[40]

*** Choose The Right Answer From The Given Options.[1 Marks Each]**

1. Tick (✓) the correct answer the following:
   The value of $(3^{-1} + 4^{-1})^{-1} \div 5^{-1}$ is:
   (A) $\frac{7}{10}$ (B) $\frac{60}{7}$ (C) $\frac{7}{5}$ (D) $\frac{7}{15}$

   Ans. :

   b. $\frac{60}{7}$

   Solution:

   $\left(-3^{-1}+4^{-1}\right) \div 5^{-1}$

   $= \left(\frac{1}{3}+\frac{1}{4}\right)^{-1} \div \frac{1}{5}$

   $= \left(\frac{4+3}{12}\right)^{-1} \div \frac{1}{5}$

   $= \left(\frac{7}{12}\right)^{-1} \div \frac{1}{5}$

   $= \left(\frac{12}{7}\right) \div \frac{1}{5}$

   $= \left(\frac{12}{7}\right) \times 5$

   $= \frac{60}{7}$

2. Thickness of an aluminum sheet is 0.982mm. Express it into standard form:
   (A) 9.82×10^{-4} (B) 98.2×10^{-2} (C) 9.82×10^{-1} (D) 982×10^{-3}

   Ans. :

   c. 9.82×10^{-1}

   Solution:

   $0.982 = 981 \times 10^{-3}$

   $= 9.82 \times 10^{2} \times 10^{-3}$

   $= 9.82 \times 10^{-1}$

3. Simplify $2^7 \times \left(\frac{1}{8}\right)$ and write the answer in exponent form:
   (A) 2^{24} (B) 2^4 (C) 2^3 (D) 2^5

   Ans. :

   b. 2^4

   Solution:

   $2^7 \times \left(\frac{1}{8}\right) = 2^7 \times \left(\frac{1}{2\times2\times2}\right)$

   $= 2^7 \times \frac{1}{2^3}$

   $\Rightarrow \frac{1}{2^3} = 2^{-3}$

   $\Rightarrow 2^7 \times 2^{-3}$ $\left(\mathrm{a^m} \times \mathrm{a^n} = \mathrm{a}^{m+n}\right)$

   $= 2^{7+(-3)}$

   $= 2^4$

4. If $(-3)^{m+1} \times (-3)^5 = (-3)^7$, then the value of m is:
   (A) 5 (B) 7 (C) 1 (D) 3

   Ans. :

   c. 1

   Solution:

   $(-3)^{m+1} \times (-3)^5 = (-3)^7$

   $(-3)^{m+1+5} = (-3)^7$

   $(-3)^{m+6} = (-3)^7$

   Since, base are equal on both the sides, hence if we compare the powers,

   m + 6 = 7

   m = 7 - 6

   = 1

5. 384467000 is equal to:

(A) 3.84467×10^8 (B) 3.84467×10^3 (C) 3.84467×10^7 (D) 3.84467×10^6

Ans. :

a. 3.84467×10^8

Solution:

$384467000 = 3.84467 \times 10^8$

6. A group of students were given an assignment to collect different types of leaves. The group collected 32 types of leaves. Represent the number of leaves collected in the form of exponential expression with its base being indivisible.

(A) 2^5 (B) 2^3 (C) 2^4 (D) None of the these

Ans. :

a. 2^5

7. Tick (✓) the correct answer the following:

The value of $\left(\frac{2}{5}\right)^{-3}$ is:

(A) $-\frac{8}{125}$ (B) $\frac{25}{4}$ (C) $\frac{125}{8}$ (D) $-\frac{2}{5}$

Ans. :

c. $\frac{125}{8}$

Solution:

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

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

$= \frac{5\times5\times5}{2\times2\times2}$

$= \frac{125}{8}$

8. Simplify $4^{-4} \times \left(\frac{3}{4}\right)^{-4}$ and write the answer in exponent form:

(A) $\frac{1}{3^4}$ (B) $\frac{4^4}{3^4}$ (C) 3^4 (D) $\frac{1}{3^3}$

Ans. :

a. $\frac{1}{3^4}$

Solution:

