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Operating System:

GATE PYQ – Synchronization
1987 to 2000

By: Vishvadeep Gothi

VISHVADEEP GOTHI SIR

AIR- 19, 119, 440, 682 in GATE

ME from IISc Bangalore
Mtech BITS Pilani in Data Science

14+ Years of Teaching Experience,
10+ Years in GATE/IES

Subjects Taken:
Computer Organization & Architecture, data structure, operating system, C-Programming, Data science, Machine Learning, Python, coding interview problems,

Special VDEEP10

Vishvadeep Gothi

#1 Educator in CS & IT · GATE & ESE

- GATE AIR-19, 119, 440, 682 - ME from IISc, - MTech BITS Pilani (Data Science) - 14 years experience

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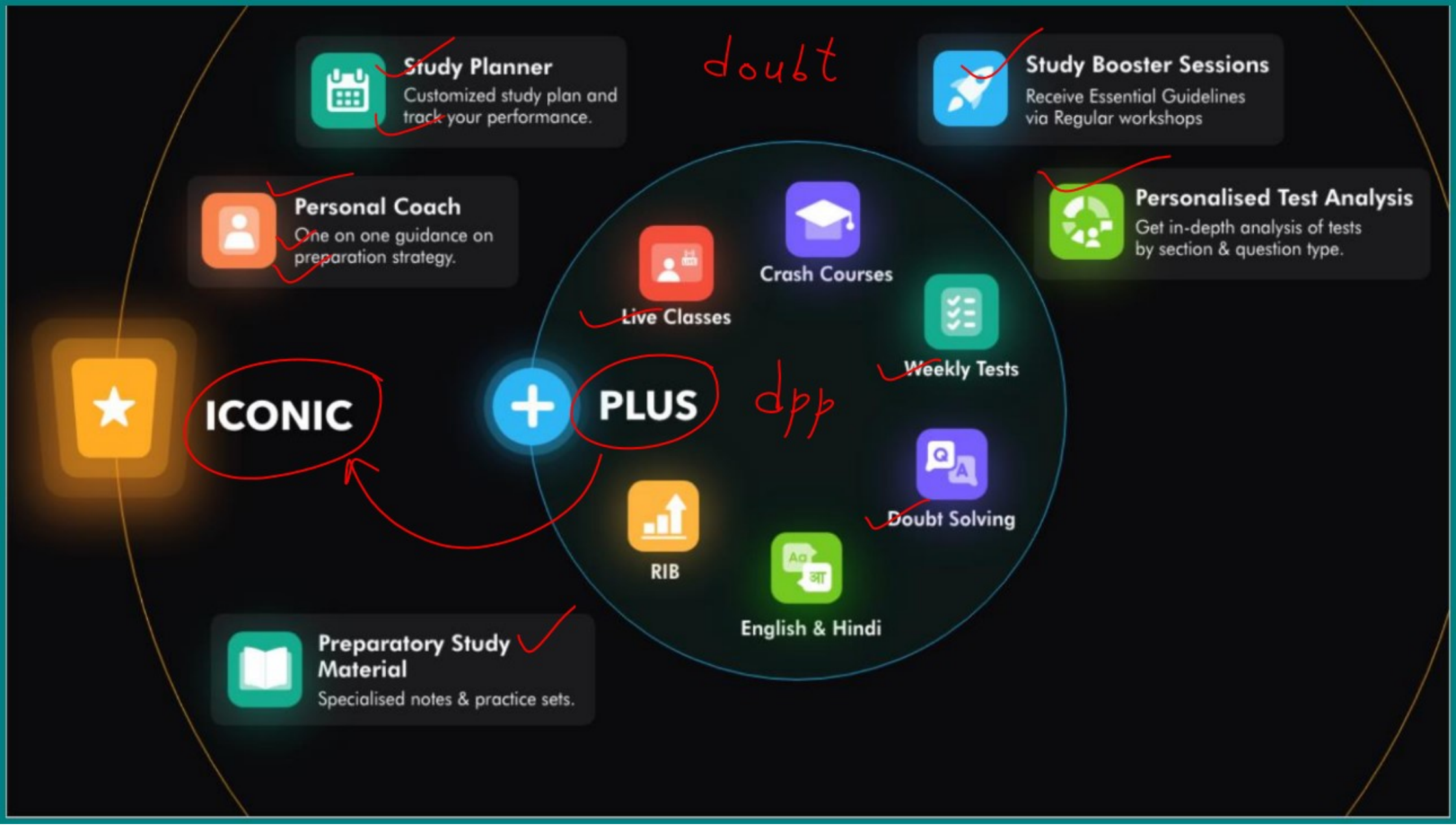
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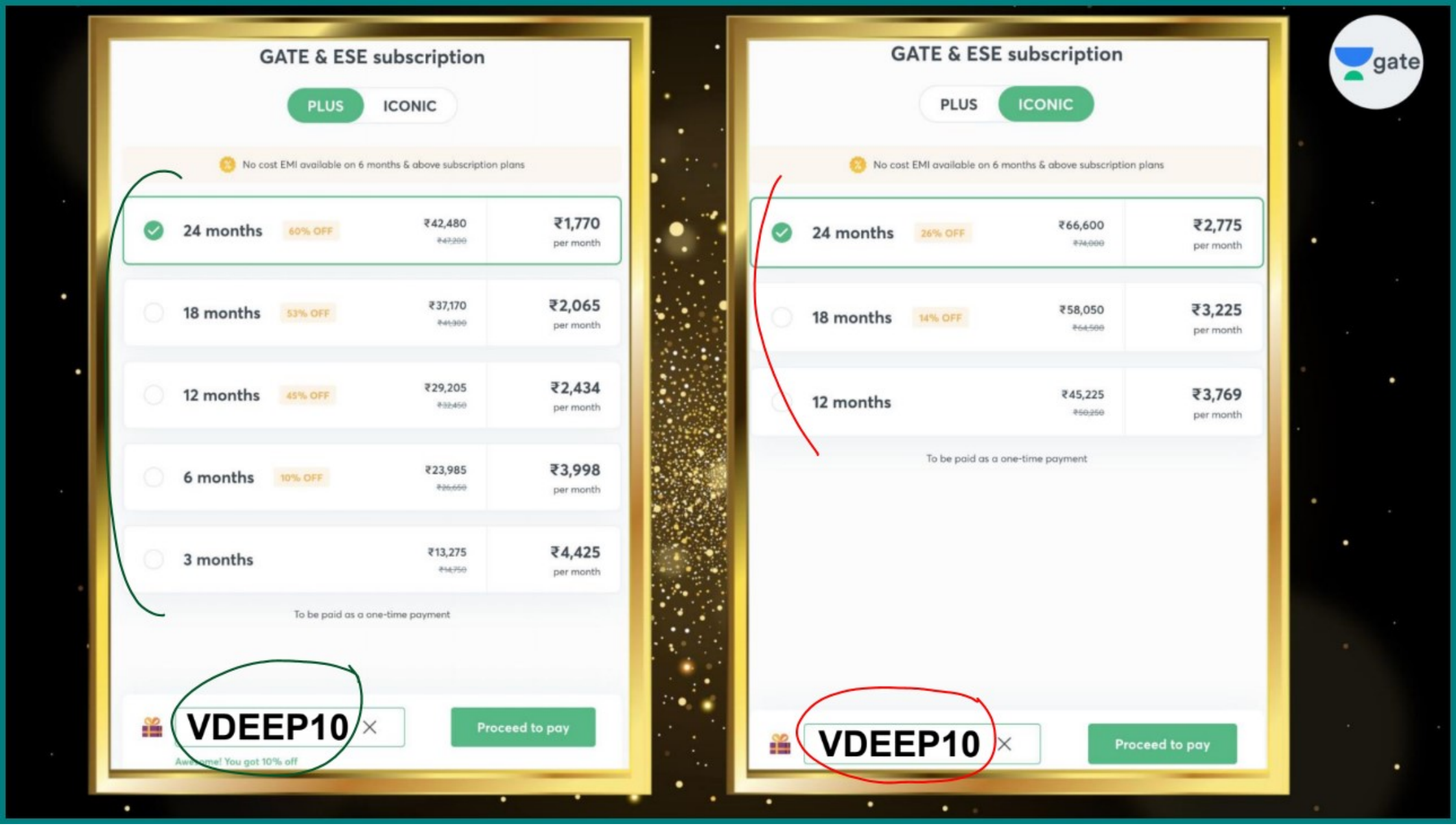
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Are You Ready??

