

Exponents (Level 1)

MCQ Test, Set 01

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

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

1. In exponential form, $4 \times 4 \times 4 \times 4 \times 4 \times 4 =$

- A. 6^4 B. 4^6 C. 4^5 D. 24

2. $2^8 =$

- A. 64 B. 16 C. 128 D. 256

3. Which is the largest of $2^8, 8^2, 3^4, 5^3$?

- A. 2^8 B. 5^3 C. 8^2 D. 3^4

4. 64 written as a power of 2 is

- A. 2^7 B. 6^2 C. 2^6 D. 2^5

5. $7^5 \times 7^9 =$

- A. 7^{14} B. 49^{14} C. 7^4 D. 7^{45}

6. $\frac{8^{11}}{8^3} =$

- A. 8^8 B. 1 C. 8^{14} D. $8^{\frac{11}{3}}$

7. $(6^5)^4 =$

- A. 6^9 B. 30^4 C. 6^{20} D. 24^5

8. $7^8 \times 3^8 =$

- A. $(21)^{16}$ B. $(10)^8$ C. $(10)^{16}$ D. $(21)^8$

9. $\frac{15^4}{5^4} =$

- A. 3 B. 81 C. 10,000 D. 12

10. $31^0 =$

- A. 1 B. 31 C. -1 D. 0

11. $3^{-3} =$

- A. -27 B. $\frac{1}{9}$ C. -9 D. $\frac{1}{27}$

12. $\left(\frac{2}{5}\right)^{-3} =$
A. $-\frac{6}{5}$ **B.** $-\frac{8}{125}$ **C.** $\frac{8}{125}$ **D.** $\frac{125}{8}$
-
13. $(-1)^{87} =$
A. -87 **B.** 87 **C.** -1 **D.** 1
-
14. $(-2)^6 =$
A. -64 **B.** -12 **C.** 64 **D.** 12
-
15. If $2^{x+2} = 64$, then $x =$
A. 62 **B.** 4 **C.** 8 **D.** 6
-
16. If $13^{x-5} = 13^9$, then $x =$
A. -14 **B.** 9 **C.** 14 **D.** 4
-
17. $5^{x+2} =$
A. 10×5^x **B.** 25×5^x **C.** 5^{2x} **D.** $5^x + 25$
-
18. $(2m)^5 =$
A. $32m^5$ **B.** $32m^6$ **C.** $10m^5$ **D.** $2m^5$
-
19. $(x^2y)^3 \times (xy^4)^2 =$
A. $x^{12}y^{24}$ **B.** $x^{11}y^8$ **C.** x^8y^{10} **D.** x^8y^{11}
-
20. $2^3 \div 2^{-2} =$
A. 2^{-1} **B.** 2^{-5} **C.** 2^5 **D.** 2^1
-
21. If $3^m \div 3^{-2} = 729$, then $m =$
A. -4 **B.** 4 **C.** 8 **D.** -8
-
22. $(10^9 \div 10^4) \times 10^{-2} =$
A. 10^5 **B.** 1000 **C.** $10,000$ **D.** $\frac{1}{1000}$
-
23. $6^{\frac{3}{2}} \times 6^{\frac{1}{2}} =$
A. 36 **B.** $6^{\frac{3}{4}}$ **C.** $\frac{1}{36}$ **D.** 6
-
24. $(10^6 \div 10^8)^3 \times 10^4 =$
A. 10^{-6} **B.** $\frac{1}{100}$ **C.** 10^5 **D.** 100
-
25. $(4p^2)^2 \times (2p)^3 =$
A. $8p^7$ **B.** $48p^7$ **C.** $128p^{12}$ **D.** $128p^7$
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Key sheet

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

Solutions

1. In exponential form, $4 \times 4 \times 4 \times 4 \times 4 \times 4 =$

4 is multiplied by itself 6 times.

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

Ans: (B) 4^6

2. $2^8 =$

$$2^8 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$= 256$$

Ans: (D) 256

3. Which is the largest of 2^8 , 8^2 , 3^4 , 5^3 ?

$$2^8 = 256, 8^2 = 64, 3^4 = 81, 5^3 = 125$$

The largest is 2^8 .

Ans: (A) 2^8

4. 64 written as a power of 2 is

Dividing repeatedly by 2: 64, 32, 16, 8, 4, 2, that is 6 times.

