

Exponents and Powers

Question 1.

Multiplicative inverse of $\frac{1}{7}$ is

- (a) 14
- (b) 7
- (c) 49
- (d) None of these

Answer: (b) 7

Question 2.

Simplify 2×10^3 .

- (a) 1000
- (b) 2000
- (c) 16000
- (d) None of these

Answer: (b) 2000

$$2 \times 10 \times 10 \times 10 = 2000.$$

Question 3.

Find $7^3 \div 7^3$.

- (a) 7^6
- (b) 7^9
- (c) 7^0
- (d) None of these

Answer: (c) 7^0

$$7^{3-3} = 7^0$$

Question 4.

The value of $(-1)^{47}$ is

- (a) -1
- (b) 1
- (c) 0
- (d) None of these

Answer: (a) -1

Question 5.

Express 72 as a product of powers.

- (a) $2^3 \times 3^2$
- (b) $3^3 \times 2^3$
- (c) $2^3 + 3^2$
- (d) None of these

Answer: (a) $2^3 \times 3^2$

Prime factors of $72 = 2 \times 2 \times 2 \times 3 \times 3 = 2^3 \times 3^2$.

Question 6.

Find the number from the following expanded forms $3 \times 10^4 + 7 \times 10^2 + 5 \times 10^0$.

- (a) 375
- (b) 30705
- (c) 3705
- (d) None of these

Answer: (b) 30705

$30000 + 700 + 5 = 30705$.

Question 7.

The short notation 10^4 stands for the product.

- (a) $10 \times 10 \times 10 \times 10$
- (b) 4×10
- (c) $10 + 10 + 10 + 10$
- (d) None of these

Answer: (a) $10 \times 10 \times 10 \times 10$

10 is multiplied four times.

Question 8.

Simplify $3^4 \div 3^4$.

- (a) 3^0
- (b) 3^{11}
- (c) 3^{28}
- (d) None of these

Answer: (a) 3^0

In division power.

Question 9.

The value of $(-1)^{91}$ is

- (a) 1
- (b) 0
- (c) -1
- (d) None of these

Answer: (c) -1

Question 10.

The value of $(-1)^{310}$ is

- (a) 1
- (b) -1
- (c) 0
- (d) None of these

Answer: (a) 1

Question 11.

Express using exponential notation 343.

- (a) 3^7
- (b) 7^3
- (c) 7
- (d) None of these

Answer: (b) 7^3

Prime factors of $343 = 7 \times 7 \times 7$.

Question 12.

Express 729 as a power of 3.

- (a) 9^3
- (b) 3^4
- (c) 3^6
- (d) 3^2

Answer: (c) 3^6

Question 13.

In 10^4 , 10 is called :

- (a) Base
- (b) Power
- (c) Exponent
- (d) None of these

Answer: (a) Base

Question 14.

The number which is multiplied by $(-8)^{-1}$ to obtain a product equal to 10^{-1} is ____.

- (a) $\frac{-4}{5}$
- (b) $\frac{-3}{5}$
- (c) $\frac{-1}{5}$
- (d) $\frac{-5}{4}$

Answer: (a) $\frac{-4}{5}$

Question 15.

Express in exponential form $2 \times 2 \times a \times a$.

- (a) $2^2 \cdot a^2$
- (b) $2^2 \cdot 2^0$
- (c) $2^2 + a^2$
- (d) None of these

Answer: (a) $2^2 \cdot a^2$

2 is multiplied two times and also a is multiplied two times.

Question 16.

Simplify $5^2 \div 5^6$.

- (a) 5^{-4}
- (b) 5^4
- (c) 5^8
- (d) None of these

Answer: (a) 5^{-4}

As $5^{2-6} = 5^{-4}$.

Question 17.

The value of $(-1)^{500}$ is

- (a) 1
- (b) -1
- (c) 0
- (d) None of these

Answer: (a) 1

Question 18.

Which is greater 2^3 or 3^2 .

- (a) 2^3
- (b) 3^2
- (c) Equal
- (d) None of these

Answer: (b) 3^2

$2^3 = 2 \times 2 \times 2 = 8$, $3^2 = 3 \times 3 = 9$.

Question 19.

Simplify 0×12^2 .

- (a) 1
- (b) 20
- (c) 0
- (d) None of these

Answer: (c) 0

0 is multiplied by any number gives result 0.

Question 20.

