

**Exponents (Level 1)****MCQ Test, Set 04**

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.

- $x^3$  is read as  
**A.** 3 power  $x$  **B.**  $x$  times 3  
**C.**  $x$  power 3 (or)  $x$  cube **D.**  $x$  squared
- $4^4 = 256$ . Then  $4^5 =$   
**A.** 260 **B.** 1024 **C.** 512 **D.** 1280
- $1,00,000 =$   
**A.**  $5^{10}$  **B.**  $10^6$  **C.**  $10^4$  **D.**  $10^5$
- If  $7^{\square} = 16,807$ , the number in the box is  
**A.** 4 **B.** 5 **C.** 6 **D.** 2401
- $p^8 \times p^3 =$   
**A.**  $p^5$  **B.**  $p^{11}$  **C.**  $p^{24}$  **D.**  $2p^{11}$
- $6^{14} \div 6^7 =$   
**A.**  $6^7$  **B.**  $6^{21}$  **C.** 1 **D.**  $6^2$
- $(2^9)^3 =$   
**A.**  $6^9$  **B.**  $2^{27}$  **C.**  $18^3$  **D.**  $2^{12}$
- $2^7 \times 15^7 =$   
**A.**  $(17)^{14}$  **B.**  $(30)^7$  **C.**  $(30)^{14}$  **D.**  $(17)^7$
- $\frac{40^2}{8^2} =$   
**A.** 10 **B.** 1024 **C.** 25 **D.** 5
- $2 \times 9^0 =$   
**A.** 0 **B.** 2 **C.** 18 **D.** 1
- $5^{-2} =$   
**A.** -25 **B.**  $\frac{1}{10}$  **C.** -10 **D.**  $\frac{1}{25}$

12.  $\left(\frac{5}{2}\right)^{-2} =$   
**A.**  $-\frac{25}{4}$  **B.**  $\frac{4}{25}$  **C.**  $-5$  **D.**  $\frac{25}{4}$
- 
13.  $(-1)^n = -1$  when  $n$  is  
**A.** an odd number **B.** a multiple of 4  
**C.** an even number **D.** zero
- 
14.  $(-x)^8 =$   
**A.**  $8x$  **B.**  $-8x$  **C.**  $x^8$  **D.**  $-x^8$
- 
15. The rule  $a^m = a^n \Rightarrow m = n$  is true only when  
**A.**  $a \neq -1, 0, 1$  **B.**  $a$  is any number  
**C.**  $a \neq 1$  only **D.**  $a \neq 0$  only
- 
16. If  $2^{x-3} = 1024$ , then  $x =$   
**A.** 10 **B.** 7 **C.** 1027 **D.** 13
- 
17.  $\frac{1}{9}$  written as a power of 9 is  
**A.**  $9^{-1}$  **B.**  $9^0$  **C.**  $-9^1$  **D.**  $9^1$
- 
18.  $(ab^2)^3 =$   
**A.**  $ab^6$  **B.**  $a^4b^5$  **C.**  $a^3b^6$  **D.**  $3a^3b^6$
- 
19.  $\frac{(3^3)^2 \times 3^4}{3^7} =$   
**A.**  $3^{17}$  **B.**  $3^2$  **C.**  $3^{-3}$  **D.**  $3^3$
- 
20.  $5^{-4} \times 5^6 =$   
**A.**  $5^{-2}$  **B.**  $5^{-10}$  **C.**  $5^{-24}$  **D.**  $5^2$
- 
21. If  $4^x = \frac{1}{64}$ , then  $x =$   
**A.** 3 **B.**  $-4$  **C.**  $-3$  **D.**  $-2$
- 
22.  $(2^{-1} \times 5^{-1}) \div 10^{-2} =$   
**A.**  $-10$  **B.**  $\frac{1}{10}$  **C.** 10 **D.**  $\frac{1}{1000}$
- 
23.  $2^{\frac{5}{3}} \times 2^{-\frac{1}{3}} \times 2^{\frac{2}{3}} =$   
**A.**  $2^{\frac{2}{3}}$  **B.** 8 **C.**  $\frac{1}{4}$  **D.** 4
- 
24.  $(-2)^{-9} \div (-2)^{-5} =$   
**A.**  $\frac{1}{16}$  **B.**  $-\frac{1}{16}$  **C.**  $-16$  **D.** 16
- 
25.  $(3t)^4 \times (2t)^3 =$   
**A.**  $648t^7$  **B.**  $648t^{12}$  **C.**  $648t^8$  **D.**  $6t^7$
-

## Key sheet

---

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

## Solutions

---

1.  $x^3$  is read as

$$x^3 = x \times x \times x$$

It is read as  $x$  power 3 (or)  $x$  cube.

