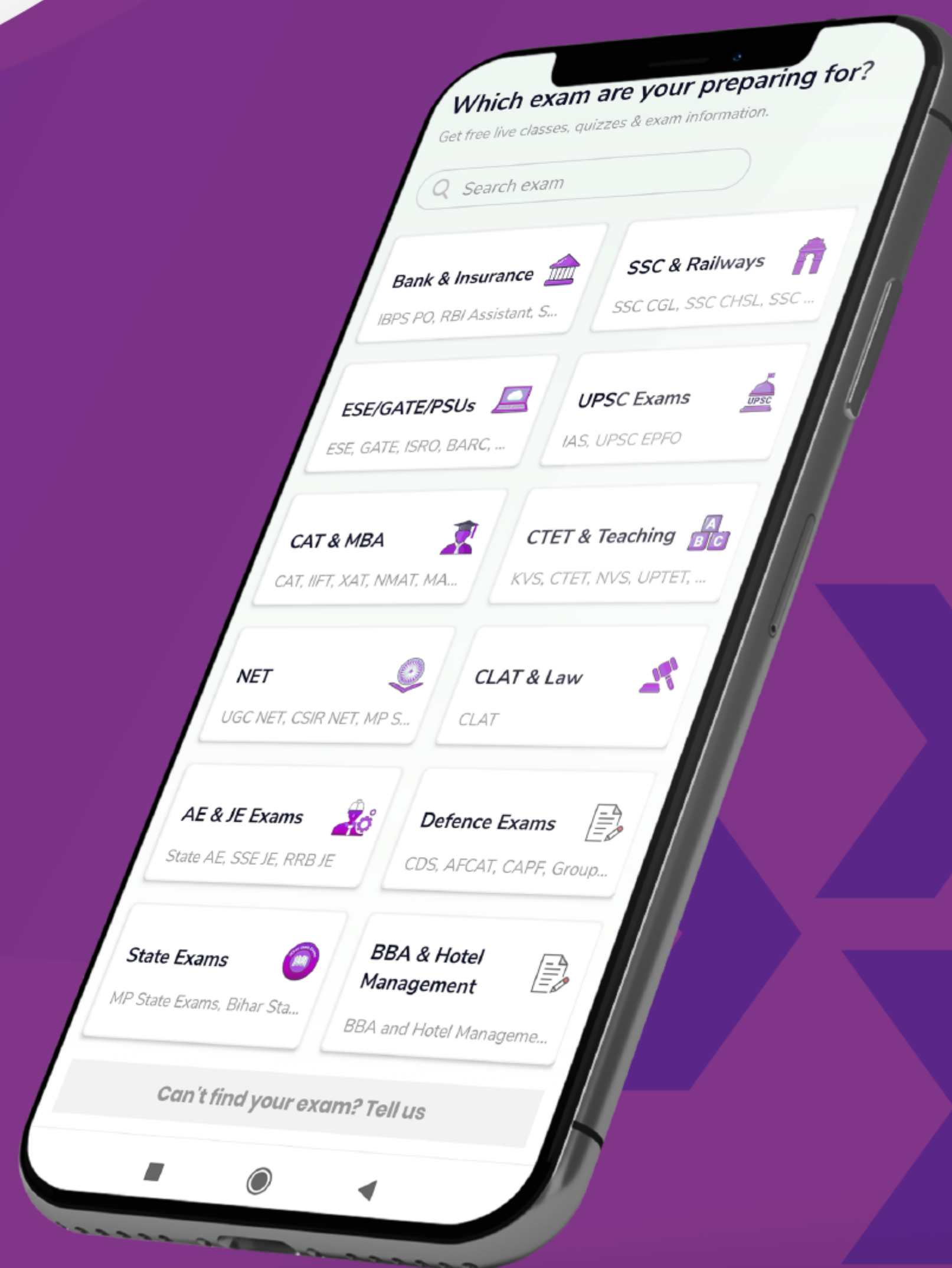


# Formula Sheet On Divisibility Rule

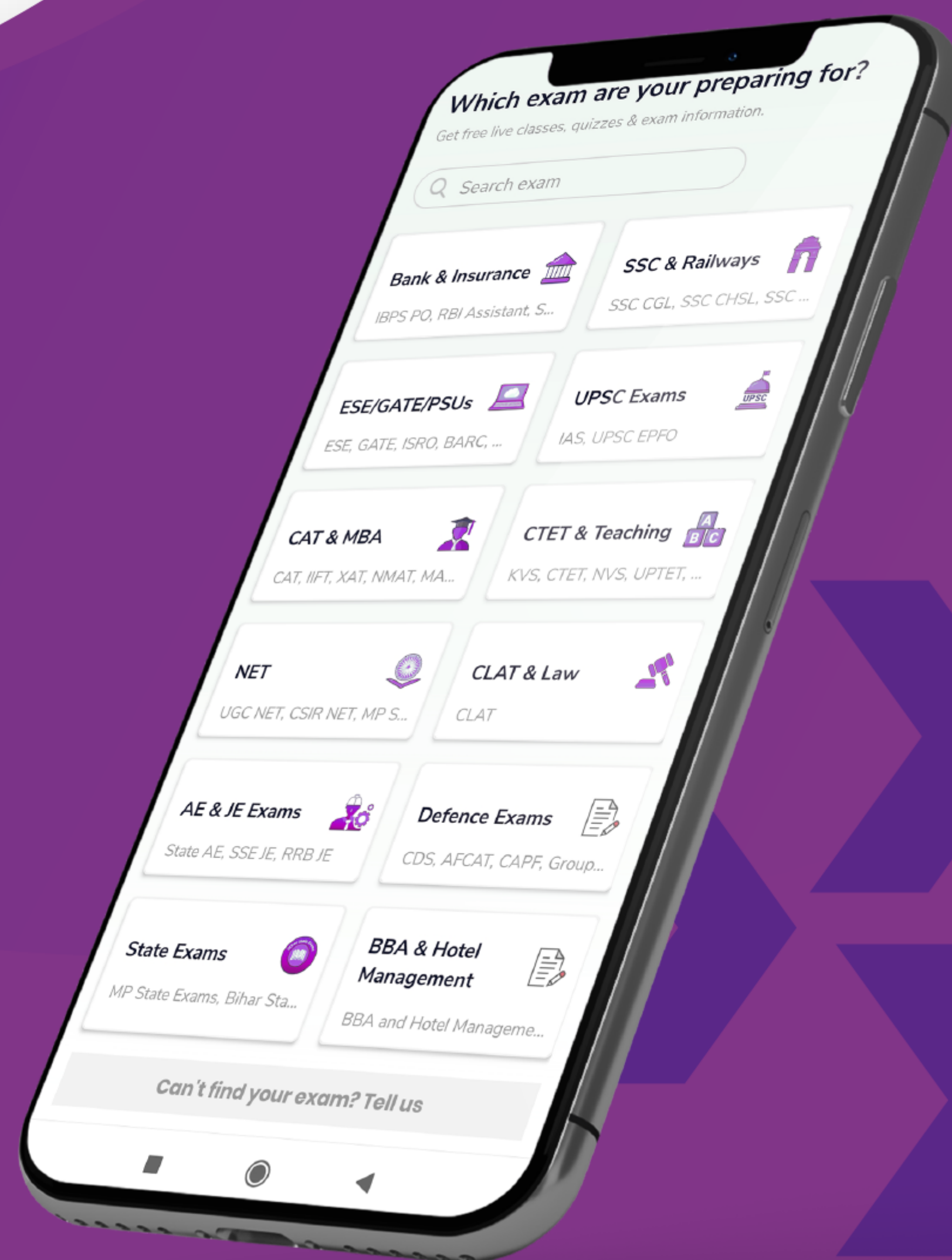


## Divisibility Rule