GATE 1987

A critical region is

A. One which is enclosed by a pair of P and V operations on semaphores.
B. A program segment that has not been proved bug-free.
C. A program segment that often causes unexpected system crashes.
D. A program segment where shared resources are accessed.

wait() → P()
Signal() → V()

C.S.

GATE 1990

Match the pairs in the following questions:

(a) Critical region	(p) Hoare's monitor
(b) Wait/Signal	(q) Mutual exclusion
(c) Working Set	(r) Principle of locality
(d) Deadlock	(s) Circular Wait

a - q
b - p
c - r
d - s

Any.

GATE 1996

A critical section is a program segment

A. which should run in a certain amount of time
B. which avoids deadlocks
C. where shared resources are accessed
D. which must be enclosed by a pair of semaphore operations, P and V

GATE 1996

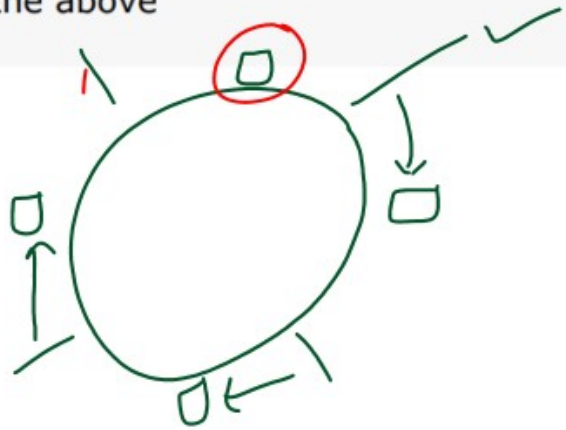
A solution to the Dining Philosophers Problem which avoids deadlock is to

A. ensure that all philosophers pick up the left fork before the right fork

B. ensure that all philosophers pick up the right fork before the left fork

C. ensure that one particular philosopher picks up the left fork before the right fork, and that all other philosophers pick up the right fork before the left fork

D. None of the above



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GATE 1997

Each Process P_i, i = $1....9$ is coded as follows

```
repeat
    P(mutex)
    {Critical section}
    V(mutex)
forever
```

The code for P_{10} is identical except it uses V(mutex) in place of P(mutex). What is the largest number of processes that can be inside the critical section at any moment?

A. 1
B. 2
C. 3
D. None

Ans = 10

GATE 1998

When the result of a computation depends on the speed of the processes involved, there is said to be

A. cycle stealing
B. race condition
C. a time lock
D. a deadlock

GATE 2000

m[0] → P[0]
m[1] → P[1]
m[2] → P[2]
m[3] → P[3]
m[4] → P[4]

Let m[0]....m[4] be mutexes (binary semaphores) and P[0].....P[4] be processes.
Suppose each process P[i] executes the following:

```
wait (m[i]; wait (m(i+1) mode 4]);
.....
release (m[i]); release (m(i+1) mod 4]);
```

This could cause

A. Thrashing
B. Deadlock
C. Starvation, but not deadlock
D. None of the above

P[0]	P[1]	P[2]
wait m[0]	wait m[1]	wait m[2]
wait m[1]	wait m[2]	wait m[3]

P[3]	P[4]
wait m[3]	wait m[4]
wait m[0]	wait m[1]

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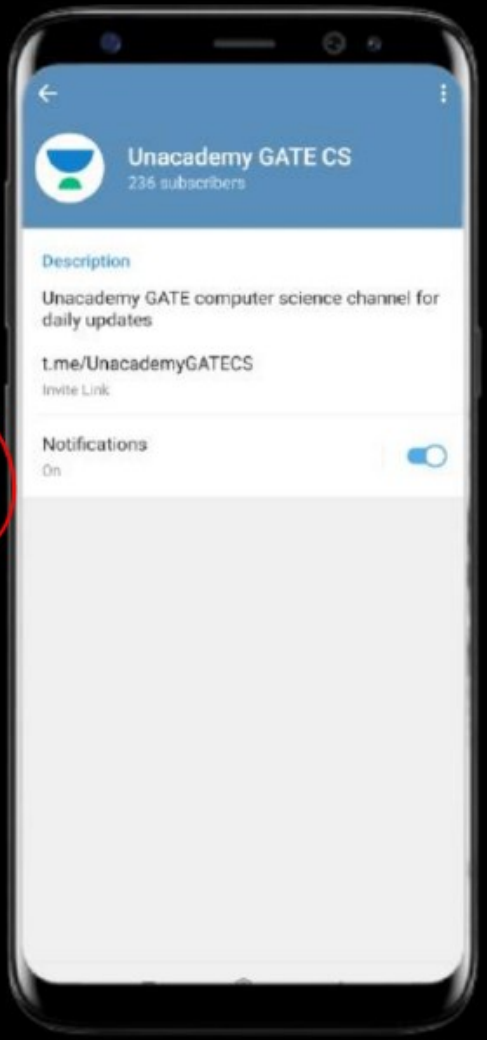

