3}} = 3^{\frac{1}{6}}$

(ii) $\frac{x^{\frac{4}{4}}}{x^{\frac{5}{9}}}$

حل:

$\frac{x^{\frac{4}{4}}}{x^{\frac{5}{9}}} = x^{\frac{4}{4}}.x^{\frac{-5}{9}} = x^{1-\frac{5}{9}} = x^{\frac{4}{9}}$

(iii) $\dfrac{2x^{\frac{3}{4}}}{4x^{\frac{3}{5}}}$

حل:

$$\frac{2x^{\frac{3}{4}}}{4x^{\frac{3}{5}}} = \frac{2}{4}.x^{\frac{3}{4}}.x^{-\frac{3}{5}} = \frac{1}{2}x^{\frac{3}{4}-\frac{3}{5}} = \frac{1}{2}x^{\frac{3}{20}}$$

(iv) $\dfrac{25y^{\frac{3}{5}}}{20y^{\frac{1}{4}}}$

حل:

$$\frac{25y^{\frac{3}{5}}}{20y^{\frac{1}{4}}} = \frac{25}{20}y^{\frac{3}{5}}.y^{-\frac{1}{4}} = \frac{5}{4}y^{\frac{3}{5}-\frac{1}{4}} = \frac{5}{4}y^{\frac{7}{20}}$$

(v) $x^3y^2 \div x^{\frac{4}{3}}y^{\frac{3}{5}}$

حل:

$$x^3y^2 \div x^{\frac{4}{3}}y^{\frac{3}{5}} = x^3y^2 \times x^{-\frac{4}{3}}y^{\frac{-3}{5}} = x^{3-\frac{4}{3}} \times y^{2-\frac{3}{5}} = x^{\frac{5}{3}}y^{\frac{7}{5}}$$

(vi) $a^{\frac{5}{9}}b^{\frac{2}{3}} \div a^{\frac{2}{5}}b^{\frac{2}{5}}$

حل:

$$a^{\frac{5}{9}}b^{\frac{2}{3}} \div a^{\frac{2}{5}}b^{\frac{2}{5}} = a^{\frac{5}{9}}b^{\frac{2}{3}} \times a^{-\frac{2}{5}}b^{-\frac{2}{5}} = a^{\frac{5}{9}}.a^{-\frac{2}{5}} \times b^{\frac{2}{3}}.b^{-\frac{2}{5}}$$

$$= a^{\frac{5}{9}-\frac{2}{5}} \times b^{\frac{2}{3}-\frac{2}{5}} = a^{\frac{7}{45}}b^{\frac{4}{15}}$$

(vii) $10x^{\frac{4}{5}}y \div 5x^{\frac{2}{3}}y^{\frac{1}{4}}$

حل:

$$10x^{\frac{4}{5}}y \div 5x^{\frac{2}{3}}y^{\frac{1}{4}} = 10x^{\frac{4}{5}}y \times \frac{1}{5}x^{-\frac{2}{3}}y^{-\frac{1}{4}} = \frac{10}{5}x^{\frac{4}{5}}.x^{-\frac{2}{3}} \times y^{1}.y^{-\frac{1}{4}}$$

$$= 2x^{\frac{4}{5}-\frac{2}{3}} \times y^{1-\frac{1}{4}} = 2x^{\frac{2}{15}}y^{\frac{3}{4}}$$

(viii) $\dfrac{5a^{\frac{3}{4}}b^{\frac{3}{5}}}{20a^{\frac{1}{5}}b^{\frac{1}{4}}}$

حل:

$$\frac{5a^{\frac{3}{4}}b^{\frac{3}{5}}}{20a^{\frac{1}{5}}b^{\frac{1}{4}}} = \frac{5}{20}a^{\frac{3}{4}-\frac{1}{5}}b^{\frac{3}{5}-\frac{1}{4}} = \frac{1}{4}a^{\frac{11}{20}}b^{\frac{7}{20}}$$