Find the value of $\frac{3^5}{3^5}$

- (a) 1
- (b) 0
- (c) 3
- (d) None of these

Answer: (a) 1

$$3^{5-5} = 3^0 = 1$$

Question 21.

The value of 11^0 is _____ .

- (a) 3
- (b) 11
- (c) 1
- (d) None of these

Answer: (c) 1

Question 22.

The exponential form of 100000 is

- (a) 10^3
- (b) 10^4
- (c) 10^5
- (d) none of these

Answer: (c) 10^5

Question 23.

$(-1)^3$ find value.

- (a) 1
- (b) -1
- (c) -3
- (d) None of these

Answer: (b) -1

Negative sign has odd number exponent.

Question 24.

Simplify $2^3 \times 5$.

- (a) 30
- (b) 40
- (c) 20
- (d) None of these

Answer: (b) 40

$$2^3 \times 5 = 2 \times 2 \times 2 \times 5 = 40.$$

Question 25.

Find the value of $2^0 + 3^0 + 4^0$.

- (a) 3
- (b) 0
- (c) 9
- (d) None of these

Answer: (a) 3

$$2^0 + 3^0 + 4^0 = 1 + 1 + 1 = 3.$$

Question 26.

Express 432 as a product of powers of prime factors.

- (a) $2^3 \times 3^3$
- (b) 8×27
- (c) 16×27
- (d) $2^4 \times 3^3$

Answer: (d) $2^4 \times 3^3$

Question 27.

Find the value of 11^2 .

- (a) 121
- (b) 22
- (c) 5.5
- (d) None of these

Answer: (a) 121

$$11 \times 11 = 121.$$

Question 28.

Simplify $a^2 \times a^4$.

- (a) a^8
- (b) a^6
- (c) a^2
- (d) None of these

Answer: (b) a^6

Powers are added as the base of both numbers is a.

Question 29.

Find the number from the following expanded forms

$$8 \times 10^4 + 6 \times 10^3 + 0 \times 10^2 + 4 \times 10^1 + 5 \times 10^0.$$

- (a) 86045
- (b) 8645
- (c) 86450
- (d) None of these

Answer: (a) 86045

$$8 \times 10^4 + 6 \times 10^3 + 0 \times 10^2 + 4 \times 10^1 + 5 \times 10^0 = 80000 + 6000 + 0 + 40 + 5.$$

Question 30.

Multiplicative inverse of $\frac{1}{5}$ is

- (a) 10
- (b) 3
- (c) 5
- (d) None of these

Answer: (c) 5

Question 31.

Solve 1^4 .

- (a) 1
- (b) 4
- (c) -1
- (d) None of these

Answer: (a) 1

1 is multiplied four times, i.e. $1 \times 1 \times 1 \times 1$.

Question 32.

Solve $2^2 \times 2^3$.

- (a) 2^6
- (b) 2^5
- (c) 4^6
- (d) None of these

Answer: (b) 2^5

Powers are added if the base are same in case of multiplication.

Question 33.

Solve $(3^0 + 2^0) \times 5^0$.

- (a) 2
- (b) 0
- (c) 5
- (d) None of these

Answer: (a) 2

$(1 + 1) \times 1 = 2 \times 1 = 2$.

Question 34.

The value of 7^0 is _____ .

- (a) 7
- (b) 21
- (c) 1
- (d) None of these

Answer: (c) 1

Question 35.

In 10^4 , 4 is called :

- (a) Base
- (b) Power
- (c) Exponent
- (d) None of

Answer: (c) Exponent

Question 36.

Identify the greater number (i) 4^3 or 3^4 .

- (a) 4^3
- (b) 3^4
- (c) Both are equal
- (d) None of these

Answer: (b) 3^4

$4 \times 4 \times 4 = 64$, and $3 \times 3 \times 3 \times 3 = 81$.

Question 37.

512 can be written in exponential form as

- (a) 2^3
- (b) 2^4
- (c) 2^9
- (d) 2^1

Answer: (c) 2^9

Question 38.

Find the value of $(2^3)^2$.

- (a) 64
- (b) 36
- (c) 81
- (d) None of these

Answer: (a) 64

$2^3 = 2 \times 2 \times 2 = 8$ and $8^2 = 8 \times 8 = 64$.

Question 39.

Solve $2^0 \times 3^0 \times 4^0$.

- (a) 1
- (b) 24
- (c) 0
- (d) None of these

Answer: (a) 1

$$2^0 \times 3^0 \times 4^0 = 1 \times 1 \times 1 = 1.$$

Question 40.