$4^{-4} \times \left(\frac{3}{4}\right)^{-4} = \frac{1}{4^4} \times \frac{3^{-4}}{4^{-4}}$

$\frac{1}{4^4} \times \frac{3^{-4}}{4^{-4}} = \frac{1}{4^4} \times \frac{4^4}{3^4}$

$= \frac{1}{3^4}$

9. The standard form for 0.000064 is:

(A) 64×10^4 (B) 64×10^{-4} (C) 6.4×10^5 (D) 6.4×10^{-5}

Ans. :

d. 6.4×10^{-5}

Solution:

Given,

$0.000064 = 0.64 \times 10^{-4}$

$= 6.4 \times 10^{-5}$

Hence,

standard form of 0.000064 is 6.4×10^{-5}.

10. Tick (✓) the correct answer the following:

If $(2^{3x-1} + 10) \div 7 = 6$, then x is equal to:

(A) -2 (B) 0 (C) 1 (D) 2

Ans. :

d. 2

Solution:

$\left[2^{3x-1} + 10\right] \div 7 = 6$

$= 2^{3x-1} + 10 = 6 \times 7$

$= 2^{3x-1} + 10 = 42$

$\Rightarrow 2^{3x-1} = 42 - 10$

$\Rightarrow 2^{3x-1} = 32$

$\Rightarrow 2^{3x-1} = (2)^5$

$\therefore 3x - 1 = 5$

$\Rightarrow 3x = 5 + 1$

$\Rightarrow 3x = 6$

$\Rightarrow x = \frac{6}{3}$

$\Rightarrow x = 2$

11. Tick (✓) the correct answer the following:

$\left(\frac{-5}{3}\right)^{-1} = \ ?$

(A) $\frac{5}{3}$ (B) $\frac{3}{5}$ (C) $\frac{-3}{5}$ (D) None of these.

Ans. :

c. $\frac{-3}{5}$

Solution:

$\left(\frac{-5}{3}\right)^{-1} = \left(\frac{-3}{5}\right)^{1}$

$= \frac{-3}{5} \left\{ \because \left(\frac{1}{x}\right)^{-m} = x^m \right\}$

12. $3^m + 3^{-3} = 3^5 \Rightarrow$ m is equal to:

(A) 1 (B) 2 (C) 3 (D) 4

Ans. :

b. 2

Solution:

$3^m + 3^{-3} = 3^5$

$\Rightarrow 3^{m+3} = 3^5$

$\Rightarrow m + 3 = 5$

$\Rightarrow m = 2$

13. If $\log_{10}^{7} = 0.81$ and $\log_{10}^{2} = 0.30$ then $\log_{4}^{49}$ is equal to:

(A) 2.7 (B) 2.1 (C) 3.0 (D) 3.1

Ans. :

a. 2.7

14. Which of the following is used as a form of 5.05×10^6 ?

(A) 505000 (B) 505000000 (C) 5050000 (D) 50500000

Ans. :

c. 5050000

Solution:

5.05×10^6

$= 5.05 \times 1000000 = 5050000$

15. $\left(\frac{2}{3}\right)^{-5} \times \left(\frac{5}{7}\right)^{-5}$ is equal to:

(A) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{-10}$ (B) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{-5}$ (C) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{25}$ (D) $\left(\frac{2}{3} \times \frac{5}{7}\right)^{-25}$

Ans. :

b. $\left(\frac{2}{3} \times \frac{5}{7}\right)^{-5}$

Solution:

We have:

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

16. Tick (✓) the correct answer the following:

The value of x for which $\left(\frac{7}{12}\right)^{-4} \times \left(\frac{7}{12}\right)^{3x} = \left(\frac{7}{12}\right)^{5}$, is:

(A) -1 (B) 1 (C) 2 (D) 3

Ans. :

d. 3

Solution:

