

Chapter \rightarrow Indeterminate forms

Multiple Choice Questions :-

Q \rightarrow 1The value of $\lim_{x \rightarrow \infty} \frac{\log x}{x^n}$, $n > 0$ is ;a) ∞ b) $-\infty$

c) 1

d) 0

Q \rightarrow 2The value of $\lim_{x \rightarrow 0} \frac{\tan 5x}{x}$ is ;

a) 0

b) 1

c) 5

d) $1/5$ Q \rightarrow 3If $\lim_{x \rightarrow 0} \frac{(1-a)e^x}{x}$ exists and is finite then it is

equal to ;

a) 1

b) 0

c) -1

d) $1/2$ Q \rightarrow 4The integer p for which $\lim_{x \rightarrow 0} \frac{px + \sin x}{x^2}$ is finite is ;

a) 0

b) -1

c) 1

d) 2

Q \rightarrow 5The value of $\lim_{x \rightarrow 0} \{ \cosh^{-1} x - \log x \}$ is ;a) $\log 1$ b) $\log 2$ c) $\log 3$

d) 0

Q \rightarrow 6The value of $\lim_{x \rightarrow \infty} x^2 \cdot e^{-x}$ is ;

a) 1

b) e^{-1} c) e^2

d) 0

Q→7 The value of $\lim_{x \rightarrow \pi/2} \{\cos x\}^{\cos x}$ is ;

a) 0

b) 1

c) -1

d) 2

Q→8 The value of $\lim_{x \rightarrow 0} (1-x^2)$ is ;

a) 0

b) 1

c) -1

d) $1/2$

Q→9 The value of $\lim_{x \rightarrow \infty} \left\{ \frac{1+2+3+\dots+x}{x^2} \right\}$ is ;

a) 0

b) 1

c) -1

d) $1/2$

Q→10 The value of $\lim_{x \rightarrow 0} (e^{3x} - 5x)^{1/x}$ is ;

a) 0

b) 1

c) e^{-2} d) e^2

Q→11 The value of $\lim_{x \rightarrow 0} \frac{|x|}{x}$ is ;

a) 0

b) ± 1 c) π d) ∞

Q→12 The value of $\lim_{x \rightarrow \infty} (x)^{1/x}$ is ;

a) ∞ b) $-\infty$

c) 1

d) 0

Q→13 The value of $\lim_{n \rightarrow \infty} \left\{ 1 + \frac{1}{n} \right\}^n$ is ;

a) 1

c) e

b) -1

d) $1/e$

Q-14 The value of $\lim_{x \rightarrow \pi/2} \left\{ \frac{\cos x}{x - \pi/2} \right\}$ is ;

a) 0

b) 1

c) -1

d) $\pi/2$

Q-15 The value of $\lim_{x \rightarrow 0} \left(\frac{1}{x} \right)^{2 \sin x}$ is ;

a) 1

b) 0

c) ∞

d) -1

Q-16 The value of $\lim_{x \rightarrow 0} \left(\frac{1^x + 2^x + 3^x}{3} \right)^{1/x}$ is ;

a) $(1/6)^3$

b) $(6)^{1/3}$

c) 1

d) 0

Q-17 The value of $\lim_{x \rightarrow 6} \frac{\sin(x-6)}{x-6}$ is ;

a) 0

b) 1

c) -1

d) 0.5

Q-18 The value of $\lim_{x \rightarrow 0} (\cos x)^{\cot^2 x}$ is ;

a) e

b) \sqrt{e}

c) $1/\sqrt{e}$

d) $1/e$

Q-19 The value of $\lim_{x \rightarrow \infty} \left(1 + \frac{a}{x} \right)^x$ is ;

a) a.e

b) a

c) $\log a$

d) e^a

Q→20 find the value of $\lim_{x \rightarrow 0} \left(\frac{1}{\sin^2 x} \right)$ is ;

a) 2

b) 1

c) 0

d) undefined

Q→21 find the value of $\lim_{x \rightarrow 0} \frac{\ln(1+x^4)}{x}$ is ;

a) 1

b) -1

c) undefined

d) 0

Q→22 find the value of $\lim_{x \rightarrow -2} \frac{\sin^2(x-2)}{(x+2)^2}$

a) 1

b) 0

c) ∞

d) -2

Q→23 find the value of $\lim_{n \rightarrow \infty} \frac{1^a + 2^a + \dots + (n-1)^a}{n^{a+1}}$

a) 1

b) $1/(a+1)$

c) 0

d) ∞

Q→24 find the value of $\lim_{x \rightarrow 0} \frac{\sin\{\sin(x)\}}{x}$

a) 1

b) ∞

c) 0

d) -1

Q→25 find the relation between a and b such that the following limit is got after a single application of L'Hospital's Rule, $\lim_{x \rightarrow 0} \frac{ae^x + be^{2x}}{be^x + ae^{2x}}$

a) $b/a = 2$

b) $a/b = 2$

c) $a = b$

d) $a = -b$

Answers :- { Indeterminate form }

1) - (d)

14) - (c)

2) - (c)

15) - (a)

3) - (b)

16) - (b)

4) - (a)

17) - (b)

5) - (b)

18) - (c)

6) - (d)

19) - (d)

7) - (a)

20) - (d)

8) - (a)

21) - (d)

9) - (d)

22) - (c)

10) - (c)

23) - (b)

11) - (b)

24) - (a)

12) - (c)

25) - (d)

13) - (c)