

Exponents (Level 1)**MCQ Test, Set 06**

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

- There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
- Each correct answer carries 1 mark. There is no negative marking.
- The key sheet and worked solutions are at the end of this test.

1. $q \times q \times q \times q \times q \times q \times q \times q =$

A. q^8

B. 8^q

C. $8q$

D. q^7

2. $6^3 = 216$. Then $6^4 =$

A. 222

B. 1296

C. 864

D. 432

3. 10^7 written in figures is

A. 70

B. 1,00,00,000

C. 10,00,000

D. 10,00,00,000

4. If $12^{\square} = 144$, the number in the box is

A. 3

B. 12

C. 2

D. 1

5. $8^{12} \times 8^5 =$

A. 8^{17}

B. 8^{60}

C. 8^7

D. 64^{17}

6. $17^{25} \div 17^5 =$

A. 17^{20}

B. 17^5

C. 17^{30}

D. 1

7. $(5^2)^9 =$

A. 5^{11}

B. 10^9

C. 5^{18}

D. 45^2

8. $3^9 \times 13^9 =$

A. $(39)^{18}$

B. $(16)^{18}$

C. $(39)^9$

D. $(16)^9$

9. $\frac{6^2}{8^2} =$

A. $\frac{9}{16}$

B. 4

C. $\frac{3}{4}$

D. $\frac{3}{2}$

10. 0^0 is

A. -1

B. undefined

C. 0

D. 1

11. $\frac{1}{12^3} =$

A. -12^3

B. 3^{-12}

C. 12^{-3}

D. 12^3

12.	$\left(\frac{4}{3}\right)^{-3} =$	A. $\frac{64}{27}$	B. $\frac{27}{64}$	C. $-\frac{64}{27}$	D. -4
13.	$(-1)^{1001} =$	A. -1001	B. 1001	C. 1	D. -1
14.	$(-13)^{20} =$	A. 13^{-20}	B. -13^{20}	C. 13^{20}	D. 20^{13}
15.	If $6^{2n} = 36$, then $n =$	A. 18	B. 2	C. 1	D. -1
16.	If $2^{x+7} = 2^3$, then $x =$	A. 3	B. 10	C. 4	D. -4
17.	-2^7 equals	A. $(-2)^8$	B. $(-2)^7$	C. $(-7)^2$	D. 2^{-7}
18.	$\left(\frac{c}{10}\right)^3 =$	A. $\frac{c^3}{10}$	B. $\frac{c^3}{30}$	C. $\frac{c^4}{1000}$	D. $\frac{c^3}{1000}$
19.	$\frac{5^7 \times 5^4}{5^9} =$	A. 5^2	B. 5^{19}	C. 5^{20}	D. 5^{-2}
20.	$(-3)^{-3} =$	A. $\frac{1}{27}$	B. 27	C. -27	D. $-\frac{1}{27}$
21.	If $5^x \div 5^4 = 125$, then $x =$	A. -1	B. 7	C. 1	D. -7
22.	$(-1)^3 + (-1)^5 + (-1)^{11} =$	A. -3	B. 3	C. -1	D. 1
23.	$\frac{6^{\frac{7}{2}} \times 6^{-\frac{3}{2}}}{6^1} =$	A. 216	B. $\frac{1}{6}$	C. 1296	D. 6
24.	$(3^9 \div 3^7)^3 \times 3^{-4} =$	A. 3^{10}	B. 3^{-10}	C. $\frac{1}{9}$	D. 9
25.	$(10b^2)^2 \times (3b)^2 =$	A. $120b^6$	B. $900b^6$	C. $30b^6$	D. $900b^8$

Key sheet

1. A	2. B	3. B	4. C	5. A
6. A	7. C	8. C	9. A	10. B
11. C	12. B	13. D	14. C	15. C
16. D	17. B	18. D	19. A	20. D
21. B	22. A	23. D	24. D	25. B

Solutions

1. $q \times q \times q \times q \times q \times q \times q \times q =$

q is multiplied by itself 8 times.

$$q \times q \times q \times q \times q \times q \times q \times q = q^8$$

Ans: (A) q^8

2. $6^3 = 216$. Then $6^4 =$

$$6^4 = 6^3 \times 6$$

$$= 216 \times 6 = 1296$$

Ans: (B) 1296

3. 10^7 written in figures is

$10^7 = 1$ followed by 7 zeros

$$= 1,00,00,000$$

Ans: (B) 1,00,00,000

4. If $12^\square = 144$, the number in the box is

Dividing repeatedly by 12: 144, 12, that is 2 times.

$$144 = 12^2$$

Ans: (C) 2

5. $8^{12} \times 8^5 =$

Using $a^m \times a^n = a^{m+n}$

$$8^{12} \times 8^5 = 8^{12+5} = 8^{17}$$

Ans: (A) 8^{17}

6. $17^{25} \div 17^5 =$

Using $\frac{a^m}{a^n} = a^{m-n}$

$$17^{25} \div 17^5 = 17^{25-5} = 17^{20}$$

Ans: (A) 17^{20}

7. $(5^2)^9 =$

Using $(a^m)^n = a^{m \times n}$

$$(5^2)^9 = 5^{2 \times 9} = 5^{18}$$

Ans: (C) 5^{18}

8. $3^9 \times 13^9 =$

Using $a^n \times b^n = (a \times b)^n$

$$3^9 \times 13^9 = (3 \times 13)^9 = (39)^9$$

Ans: (C) $(39)^9$

9. $\frac{6^2}{8^2} =$

Using $\frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$

$$\frac{6^2}{8^2} = \left(\frac{6}{8}\right)^2 = \left(\frac{3}{4}\right)^2 = \frac{9}{16}$$

Ans: (A) $\frac{9}{16}$

10. 0^0 is

The notes: $a^0 = 1$ only when $a \neq 0$.

