

**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)  $\lim_{x \rightarrow -1^+} f(x) = 1$

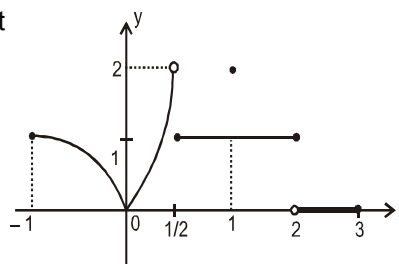
(B)  $\lim_{x \rightarrow 2} f(x)$  does not exist

(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