



Note: (1) Think and Answer (2) Mind Choices

Name:

Date:

Areas of Improvements:

Maximum Marks	
Marks Obtained	
%	

Parent's Signature	Parent's Signature



Section A:

Q1. $(1/2)^{-5}$ is equal to

- (a) 32
- (b) 132
- (c) -32
- (d) -132

Q2..

The value of $\left[\left(\frac{1}{4}\right)^{-2} + \left(\frac{1}{3}\right)^{-2}\right] \div \left(\frac{1}{5}\right)^{-2}$ is

- (a) 0
- (b) -1
- (c) 1
- (d) $\frac{7}{5}$

Q3. .

$\left(\frac{-4}{3}\right)^7 \times \left(\frac{-4}{3}\right)^8 \div \left(\frac{-3}{4}\right)^{-5}$ is equal to

- (a) $\left(\frac{-4}{3}\right)^{20}$
- (b) $\left(\frac{-4}{3}\right)^{10}$
- (c) $\left(\frac{-3}{4}\right)^{10}$
- (d) $\left(\frac{-3}{4}\right)^{20}$

Q4. Standard form of 0.000000789 is

- (a) 78.9×10^{-8}
- (b) 789×10^{-9}
- (c) 7.89×10^{-7}
- (d) None



Q5.

$2^0 + 3^0 + \left(\frac{1}{4}\right)^0$ is equal to

(a) $\frac{21}{4}$

(b) 0

(c) 9

(d) 3

Q6.

If $\left(\frac{12}{13}\right)^4 \times \left(\frac{13}{12}\right)^{-8} = \left(\frac{12}{13}\right)^{2x}$, then the value of x is

(a) -2

(b) 6

(c) 2

(d) -6

Q7.

(i) Express 16^{-2} as a power with base 2.

(ii) Express 125^{-4} as a power with base 5.

Q8. Write the following numbers in expanded form using exponents:

(i) 2789.453

(ii) 3007.805



Section B

Q9.

$$(i) \left[\left(\frac{1}{2} \right)^{-3} + \left(\frac{1}{3} \right)^{-3} + \left(\frac{1}{4} \right)^{-3} \right] \div (3)^2$$

$$(ii) \left[3^3 - \left(\frac{1}{2} \right)^{-3} \times \frac{1}{19} \right]$$

$$(iii) [2^{-1} + 3^0 + 5^1 + 7^2 + 9^3] \div \left(\frac{2}{3} \right)^{-1}$$

Q10. Simplify:

$$\frac{5^{n+2} - 6 + 5^{n+1}}{13 \times 5^n - 2 \times 5^{n+1}}$$

Q11. Find the value of m for which $9^m \div 3^{-2} = 9^4$.

Section C (any one)

Q12. Simplify:

$$(i) [(2)^{-1} + (4)^{-1} + (3)^{-1}]^{-1}$$

$$(ii) [(4)^{-1} - (5)^{-1}]^2 \times \left(\frac{5}{8} \right)^{-1}$$

$$(iii) [4^0 + 4^2 - 2^3] \times 3^{-2}$$

$$(iv) \left[(5)^2 - \left(\frac{1}{4} \right)^{-2} \right] \times \left(\frac{3}{4} \right)^{-2}$$



Q13. Simplify and write in exponential form with a positive exponent:

$$(i) \left[\left\{ \left(\frac{5}{7} \right)^2 \right\}^{-1} \right]^{-3}$$

$$(ii) \left(\frac{2}{7} \right)^2 \times \left(\frac{7}{2} \right)^{-3} \div \left\{ \left(\frac{7}{5} \right)^{-2} \right\}^{-4}$$

$$(i) \left[\left\{ \left(\frac{5}{7} \right)^2 \right\}^{-1} \right]^{-3}$$

$$(ii) \left(\frac{2}{7} \right)^2 \times \left(\frac{7}{2} \right)^{-3} \div \left\{ \left(\frac{7}{5} \right)^{-2} \right\}^{-4}$$

Section D (any one)

Q14. The number of red blood cells per cubic millimeter of blood is approximately 5.5 million. If the average body contains 5 liters of blood, what is the total number of red cells in the body? (1 litre = 1,00,000 mm³)

Q15. Mass of Mars is 6.42×10^{29} kg and the mass of the sun is 1.99×10^{30} kg. What is the total mass?

Q16. The mass of the Earth is 5.97×10^{24} kg and the mass of the Moon is 7.35×10^{22} kg. What is the difference of their masses?



Section E: (any two)

Q17.

$$(i) \frac{49 \times z^{-3}}{7^{-3} \times 10 \times z^{-5}} \quad (z \neq 0)$$

$$(ii) \frac{9^3 \times 27 \times t^4}{(3)^2 \times (3)^4 \times t^2}$$

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

$$(iv) \frac{2^5 \times 15^{-5} \times 500}{5^{-6} \times 6^{-5}}$$

Q18.

$$\text{If } \left(\frac{-5}{7}\right)^{-4} \times \left(\frac{-5}{7}\right)^{12} = \left\{\left(\frac{-5}{7}\right)^3\right\}^x \times \left(\frac{-5}{7}\right)^{-1}$$

find the value of x .

Q19..

$$(i) \text{ If } 5^{2x-1} = \frac{1}{(125)^{x-3}}, \text{ find } x.$$

$$(ii) \text{ If } \frac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27, \text{ find } n.$$

Q20. If $(9/44)^{-4} \times (2/3)^3 = (pq)^{11}$, then find the value of $(p/q)^{-2}$.