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IIT JEE | MEDICAL | FOUNDATION

IIT JEE - 2021

Quiz 1 | Function | Mathematics

1. The domain of definition of the function $f(x) = \dfrac{1}{x^{\log_{10} x}}$ is:

   (A) $(0, 1) \cup (1, \infty)$ **(B)** $(0, \infty)$ **(C)** $[0, \infty)$ **(D)** $[0, 1) \cup (1, \infty)$

2. If $f(x)$ is defined on $(0, 1)$, then the domain of $g(x) = f(e^x) + f(\log_e |x|)$ is:

   (A) $(-1, e)$ **(B)** $(1, e)$ **(C)** $(-e, -1)$ **(D)** $(-e, 1)$

3. The function $f(x) = \dfrac{\sqrt{|\tan x| + \tan x}}{\sqrt{3x}}$ is defined for:

   (A) R **(B)** $R - \left\{\dfrac{1}{3}\right\}$

   (C) $R^+ - \left\{n\pi + \dfrac{\pi}{2}\Big| n \in I^+\right\}$ **(D)** None of these

4. The minimum value of $f(x) = |x-1| + |x-2| + |x-3|$ is equal to:

   (A) 1   **(B)** 2   **(C)** 3   **(D)** 0

5. The domain of the function: $f(x) = \log_3 \left[-(\log_3 x)^2 + 5\log_3 x - 6\right]$ is:

   (A) $(0, 9) \cup (27, \infty)$ **(B)** $[9, 27]$ **(C)** $(9, 27)$ **(D)** None of these

6. Which of the following when simplified reduces to unity?

   I. $\log_{1.5} \log_4 \log_{\sqrt{3}} 81$ **II.** $\log_2 \sqrt{6} + \log_2 \sqrt{\dfrac{2}{3}}$

   III. $-\dfrac{1}{6}\log_{\frac{\sqrt{3}}{2}}\left(\dfrac{64}{27}\right)$ **IV.** $\log_{3.5}(1 + 2 + 3 \div 6)$

   The correct choice is:

   (A) I only   **(B)** II and IV only   **(C)** I and III only   **(D)** All the above

7. If $\log_6 \log_2 \left[\sqrt{4x + 2} + 2\sqrt{x}\right] = 0$, then x is:

   (A) 1/2   **(B)** 1/4   **(C)** 1/16   **(D)** None of these

8. The domain of the function $f(x) = \sqrt{\log_{10}\left(\dfrac{5x - x^2}{4}\right)}$ is $x \in$:

(A) [1, 4]   (B) (1, 4)   (C) (0, 5)   (D) [0, 5]

9. The domain of the function $f(x) = \dfrac{\sqrt{-\log_{0.3}(x-1)}}{\sqrt{-x^2 + 2x + 8}}$ is:

(A) (1, 4)   (B) (–2, 4)   (C) [2, 4)   (D) None of these

10. The domain of the function $f(x) = \dfrac{\tan 2x}{6\cos x + 2\sin 2x}$ is:

(A) $R - \left\{(2n+1)\dfrac{\pi}{2} : n \in Z\right\}$

(B) $R - \left\{(2n+1)\dfrac{\pi}{4} : n \in Z\right\}$

(C) $R - \left\{\left\{(2n+1)\dfrac{\pi}{2} : n \in Z\right\} \cup \left\{(2n+1)\dfrac{\pi}{4} : n \in Z\right\}\right\}$

(D) None of these