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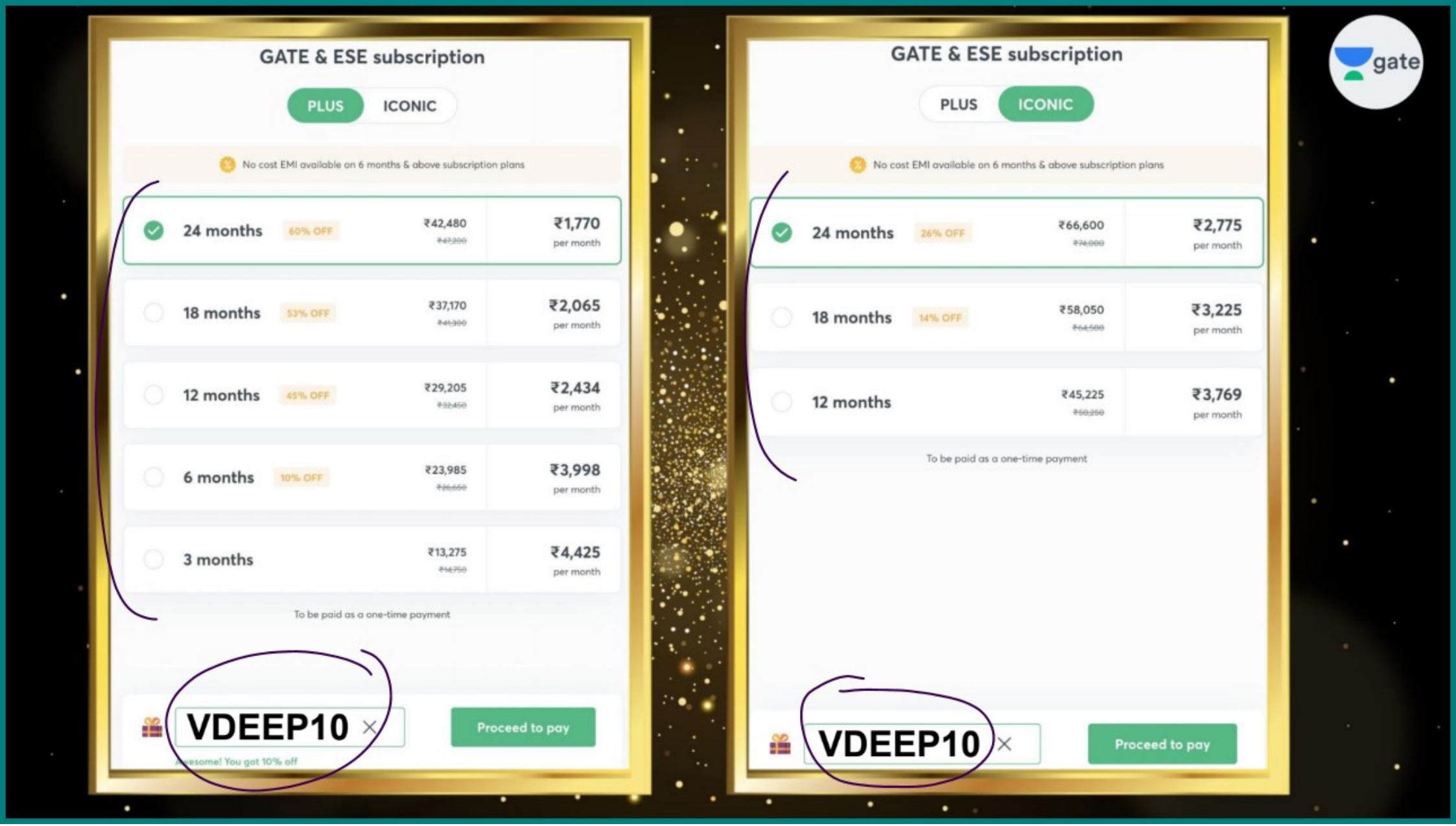
