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AIR 03 ME KUSHAGRA DUTT	AIR 05 PI HARSHIT KUMAR	AIR 07 ME RUSHI PRADIPKUMAR KARIYA	AIR 11 CE VINAY JAIN	AIR 30 CE DITIK BANSAL	AIR 36 ECE SURIT KUMAR
AIR 64 CE UTKARSH MISHRA	AIR 71 EE SONESH SANJAY PAWAR	AIR 76 CE DIPANKAR DAS	AIR 87 EC SURAJIT RABI DAS	AIR 91 EE RISHABH GUPTA	AIR 111 ES ANIL GUPTA
AIR 130 EE SAURAV PATEL	AIR 136 CE RUPESH SACHDEVA	AIR 200 ECE WASIUZZAMA	AIR 212 IN WASIUZZAMA	AIR 217 ME VISHAL KUMAR	AIR 219 ME RITESH KUMAR
AIR 258 EE MANAV	AIR 348 EE AMAN NAMDEV	AIR 392 EE CAURAV MAHAJAN	AIR 403 EC MOHAN KUMAR SINGH	AIR 567 EE SHANKAR JHA	AIR 571 ME VIJENDER MEENA

You Tube Classes Schedule



EE & EC ENGINEERING

EXAM TARGET	SUBJECT	TIME	FACULTY
ALL PSUs	ENGINEERING MATHS	10:00 AM	ANANT SIR
GATE 2024-25	NETWORK THEORY	6:00 PM	RAVI SIR
GATE 2024-25	ELECTRICAL MACHINE	7:30 PM	SANTAN SIR
GATE 2024-25	COMMUNICATION	9:00 PM	RENU SIR

You **Tube** Classes Schedule



CIVIL ENGINEERING

EXAM TARGET	SUBJECT	TIME	FACULTY
ALL PSUs	ENGINEERING MATHS	10:00 AM	ANANT SIR
ALL PSUs	GEOTECHNICAL	1:00 PM	RUDRA SIR
GATE 2024-25	STEEL STRUCTURE	6.00 PM	REHAN SIR
GATE 2024-25	ENVIRONMENT	8:00 PM	PRATIK SIR
GATE 2024-25	SOM	9:00 PM	MUKESH SIR

You **Tube** Classes Schedule



MECHANICAL ENGINEERING

EXAM TARGET	SUBJECT	TIME	FACULTY
ALL PSUs	ENGINEERING MATHS	10:00 AM	ANANT SIR
ALL PSUs	PRODUCTION	11:30 PM	GAURAV SIR
ALL PSUs	THERMODYNAMICS	3:00 PM	KANISTH SIR
GATE 2024-25	HMT	4:30 PM	YOGESH SIR
GATE 2024-25	SOM	9:00 PM	MUKESH SIR



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MECHANICAL ENGINEERING



Free

HMT	MONDAY Live @11AM	YOGESH SIR
PRODUCTION	TUESDAY Live @11AM	GAURAV SIR
SOM	WEDNESDAY Live @8PM	MUKESH SIR
THERMODYNAMICS	THURSDAY Live @11AM	KANISTH SIR
ENGINEERING MATHEMATICS	FRIDAY Live @11AM	ANANT SIR

FREE APP CLASS SCHEDULE



EE & ECE ENGINEERING



NETWORK THEORY	SATURDAY Live @11AM	RAVI SIR
COMMUNICATION	WEDNESDAY Live @8PM	RENU SIR
ANALOG ELECTRONICS	THURSDAY Live @8PM	LAWRENCE SIR
ENGINEERING MATHEMATICS	FRIDAY Live @11AM	ANANT SIR
ELECTRICAL MACHINE	MONDAY Live @8PM	SANTAN SIR

