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Logarithms questions for CDSE and Railways

Directions: Study the following questions carefully and choose the right answer:

Logarithms quiz 1

1. The value of $\log 2$ is 0.3010, then the number of digits in 5_{25} is:

- A. 6
B. 8
C. 10
D. 18

2. Provided $\log_{27} x + \log_3 x = 4$, then x is equal to:

- A. 14
B. 17
C. 27
D. 35

3. What is the value of $\log_2(\log_6 216)$ is:

- A. $\log_2 5$
B. 3
C. $\log_2 3$
D. 5

4. What is the value of $\log_7(1/343)$ is:

- A. 2
B. 3
C. -2
D. -3

5. The value of $\text{Log}_2 32$ is ?

- A. 2
B. 3
C. 5
D. 7

6. The value of $\log 2$ is 0.3010, then the number of digits in $\log 2^6$ is:

- A. 1
B. 1.8
C. 2
D. 2.4

7. Provided $\log_5 25 + \log_5 5 = x$, then what is the value of x ?

- A. 3 B. 5
C. 7 D. 8

8. If $\log_{1296} x = -1/4$, then x is equal to:

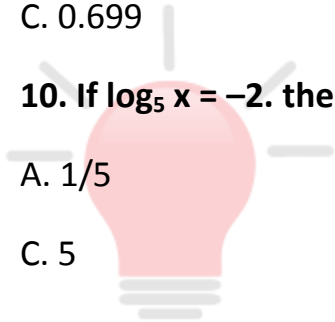
- A. 1/6 B. 3
C. 1/5 D. 4

9. Provided $\log_{10} 2 = 0.3010$, then the value of $\log_{10} 20$ is:

- A. 1.301 B. 0.301
C. 0.699 D. 2.301

10. If $\log_5 x = -2$, then, x is equal to:

- A. 1/5 B. 1/25
C. 5 D. 25



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Correct answers:

1	2	3	4	5	6	7	8	9	10
D	C	C	D	C	C	A	A	A	B

Explanations:

1). $\log 5^{25} \Rightarrow 25 \log\left[\frac{10}{2}\right]$

$$\Rightarrow 25 [\log 10 - \log 2] \Rightarrow 25 (1 - 0.3010) \Rightarrow 25 \times 0.699 \Rightarrow 17.5.$$

\therefore Characteristic = 17. Hence, the number of digits in 5^{25} is 18.

Hence, option D is correct.

2). $\log_{27} x + \log_3 x = 4$

$$\Rightarrow \frac{\log x}{\log 27} + \frac{\log x}{\log 3} = 4.$$

$$\Rightarrow \frac{\log x}{3 \log 3} + \frac{\log x}{\log 3} = 4.$$

$$\Rightarrow \frac{\log x + 3 \log x}{3 \log 3} = 4 \Leftrightarrow 4 \log x = 12 \log 3$$

$$\Leftrightarrow \log x = 3 \log 3 \Leftrightarrow \log x = \log (3^3) = \log 27 \Leftrightarrow x = 27.$$

Hence, option C is correct.

3). Let $\log_6 216 = y$. Then, $6^x = 216 = 6^3 \Rightarrow x = 3$.

Let $\log_2 (\log_6 216) = y$.

Then $\log_2 3 = y$.

or $2^y = 3 \Rightarrow y = \log_2 3$

$$\therefore \log_2(\log_6 216) = \log_2 3.$$

Hence, option C is correct.

4). Let $\log_7\left(\frac{1}{343}\right) = n$ Then, $7^n = \frac{1}{343}$

$$\Rightarrow 7^n = 7^{-3} \Rightarrow n = -3.$$

$$\therefore \log_7\left(\frac{1}{343}\right) = -3.$$

Hence, option D is correct.

5). Let $\log_2 32 = n$, then, $2^n = 2^5 \Rightarrow n = 5$.

$$\therefore \log_2 32 = 5.$$

Hence, option C is correct.

6). $\log 2^6 \Rightarrow 6 \log 2 = 6 \times 0.3010 \Rightarrow 1.806 = 1.8$.

Hence, option C is correct.

7). $\log_5 25 + \log_5 5 = x \Rightarrow \log_5 (25 \times 5) = x$.

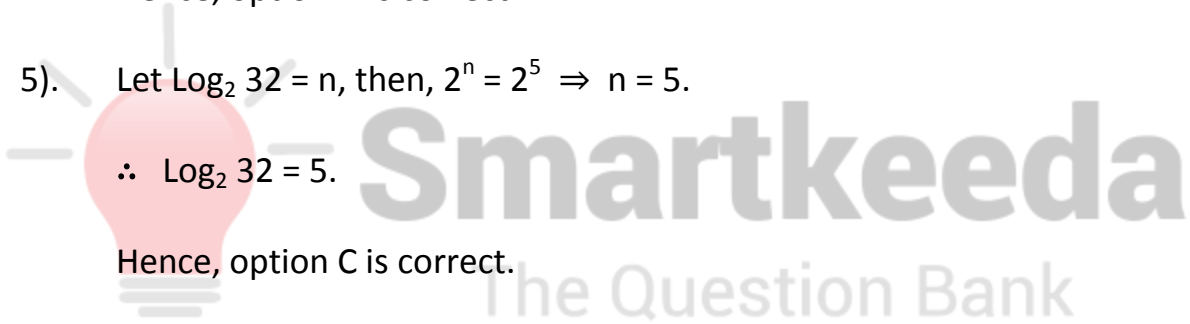
$$\Rightarrow x = \log_5 (125) = \log_5 (5^3) = 3 \log_5 5 \Rightarrow 3 \times 1 = 3.$$

Hence, option A is correct.

8). $\log_{1296} x = -\frac{1}{4}$ then,

$$x = (1296)^{-1/4} \Rightarrow (6^4)^{-1/4} = \frac{1}{6}.$$

Hence, option A is correct.



$$9). \quad \log_{10} 20 \Rightarrow \log_{10}\left(\frac{100}{5}\right) = \log_{10} 100 - \log_{10} 5$$

$$\Rightarrow 2 - \log_{10} 5$$

$$2 - \log_{10}\left(\frac{10}{2}\right) \Rightarrow 2 - (\log_{10} 10 - \log_{10} 2)$$

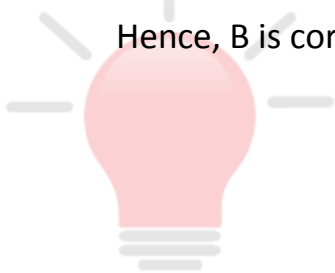
$$\Rightarrow 2 - (1 - 0.3010) \Rightarrow 2 - 1 + 0.3010 = 1.3010.$$

$$\Rightarrow 2 - (1 - 0.3010) \Rightarrow 2 - 1 + 0.3010 = 1.3010.$$

Hence, option A is correct.

$$10). \quad \log_5 x = -2 \Rightarrow x = 5^{-2} = \frac{1}{5^2} = \frac{1}{25}.$$

Hence, B is correct.



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