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

$\Rightarrow \left(\frac{7}{12}\right)^{3x-4}$

$= \left(\frac{7}{12}\right)^{5}$

$= 3x - 4 = 5$

$= 3x = 5 + 4 = 9$

$\Rightarrow x = \frac{9}{3}$

$= 3$

17. $(-9)^3 \div (-9)^8$ is equal to:

a. $(9)^5$

b. $(9)^{-5}$

c. $(-9)^5$

d. $(-9)^{-5}$

Ans. :

d. $(-9)^{-5}$

Solution:

Given,

$(-9)^3 \div (-9)^8$

Using law of exponents, $a^m + a^n = (a)^{m-n}$ [$\because$ a is non-zero integer]

$\therefore (-9)^3 + (-9)^8 = (-9)^{3-8}$

$(-9)^{-5}$

18. $\left(\frac{-1}{2}\right)^5 \times \left(\frac{-1}{2}\right)^3$ is equal to:

a. $\left(\frac{-1}{2}\right)^8$

b. $-\left(\frac{1}{2}\right)^8$

c. $\left(\frac{1}{4}\right)^8$

d. $\left(-\frac{1}{2}\right)^{15}$

Ans. :

a. $\left(\frac{-1}{2}\right)^8$

Solution:

We have:

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

$= \left(\frac{-1}{2}\right)^8$

19. Tick (✓) the correct answer the following:

The value of $(3^{-1} + 4^{-1})^{-1} \div 5^{-1}$ is:

a. $\frac{7}{10}$

b. $\frac{60}{7}$

c. $\frac{7}{5}$

d. $\frac{7}{15}$

Ans. :

b. $\frac{60}{7}$

Solution:

$\left(-3^{-1} + 4^{-1}\right) \div 5^{-1}$

$= \left(\frac{1}{3} + \frac{1}{4}\right)^{-1} \div \frac{1}{5}$

$= \left(\frac{4+3}{12}\right)^{-1} \div \frac{1}{5}$

$= \left(\frac{7}{12}\right)^{-1} \div \frac{1}{5}$

$= \left(\frac{12}{7}\right) \div \frac{1}{5}$

$= \left(\frac{12}{7}\right) \times 5$

$= \frac{60}{7}$

20. Tick (✓) the correct answer the following:

$\left\{\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3} = \ ?$

a. $\frac{19}{64}$
b. $\frac{27}{16}$
c. $\frac{64}{19}$
d. $\frac{16}{25}$

Ans. :

a. $\frac{19}{64}$

Solution:

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

$= \left(3^3 - 2^3\right) \div (4)^3$

$= (27 - 8) \div 64$

$= \frac{19}{64}$

21. Tick (✓) the correct answer the following:

The value of x for which $\left(\frac{7}{12}\right)^{-4} \times \left(\frac{7}{12}\right)^{3x} = \left(\frac{7}{12}\right)^{5}$, is:

a. -1
b. 1
c. 2
d. 3

Ans. :

d. 3

Solution:

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

$\Rightarrow \left(\frac{7}{12}\right)^{3x-4}$

$= \left(\frac{7}{12}\right)^{5}$

$= 3x - 4 = 5$

$= 3x = 5 + 4 = 9$

$\Rightarrow x = \frac{9}{3}$

$= 3$

22. The value of $\left(\frac{2}{5}\right)^{-3}$ is

(A) $-\frac{8}{125}$ (B) $\frac{25}{4}$ (C) $\frac{125}{8}$ (D) $-\frac{2}{5}$

Ans. : (C) $\frac{125}{8}$

23. The value of $(-3)^{-4}$ is

(A) 12 (B) 81 (C) $-\frac{1}{12}$ (D) $\frac{1}{81}$

Ans. : (D) $\frac{1}{81}$

24. $\left(2^{-5} \div 2^{-2}\right) = ?$

(A) $\frac{1}{128}$ (B) $\frac{-1}{128}$ (C) $-\frac{1}{8}$ (D) $\frac{1}{8}$

Ans. : (D) $\frac{1}{8}$

25. The value of $\left(3^{-1}+4^{-1}\right)^{-1} \div 5^{-1}$ is

(A) $\frac{7}{10}$ (B) $\frac{60}{7}$ (C) $\frac{7}{5}$ (D) $\frac{7}{15}$

Ans. : (B) $\frac{60}{7}$

26. $\left(\frac{1}{2}\right)^{-2}+\left(\frac{1}{3}\right)^{-2}+\left(\frac{1}{4}\right)^{-2}=?$