FREE APP

CLASS SCHEDULE

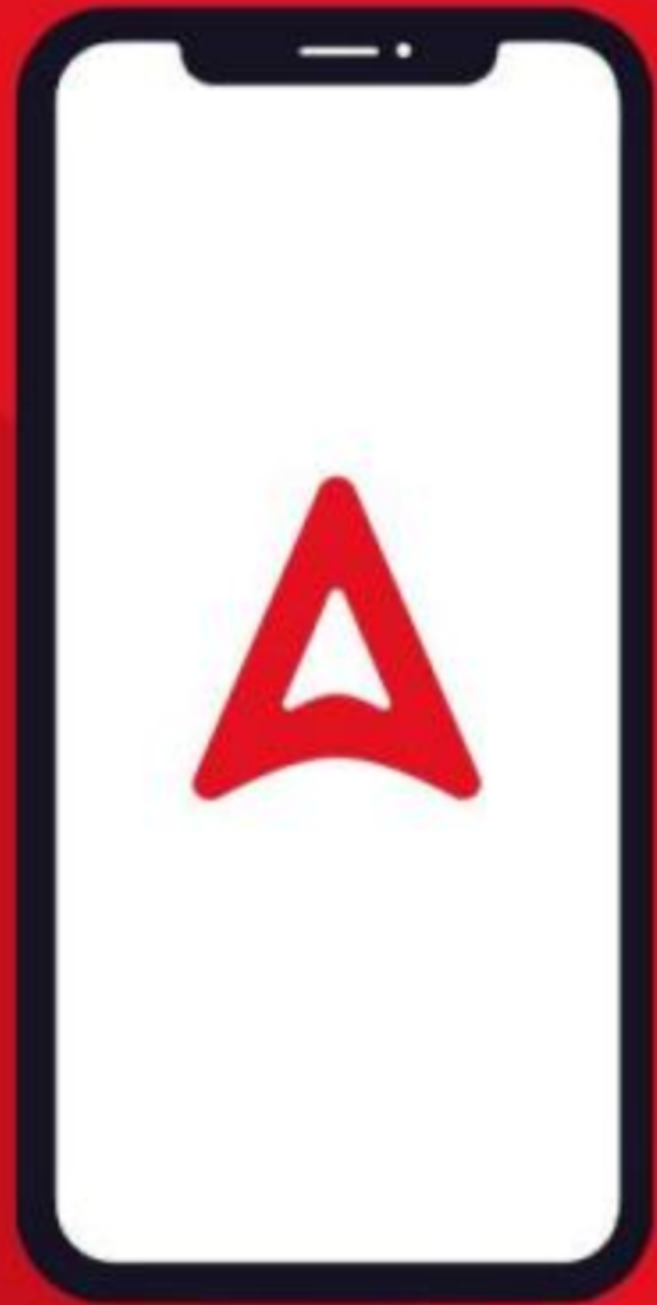


CIVIL ENGINEERING



SOM	WEDNESDAY Live @8PM	MUKESH SIR
ENVIRONMENT	THURSDAY Live @8PM	PRATIK SIR
STEEL STRUCTURE	FRIDAY Live @8PM	REHAN SIR
GEOTECHNICAL	SATURDAY Live @11AM	RUDRA SIR
ENGINEERING MATHEMATICS	FRIDAY Live @11AM	ANANT SIR

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Q:9

$$\lim_{x \rightarrow 0} \frac{x(e^x - 1) + 2(\cos x - 1)}{x(1 - \cos x)} = \underline{\hspace{2cm}}$$

$$\Rightarrow \frac{0 + 2(1-1)}{0} = \frac{0}{0} \text{ form}$$

$$\lim_{x \rightarrow 0} \frac{x e^x + (e^x - 1) + 2(-\sin x)}{x(+\sin x) + (1 - \cos x)}$$

$$\lim_{x \rightarrow 0} \frac{(x+1)e^x - x - 2\sin x}{x\sin x + 1 - \cos x} = \frac{1 - 0 - 2 \cdot 0}{1 - 1} = \frac{1}{0} = \infty$$

Q:10

$$\lim_{x \rightarrow 0} \frac{1}{10} \frac{1 - e^{-j5x}}{1 - e^{-jx}} = \underline{\hspace{2cm}}$$

$$\frac{1 - e^0}{10(1 - e^0)} = \frac{0}{0} \text{ form}$$

(a) 0

(b) 1.1

 (c) 0.5

(d) 1

$$\lim_{x \rightarrow 0} \frac{10(+j5e^{-j5x})}{10(+je^{-jx})} = \frac{j5}{j10} = 0.5$$

Q:11
good

The value of $\left[\lim_{x \rightarrow \infty} \left(\frac{1}{\sin x} - \frac{1}{\tan x} \right) \right]$ is:

- (a) 0
- (b) 1
- ~~(c) 2~~
- (d) doesn't exist

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

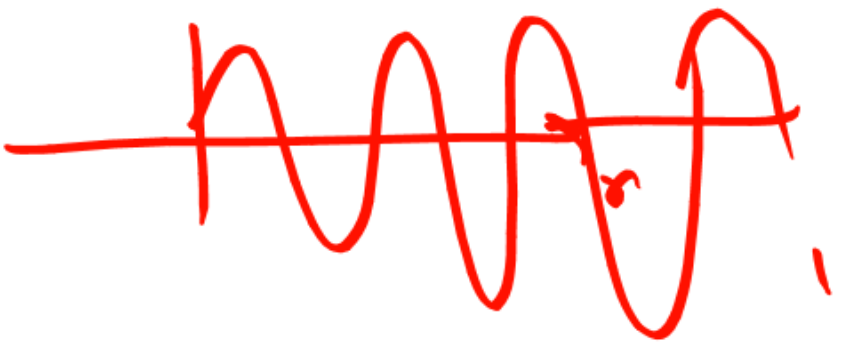
$$\cos 2\theta = 2\cos^2 \theta - 1$$

$$2\cos^2 \theta = 1 - \cos 2\theta$$

$$\cos 2\theta = 1 - 2\sin^2 \theta$$

$$1 - \cos 2\theta = 2\sin^2 \theta$$

$\lim_{x \rightarrow \infty} \sin x$



$$\lim_{x \rightarrow \infty} \left[\frac{1 - \cos x}{\sin x} \right]$$

$$\lim_{x \rightarrow \infty} \frac{2\sin^2 \frac{x}{2}}{2\sin \frac{x}{2} \cos \frac{x}{2}} = \lim_{x \rightarrow \infty} \left(\tan \frac{x}{2} \right)$$

$$\lim_{x \rightarrow \infty} \frac{\sin^2 \frac{x}{2}}{\cos \frac{x}{2}}$$

Q:13

$\lim_{x \rightarrow 0} x \sin\left(\frac{1}{x}\right)$ is

(a) ∞

✓ (b) 0

(c) 1

(d) Non-existent

$0 \sin\left(\frac{1}{0}\right)$

$0 \times \sin(\infty)$

$0 \times \text{finite value } [-1, 1]$

$= 0$

Q:14 Find the limiting value of the ratio of the square of the sum of a natural numbers to n times the sum of squares of the n natural number as, n approaches infinity.

Sol: Sum of natural numbers = $1 + 2 + 3 + 4 + \dots + n$
 $= \frac{n(n+1)}{2}$

Sum of square of natural number = $1 + (2)^2 + (3)^2 + \dots + (n)^2$

$\lim_{n \rightarrow \infty} \left(\frac{n(n+1)}{2} \right)^2$
 $\frac{1}{6} \times \frac{n(n+1)(2n+1)}{6}$

$\lim_{n \rightarrow \infty} \frac{n^2(n^2+2n+1) \times 6}{4 \times n \times (2n^2+3n+1)}$

$$\lim_{n \rightarrow \infty} \frac{6(n^2 + 2n + 1)}{4(2n^2 + 3n + 1)} = \infty$$

$$\lim_{n \rightarrow \infty} \frac{6 \times 2}{4 \times 4}$$

$$= \frac{6}{8} = \frac{3}{4} = \underline{\underline{0.75}}$$

Q:15

Limit of the function $\lim_{n \rightarrow \infty} \frac{n}{\sqrt{n^2 + n}}$ is $\frac{\infty}{\infty}$ form

(a) $\frac{1}{2}$

(b) 0

(c) ∞

(d) 1

$\lim_{n \rightarrow \infty} \frac{\cancel{n}}{\sqrt{1 + \frac{1}{n}}}$

$\frac{1}{\sqrt{1 + \frac{1}{\infty}}} = 1$

Q:16 Value of the function $\lim_{x \rightarrow a} (x - a)^{(x - a)}$ is

- (a) 1
- (c) ∞

- (b) 0 $(a-a)^{a-a}$
 0^0
- (d) a

let $y = \lim_{x \rightarrow a} (x - a)^{x - a}$

$\ln y = \lim_{x \rightarrow a} (x - a) \ln(x - a)$

$= \lim_{x \rightarrow a} \frac{\ln(x - a)}{\frac{1}{x - a}}$ = '0/0' form

$\lim_{x \rightarrow a} \frac{(x - a)^{-1}}{(x - a)^2}$

$\lim_{x \rightarrow a} (x - a)$
 $\lim_{x \rightarrow a} = 0$

$y = e^0 = 1$

Q:17
 $\lim_{x \rightarrow 1} \frac{(x^2 - 1)}{(x - 1)}$ is $\frac{0}{0}$ form

(a) $\lim_{x \rightarrow 1} \frac{2x}{1} = 2$

(b) 0

(c) 2

(d) 1

$$\lim_{x \rightarrow 1} \frac{(x-1)(x+1)}{(x-1)} = 2$$

Q:18

The limit of the function $f(x) = \left[1 - \frac{a^4}{x^4} \right]$ as $x \rightarrow \infty$ is

given by

- (a) 1
- (b) $\exp[-a^4]$
- (c) ∞
- (d) Zero



Q:19

$$\lim_{x \rightarrow \frac{\pi}{4}} \frac{\sin 2\left(x - \frac{\pi}{4}\right)}{x - \frac{\pi}{4}} = \underline{\hspace{2cm}}$$

- (a) 0
- (c) 1

- (b) $\frac{1}{2}$
- (d) 2



Q:20 The limit of the following sequence as $n \rightarrow \infty$ is:

$$x_n = n^{1/n}$$

(a) 0

(b) 1

(c) ∞

(d) $-\infty$



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