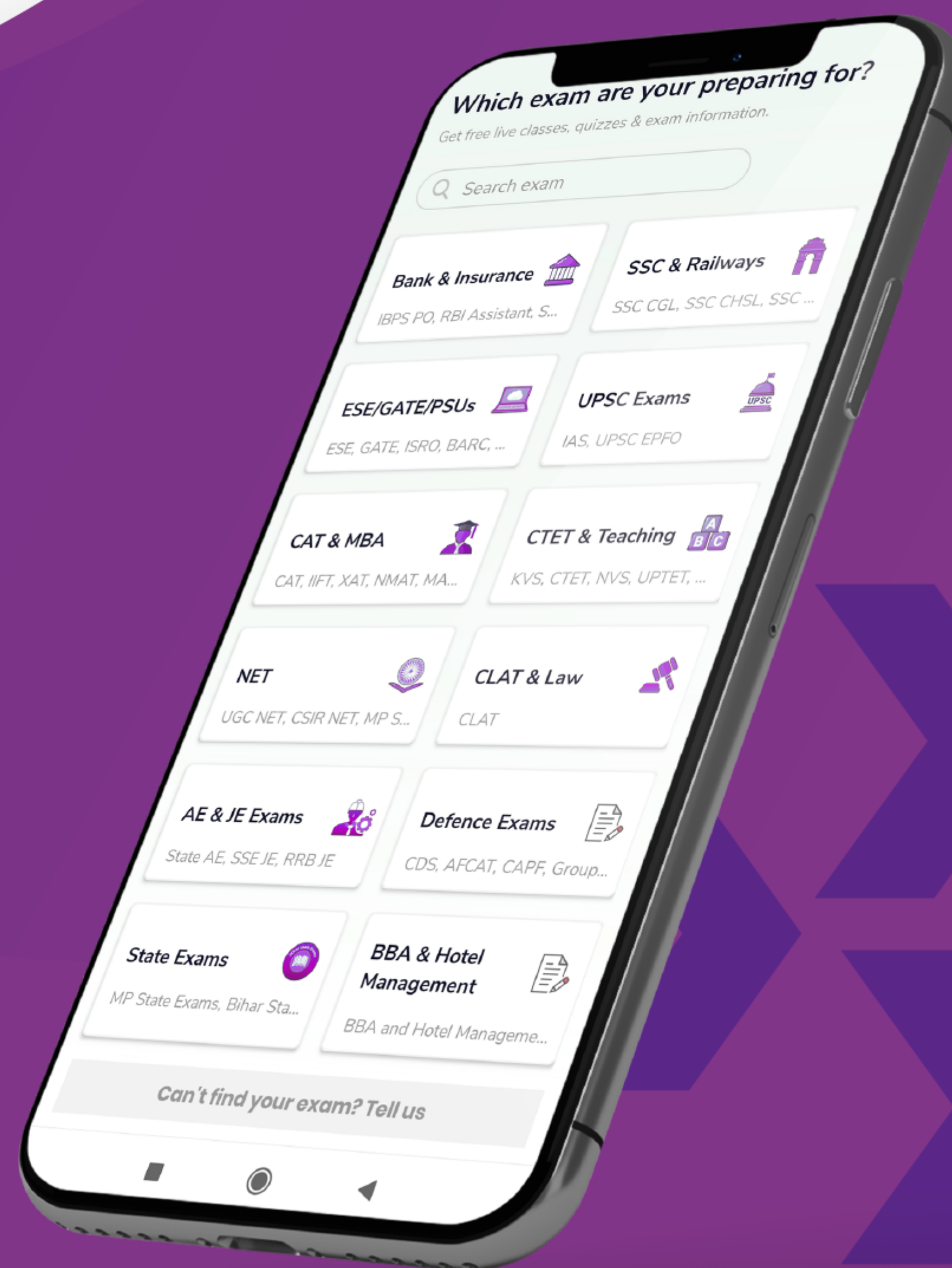
1. **Divisibility by 1:** All the integers are divisible by 1.
2. **Divisibility by 2:** A number is said to be divisible by 2 when the last digit of the given number is even i.e. 0, 2, 4, 6, 8.

Example 1: 68, 484, 89232, 5820, 1446 all numbers are divisible by 2.