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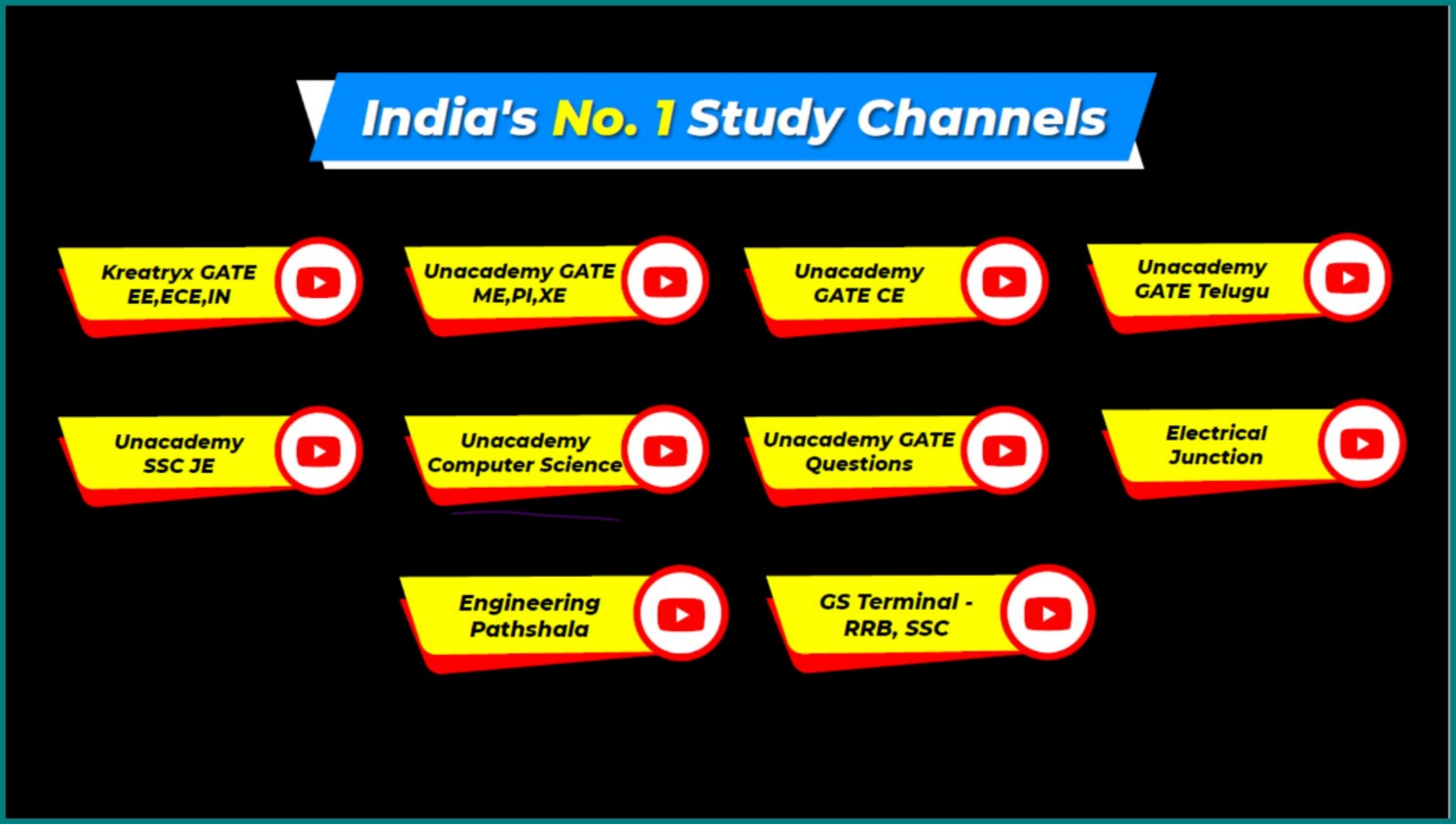
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