(A) $\frac{61}{144}$ (B) $\frac{144}{61}$ (C) 29 (D) $\frac{1}{29}$

Ans. : (C) 29

27. $\left\{\left(\frac{1}{3}\right)^{-3}-\left(\frac{1}{2}\right)^{-3}\right\} \div\left(\frac{1}{4}\right)^{-3}=?$

(A) $\frac{19}{64}$ (B) $\frac{27}{16}$ (C) $\frac{64}{19}$ (D) $\frac{16}{25}$

Ans.: (A) $\frac{19}{64}$

28. $\left[\left\{\left(-\frac{1}{2}\right)^{2}\right\}^{-2}\right]^{-1}=?$

(A) $\frac{1}{16}$ (B) 16 (C) $-\frac{1}{16}$ (D) -16

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

29. The value of x for which $\left(\frac{7}{12}\right)^{-4} \times\left(\frac{7}{12}\right)^{3x}=\left(\frac{7}{12}\right)^{0}$, is

(A) -1 (B) 1 (C) 2 (D) 3

Ans. : (D) 3

30. If $\left(2^{3x-1}+10\right) \div 7=6$, then x is equal to

(A) -2 (B) 0 (C) 1 (D) 2

Ans. : (D) 2

31. $\left(\frac{-5}{3}\right)^{-1}=?$

(A) $\frac{5}{3}$ (B) $\frac{3}{5}$ (C) $\frac{-3}{5}$ (D) none of these

Ans. : (C) $\frac{-3}{5}$

32. $\left(-\frac{1}{2}\right)^{3}=?$

(A) $\frac{-1}{6}$ (B) $\frac{1}{6}$ (C) $\frac{1}{8}$ (D) $\frac{-1}{8}$

Ans. : (D) $\frac{-1}{8}$

33. $\left(\frac{-3}{4}\right)^{2}=?$

(A) $\frac{-9}{16}$ (B) $\frac{9}{16}$ (C) $\frac{16}{9}$ (D) $\frac{-16}{9}$

Ans. : (B) $\frac{9}{16}$

34. 3670000 in standard form is

(A) 367×10^{4} (B) 36.7×10^{5} (C) 3.67×10^{6} (D) none of these

Ans. : (C) 3.67×10^{6}

35. 0.0000463 in standard form is

(A) 463×10^{-7} (B) 4.63×10^{-5} (C) 4.63×10^{-9} (D) 46.3×10^{-6}

Ans. : (B) 4.63×10^{-5}

36. 0.000367×10^{4} in usual form is

(A) 3.67 (B) 36.7 (C) 0.367 (D) 0.0367

Ans.: (A) 3.67

37. Tick (✓) the correct answer the following:

0.000367×10^{4} in usual form is:

a. 3.67

b. 36.7
c. 0.367
d. 0.0367

Ans. :

a. 3.67

Solution:

0.000367×10^4

$= 0.000367 \times 10000$

$= \frac{367}{1000000} \times 10000$

$= \frac{367}{100}$

$= 3.67$

38. The standard form of 5126000 is

(A) 5.126×10^4 (B) 5.126×10^6 (C) 5.126×10^{-4} (D) 5.126×10^{-6}

Ans. : (B) 5.126×10^6

39. If $\frac{8^{2n+1}}{8^{-3}} = 8^5$, then the value of n is

(A) $\frac{1}{2}$ (B) $\frac{-1}{2}$ (C) 2 (D) -2

Ans.: (A) $\frac{1}{2}$

40. The distance of planet Neptune from the Sun is 4495000000000000 km . Which of the following can be another way of representing the distance (in km) between the Neptune and the Sun?

(A) 4.495×10^{14} (B) 4.495×10^{15} (C) 4.495×10^{16} (D) 4.495×10^{17}

Ans. : (B) 4.495×10^{15}

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