The value of 2^8 is

- (a) 1024
- (b) 256
- (c) 512
- (d) 128

Answer: (b) 256

Question 41.

Simplify 0×10^2 .

- (a) 0
- (b) 100
- (c) 20
- (d) None of these

Answer: (a) 0

0 is multiplied by any number gives result 0.

Question 42.

Express in exponential form : $(2 \times 3)^5$

- (a) $3^0 \times 3^0$
- (b) $5^2 \times 5^3$
- (c) 6^5
- (d) None of these

Answer: (c) 6^5

$$(a \times b)^x = (ab)^x.$$

Question 43.

Express 432 as a product of powers.

- (a) $4^2 \times 3^3$
- (b) $2^4 \times 3^3$

- (c) $2^4 + 3^4$
(d) None of these

Answer: (b) $2^4 \times 3^3$

Prime factor of 432 = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$.

Question 44.

Which is smaller 2^{10} or 10^2 ?

- (a) 2^{10}
(b) 10^2
(c) Both are equal
(d) None of these

Answer: (b) 10^2

$2^{10} = 1024$ and $10^2 = 100$, so 10^2 is smaller than 2^{10} .

Question 45.

Expresses 256 as a power of 2.

- (a) 2^8
(b) 2×8
(c) 2 multiplied 8 times
(d) None of these

Answer: (a) 2^8

Prime factors of 256 = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$.

Question 46.

The value of $(-1)^{75}$ is

- (a) 0
(b) 1
(c) -1
(d) None of these

Answer: (c) -1

Question 47.

The value of $(-1)^{400}$ is

- (a) 1

- (b) 0
- (c) -1
- (d) None of these

Answer: (a) 1

State whether the given statements are True or False.

Question 1.

$$10 \times 10^{11} = 100^{11}$$

Answer: False

Question 2.

$$2^3 > 5^2$$

Answer: False

Question 3.

$$2^3 \times 3^2 = 6^5$$

Answer: False

Question 4.

$$3^0 = (1000)^0$$

Answer: True

Match the following :

1. 72	(a) $2^4 \times 3^3$
2. 1000	(b) $2^3 \times 3^2$
3. 432	(c) $2^7 \times 5^3$
4. 16000	(d) $2^3 \times 5^3$

Answer:

1. 72	(b) $2^3 \times 3^2$
2. 1000	(d) $2^3 \times 5^3$
3. 432	(a) $2^4 \times 3^3$
4. 16000	(c) $2^7 \times 5^3$

Match the following :

1. $(2 \times 3)^5$	(a) $(-4)^3 \times m^3$
2. $(2a)^4$	(b) $2^5 \cdot 3^5$
3. $(-4m)^3$	(c) $2^4 \cdot a^4$

Answer:

1. $(2 \times 3)^5$	(b) $2^5 \cdot 3^5$
2. $(2a)^4$	(c) $2^4 \cdot a^4$
3. $(-4m)^3$	(a) $(-4)^3 \times m^3$

Match the following :

1. 5985.3	(a) 2.7×10^5
2. 65950	(b) 5.9853×10^3
3. 3430,000	(c) 6.595×10^4
4. 279404	(d) 3.43×10^6

Answer:

1. 5985.3	(b) 5.9853×10^3
2. 65950	(c) 6.595×10^4
3. 3430,000	(d) 3.43×10^6
4. 279404	(a) 2.7×10^5

Fill in the blanks.

1. $b^2 \times b^3 = \dots\dots\dots$

Answer: b^5

2. $a^m \times b^m = \dots\dots\dots$

Answer: $(ab)^m$

3. $a^0 = \dots\dots\dots$

Answer: 1

4. The number 10^4 is read as $\dots\dots\dots$ raised to the power of $\dots\dots\dots$.

Answer: 10, 4

5. $(-1)^{\text{even number}} = \dots\dots\dots$

Answer: 1

6. $c^4 \div c^5 = \dots\dots\dots$

Answer: c^{-1}

7. 10^4 is called the $\dots\dots\dots$ of 10000.

Answer: exponential form

8. $(-1)^{\text{odd number}} = \dots\dots\dots$

Answer: -1

9. $c^7 \div c^7 = \dots\dots\dots$

Answer: 1

10. Any number can be expressed as a decimal number between 1.0 and 10.0 including 1.0 multiplied by a power of 10. Such a form of a number is called its $\dots\dots\dots$.

Answer: standard form