**Ans: (C)  $x$  power 3 (or)  $x$  cube**

---

2.  $4^4 = 256$ . Then  $4^5 =$

$$4^5 = 4^4 \times 4$$

$$= 256 \times 4 = 1024$$

**Ans: (B) 1024**

---

3. 1,00,000 =

1,00,000 is 1 followed by 5 zeros.

$$1,00,000 = 10^5$$

**Ans: (D)  $10^5$**

---

4. If  $7^{\square} = 16,807$ , the number in the box is

Dividing repeatedly by 7: 16,807, 2401, 343, 49, 7, that is 5 times.

$$16,807 = 7^5$$

**Ans: (B) 5**

---

5.  $p^8 \times p^3 =$

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

$$p^8 \times p^3 = p^{8+3} = p^{11}$$

**Ans: (B)  $p^{11}$**

---

6.  $6^{14} \div 6^7 =$

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

$$6^{14} \div 6^7 = 6^{14-7} = 6^7$$

**Ans: (A)  $6^7$**

---

7.  $(2^9)^3 =$

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

$$(2^9)^3 = 2^{9 \times 3} = 2^{27}$$

**Ans: (B)  $2^{27}$**

---

8.  $2^7 \times 15^7 =$

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

$$2^7 \times 15^7 = (2 \times 15)^7 = (30)^7$$

**Ans: (B)  $(30)^7$**

---

9.  $\frac{40^2}{8^2} =$

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

$$\frac{40^2}{8^2} = \left(\frac{40}{8}\right)^2 = 5^2 = 25$$

Ans: (C) 25

---

10.  $2 \times 9^0 =$

$$9^0 = 1$$

$$2 \times 9^0 = 2 \times 1 = 2$$

Ans: (B) 2

---

11.  $5^{-2} =$

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

$$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$$

Ans: (D)  $\frac{1}{25}$

---

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

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

$$\left(\frac{5}{2}\right)^{-2} = \left(\frac{2}{5}\right)^2 = \frac{4}{25}$$

Ans: (B)  $\frac{4}{25}$

---

13.  $(-1)^n = -1$  when  $n$  is

The notes:  $(-1)^{\text{odd number}} = -1$ , e.g.  $(-1)^3 = -1$ .

Ans: (A) an odd number

---

14.  $(-x)^8 =$

8 is even, so  $(-x)^8 = x^8$

Ans: (C)  $x^8$

---

15. The rule  $a^m = a^n \Rightarrow m = n$  is true only when

$$1^4 = 1^7, 0^2 = 0^3, (-1)^2 = (-1)^4 \text{ but the powers are not equal.}$$

So the rule needs  $a \neq -1, 0, 1$ .

Ans: (A)  $a \neq -1, 0, 1$

---

16. If  $2^{x-3} = 1024$ , then  $x =$

Given,  $2^{x-3} = 1024$

Dividing 1024 repeatedly by 2: 1024, 512, 256, 128, 64, 32, 16, 8, 4, 2, so  $1024 = 2^{10}$ .

$$\Rightarrow 2^{x-3} = 2^{10}$$

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

$$\Rightarrow x - 3 = 10$$

$$\Rightarrow x = 10 + 3$$

$$\Rightarrow x = 13$$

Ans: (D) 13

---

17.  $\frac{1}{9}$  written as a power of 9 is

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

$$\frac{1}{9} = 9^{-1}$$

Ans: (A)  $9^{-1}$

---

18.  $(ab^2)^3 =$

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

$$(ab^2)^3 = a^3 \times (b^2)^3$$

$$= a^3 b^6$$

Ans: (C)  $a^3 b^6$

---

19.  $\frac{(3^3)^2 \times 3^4}{3^7} =$

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

$$\frac{(3^3)^2 \times 3^4}{3^7} = \frac{3^6 \times 3^4}{3^7} = \frac{3^{10}}{3^7}$$

Using  $\frac{a^m}{a^n} = a^{m-n}$ :  $3^{10-7} = 3^3$

Ans: (D)  $3^3$

---

20.  $5^{-4} \times 5^6 =$

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

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

$$= 25$$

Ans: (D)  $5^2$

---

21. If  $4^x = \frac{1}{64}$ , then  $x =$

Given,  $4^x = \frac{1}{64}$

$$\frac{1}{64} = \frac{1}{4^3} = 4^{-3} \text{ (dividing 64 repeatedly by 4: 64, 16, 4)}$$

$$\Rightarrow 4^x = 4^{-3}$$

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

$$\Rightarrow x = -3$$

Ans: (C)  $-3$

---

22.  $(2^{-1} \times 5^{-1}) \div 10^{-2} =$

$$(2^{-1} \times 5^{-1}) \div 10^{-2} = \left(\frac{1}{2} \times \frac{1}{5}\right) \div \frac{1}{10^2}$$

$$= \frac{1}{10} \div \frac{1}{100}$$

$$= \frac{1}{10} \times 100 = 10$$

Ans: (C) 10

---

23.  $2^{\frac{5}{3}} \times 2^{-\frac{1}{3}} \times 2^{\frac{2}{3}} =$

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

$$2^{\frac{5}{3}} \times 2^{-\frac{1}{3}} \times 2^{\frac{2}{3}} = 2^{\frac{5}{3} + (-\frac{1}{3}) + \frac{2}{3}}$$

$$= 2^{\frac{6}{3}} = 2^2$$

$$= 4$$

Ans: (D) 4

---

24.  $(-2)^{-9} \div (-2)^{-5} =$

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

$$\begin{aligned} (-2)^{-9} \div (-2)^{-5} &= (-2)^{-9-(-5)} = (-2)^{-9+5} = (-2)^{-4} \\ &= \frac{1}{(-2)^4} = \frac{1}{16} = \frac{1}{16} \end{aligned}$$

Ans: (A)  $\frac{1}{16}$

---

25.  $(3t)^4 \times (2t)^3 =$

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

$$(3t)^4 \times (2t)^3 = 3^4 \cdot t^4 \times 2^3 \cdot t^3$$

$$= 81t^4 \times 8t^3$$

$$= 648 \cdot t^{4+3} = 648t^7$$

Ans: (A)  $648t^7$

---