

Topic : Limit

Type of Questions

M.M., Min.

Single choice Objective (no negative marking) Q.1,2,3

(3 marks, 3 min.)

[9, 9]

Multiple choice objective (no negative marking) Q.4

(5 marks, 4 min.)

[5, 4]

Subjective Questions (no negative marking) Q.5,6,7

(4 marks, 5 min.)

[12, 15]

1. $\lim_{x \rightarrow 0} \frac{2^x + 2^{-x} - 2}{x^2} = ?$

- (A) $2 \ln 2$ (B) $(\ln 2)^2$ (C) 0 (D) none

2. $\lim_{x \rightarrow 0} \frac{e^{\tan x} - e^x}{\tan x - x} =$

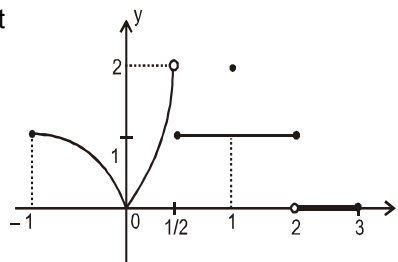
- (A) $\frac{1}{2}$ (B) 0 (C) 1 (D) none

3. $\lim_{x \rightarrow 0} \frac{a^{bx} - b^{ax}}{x}$ where $a > 0, b > 0$, is equal to:

- (A) $\ln a + \ln b$ (B) $\ln a - \ln b$ (C) $b \ln a - a \ln b$ (D) none

4. Which of the following statements are true of the function f defined for $-1 \leq x \leq 3$ in the figure shown.

- (A) $\lim_{x \rightarrow -1^+} f(x) = 1$ (B) $\lim_{x \rightarrow 2} f(x)$ does not exist
 (C) $\lim_{x \rightarrow 1^-} f(x) = 1$ (D) $\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^-} f(x)$
 (E) $\lim_{x \rightarrow c} f(x)$ exists at every c between -1 & 1
 (F) $\lim_{x \rightarrow c} f(x)$ exists at every c between -1 & 0 .



5. $\lim_{x \rightarrow 3} \frac{x-3}{\sqrt{x-2} - \sqrt{4-x}}$ is equal to

6. $\lim_{x \rightarrow 0} \frac{\sqrt{1+x^2} - \sqrt{1-x^2}}{x^2}$ is equal to

7. $\lim_{x \rightarrow 1} \left(\frac{1}{1-x} - \frac{3}{1-x^3} \right)$ is equal to

Answers Key

1. (B) 2. (C) 3. (C) 4. (A)(C)(F)

5. 1 6. 1 7. -1