$$64 = 2^6$$

Ans: (C) 2^6

5. $7^5 \times 7^9 =$

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

$$7^5 \times 7^9 = 7^{5+9} = 7^{14}$$

Ans: (A) 7^{14}

6. $\frac{8^{11}}{8^3} =$

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

$$\frac{8^{11}}{8^3} = 8^{11-3} = 8^8$$

Ans: (A) 8^8

7. $(6^5)^4 =$

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

$$(6^5)^4 = 6^{5 \times 4} = 6^{20}$$

Ans: (C) 6^{20}

8. $7^8 \times 3^8 =$

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

$$7^8 \times 3^8 = (7 \times 3)^8 = (21)^8$$

Ans: (D) $(21)^8$

9. $\frac{15^4}{5^4} =$

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

$$\frac{15^4}{5^4} = \left(\frac{15}{5}\right)^4 = 3^4 = 81$$

Ans: (B) 81

10. $31^0 =$

Using $a^0 = 1$ ($a \neq 0$)

$$31^0 = 1$$

Ans: (A) 1

11. $3^{-3} =$

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

$$3^{-3} = \frac{1}{3^3} = \frac{1}{27}$$

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

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

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

$$\left(\frac{2}{5}\right)^{-3} = \left(\frac{5}{2}\right)^3 = \frac{125}{8}$$

Ans: (D) $\frac{125}{8}$

13. $(-1)^{87} =$

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

$$(-1)^{87} = -1$$

Ans: (C) -1

14. $(-2)^6 =$

Using $(-a)^n = -a^n$ if n is odd, $(-a)^n = a^n$ if n is even

$$(-2)^6 = 2^6 = 64$$

Ans: (C) 64

15. If $2^{x+2} = 64$, then $x =$

Given, $2^{x+2} = 64$

Dividing 64 repeatedly by 2: 64, 32, 16, 8, 4, 2, so $64 = 2^6$.

$$\Rightarrow 2^{x+2} = 2^6$$

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

$$\Rightarrow x + 2 = 6$$

$$\Rightarrow x = 6 - 2$$

$$\Rightarrow x = 4$$

Ans: (B) 4

16. If $13^{x-5} = 13^9$, then $x =$

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

$$\Rightarrow x - 5 = 9$$

$$\Rightarrow x = 9 + 5$$

$$\Rightarrow x = 14$$

Ans: (C) 14

17. $5^{x+2} =$

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

$$5^{x+2} = 5^x \times 5^2 = 25 \times 5^x$$

Ans: (B) 25×5^x

18. $(2m)^5 =$

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

$$(2m)^5 = 2^5 \times m^5$$

$$= 32 \times m^5 = 32m^5$$

Ans: (A) $32m^5$

19. $(x^2y)^3 \times (xy^4)^2 =$

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

$$(x^2y)^3 \times (xy^4)^2 = x^6y^3 \times x^2y^8$$

$$\text{Using } a^m \times a^n = a^{m+n}: = x^8y^{11}$$

Ans: (D) x^8y^{11}

20. $2^3 \div 2^{-2} =$

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

$$2^3 \div 2^{-2} = \frac{2^3}{2^{-2}} = 2^{3-(-2)} = 2^{3+2} = 2^5$$

$$= 32$$

Ans: (C) 2^5

21. If $3^m \div 3^{-2} = 729$, then $m =$

Given, $3^m \div 3^{-2} = 729$

Dividing 729 repeatedly by 3: 729, 243, 81, 27, 9, 3, so $729 = 3^6$.

$$\Rightarrow 3^{m-(-2)} = 3^6 \left(\frac{a^m}{a^n} = a^{m-n} \right)$$

$$\Rightarrow 3^{m+2} = 3^6$$

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

$$\Rightarrow m + 2 = 6$$

$$\Rightarrow m = 6 - 2$$

$$\Rightarrow m = 4$$

Ans: (B) 4

22. $(10^9 \div 10^4) \times 10^{-2} =$
 $(10^9 \div 10^4) \times 10^{-2} = \frac{10^9}{10^4} \times 10^{-2}$
 $= 10^{9-4} \times 10^{-2} = 10^5 \times 10^{-2}$
 $= 10^{5-2} = 10^3$
 $= 1000$

Ans: (B) 1000

23. $6^{\frac{3}{2}} \times 6^{\frac{1}{2}} =$
Using $a^m \times a^n = a^{m+n}$
 $6^{\frac{3}{2}} \times 6^{\frac{1}{2}} = 6^{\frac{3}{2} + \frac{1}{2}}$
 $= 6^{\frac{4}{2}} = 6^2$
 $= 36$

Ans: (A) 36

24. $(10^6 \div 10^8)^3 \times 10^4 =$
 $(10^6 \div 10^8)^3 \times 10^4 = \left(\frac{10^6}{10^8}\right)^3 \times 10^4$
 $= (10^{6-8})^3 \times 10^4 = (10^{-2})^3 \times 10^4$
 $= 10^{-6} \times 10^4 ((a^m)^n = a^{m \times n})$
 $= 10^{-6+4} = 10^{-2}$
 $= \frac{1}{10^2} = \frac{1}{100}$

Ans: (B) $\frac{1}{100}$

25. $(4p^2)^2 \times (2p)^3 =$
Using $(ab)^n = a^n \times b^n$ and $(a^m)^n = a^{m \times n}$
 $(4p^2)^2 \times (2p)^3 = 4^2 \cdot (p^2)^2 \times 2^3 \cdot p^3$
 $= 16p^4 \times 8p^3$
 $= 128 \cdot p^{4+3} = 128p^7$

Ans: (D) $128p^7$