0^0 is undefined.

Ans: (B) undefined

11. $\frac{1}{12^3} =$

Using $\frac{1}{a^n} = a^{-n}$

$$\frac{1}{12^3} = 12^{-3}$$

Ans: (C) 12^{-3}

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

Using $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$

$$\left(\frac{4}{3}\right)^{-3} = \left(\frac{3}{4}\right)^3 = \frac{27}{64}$$

Ans: (B) $\frac{27}{64}$

13. $(-1)^{1001} =$

1001 is odd and $(-1)^{\text{odd number}} = -1$.

$$(-1)^{1001} = -1$$

Ans: (D) -1

14. $(-13)^{20} =$

20 is even, so $(-13)^{20} = 13^{20}$

Ans: (C) 13^{20}

15. If $6^{2n} = 36$, then $n =$

Given, $6^{2n} = 36$

Dividing 36 repeatedly by 6: 36, 6, so $36 = 6^2$.

$$\Rightarrow 6^{2n} = 6^2$$

Using $a^m = a^n \Rightarrow m = n$

$$\Rightarrow 2n = 2$$

$$\Rightarrow n = \frac{2}{2} = 1$$

Ans: (C) 1

16. If $2^{x+7} = 2^3$, then $x =$

Using $a^m = a^n \Rightarrow m = n$

$$\Rightarrow x + 7 = 3$$

$$\Rightarrow x = 3 - 7$$

$$\Rightarrow x = -4$$

Ans: (D) -4

17. -2^7 equals

7 is odd, so $-a^n = (-a)^n$: $-2^7 = (-2)^7$

Ans: (B) $(-2)^7$

18. $(\frac{c}{10})^3 =$

Using $(\frac{a}{b})^n = \frac{a^n}{b^n}$ and $(a^m)^n = a^{m \times n}$

$$(\frac{c}{10})^3 = \frac{c^3}{10^3}$$

$$= \frac{c^3}{1000}$$

Ans: (D) $\frac{c^3}{1000}$

19. $\frac{5^7 \times 5^4}{5^9} =$

Using $a^m \times a^n = a^{m+n}$ and $\frac{a^m}{a^n} = a^{m-n}$

$$\frac{5^7 \times 5^4}{5^9} = \frac{5^{11}}{5^9}$$

$$= 5^{11-9} = 5^2$$

Ans: (A) 5^2

20. $(-3)^{-3} =$

Using $a^{-n} = \frac{1}{a^n}$

$$(-3)^{-3} = \frac{1}{(-3)^3}$$

$$= \frac{1}{-27} = -\frac{1}{27} \text{ (3 is odd)}$$

Ans: (D) $-\frac{1}{27}$

21. If $5^x \div 5^4 = 125$, then $x =$

Given, $5^x \div 5^4 = 125$

Dividing 125 repeatedly by 5: 125, 25, 5, so $125 = 5^3$.

$$\Rightarrow 5^{x-4} = 5^3 \left(\frac{a^m}{a^n} = a^{m-n} \right)$$

Using $a^m = a^n \Rightarrow m = n$

$$\Rightarrow x - 4 = 3$$

$$\Rightarrow x = 3 + 4$$

$$\Rightarrow x = 7$$

Ans: (B) 7

22. $(-1)^3 + (-1)^5 + (-1)^{11} =$

Using $(-1)^{\text{odd number}} = -1$, $(-1)^{\text{even number}} = 1$

$$\begin{aligned} (-1)^3 + (-1)^5 + (-1)^{11} &= (-1) + (-1) + (-1) \\ &= -3 \end{aligned}$$

Ans: (A) -3

23. $\frac{6^{\frac{7}{2}} \times 6^{-\frac{3}{2}}}{6^1} =$

Using $a^m \times a^n = a^{m+n}$ and $\frac{a^m}{a^n} = a^{m-n}$

$$\frac{6^{\frac{7}{2}} \times 6^{-\frac{3}{2}}}{6^1} = \frac{6^{\frac{7}{2} + (-\frac{3}{2})}}{6^1}$$

$$= \frac{6^{\frac{4}{2}}}{6^1} = \frac{6^2}{6^1}$$

$$= 6^{2-1} = 6^1$$

$$= 6$$

Ans: (D) 6

24. $(3^9 \div 3^7)^3 \times 3^{-4} =$

$$(3^9 \div 3^7)^3 \times 3^{-4} = \left(\frac{3^9}{3^7}\right)^3 \times 3^{-4}$$

$$= (3^{9-7})^3 \times 3^{-4} = (3^2)^3 \times 3^{-4}$$

$$= 3^6 \times 3^{-4} \quad ((a^m)^n = a^{m \times n})$$

$$= 3^{6-4} = 3^2$$

$$= 9$$

Ans: (D) 9

25. $(10b^2)^2 \times (3b)^2 =$

Using $(ab)^n = a^n \times b^n$ and $(a^m)^n = a^{m \times n}$

$$(10b^2)^2 \times (3b)^2 = 10^2 \cdot (b^2)^2 \times 3^2 \cdot b^2$$

$$= 100b^4 \times 9b^2$$

$$= 900 \cdot b^{4+2} = 900b^6$$

Ans: (B) $900b^6$