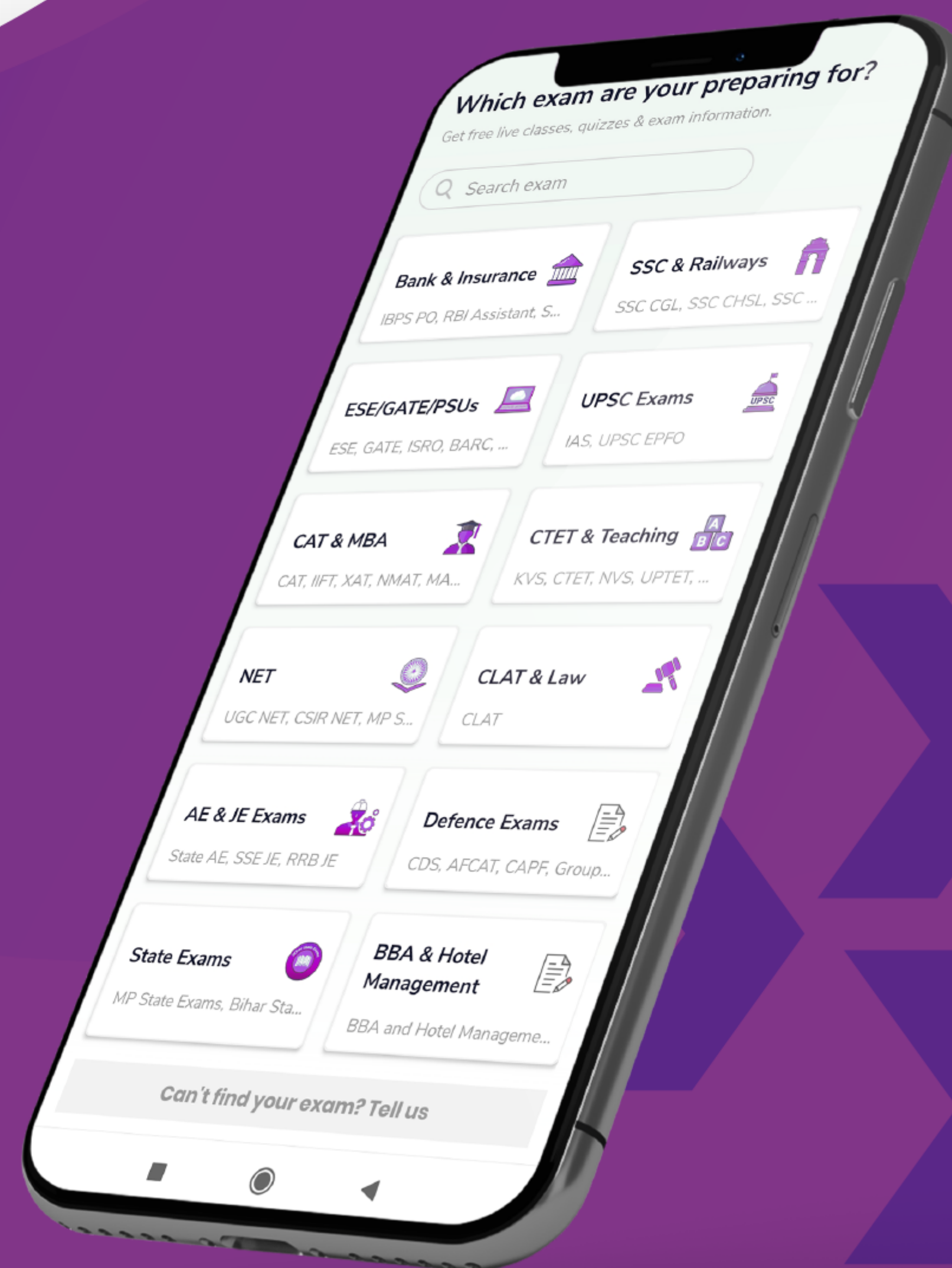
3. **Divisibility by 3:** A number is divisible by 3 when the sum of all the digits of the given number is either 3 or a multiple of 3.
4. **Divisibility by 4:** A number is divisible by 4 when the last two digits of the given number is divisible by 4 or any multiple of 4.



5. **Divisibility by 5:** A number is divisible by 5 when the last digit of the given number is either 0 or 5.
6. **Divisibility by 6:** A number is divisible by 6 when the given number is both 2 And 3 as  $6 = 2 \times 3$ .
7. **Divisibility by 7:** There are various methods to find divisibility by 7 for any given number. These are as following:
- Step 1: First form pairs of three-three digits from the right end of the given number. Step 2: Now add all the alternating pairs at odd places and even places simultaneously and find the difference between them. If the number obtained is exactly divided by 7 then the given number is said to be divisible by 7.



8. **Divisibility by 8:** A number is divisible by 8 when the last three digits of the given number is divisible by 8 or any multiple of 8.
9. **Divisibility by 9:** A number is divisible by 9 when the sum of all the digits of the given number is divisible by 9 or a multiple of 9.
10. **Divisibility by 10:** Since 10 can be broken down into 2 multiplied by 5. So, any number that is divisible by 2 and 5 simultaneously will also be divisible by 10. Or if the last digit is 0 then the given number will be exactly divisible by 10.
11. **Divisibility by 11:** The divisibility rule of 11 is as following:  
Step 1: Find the sum of the digits at odd places and even places.  
Step 2: Find the difference between the sums. Check whether the result is 0 or 11 or a multiple of 11. If yes then the given number will be exactly divisible by 11.



**12. Divisibility by 12:** We can see that 12 is obtained by 3 multiplied by 4. So, for a number to be divisible by 12, it has to be exactly divisible by 3 and 4 simultaneously.

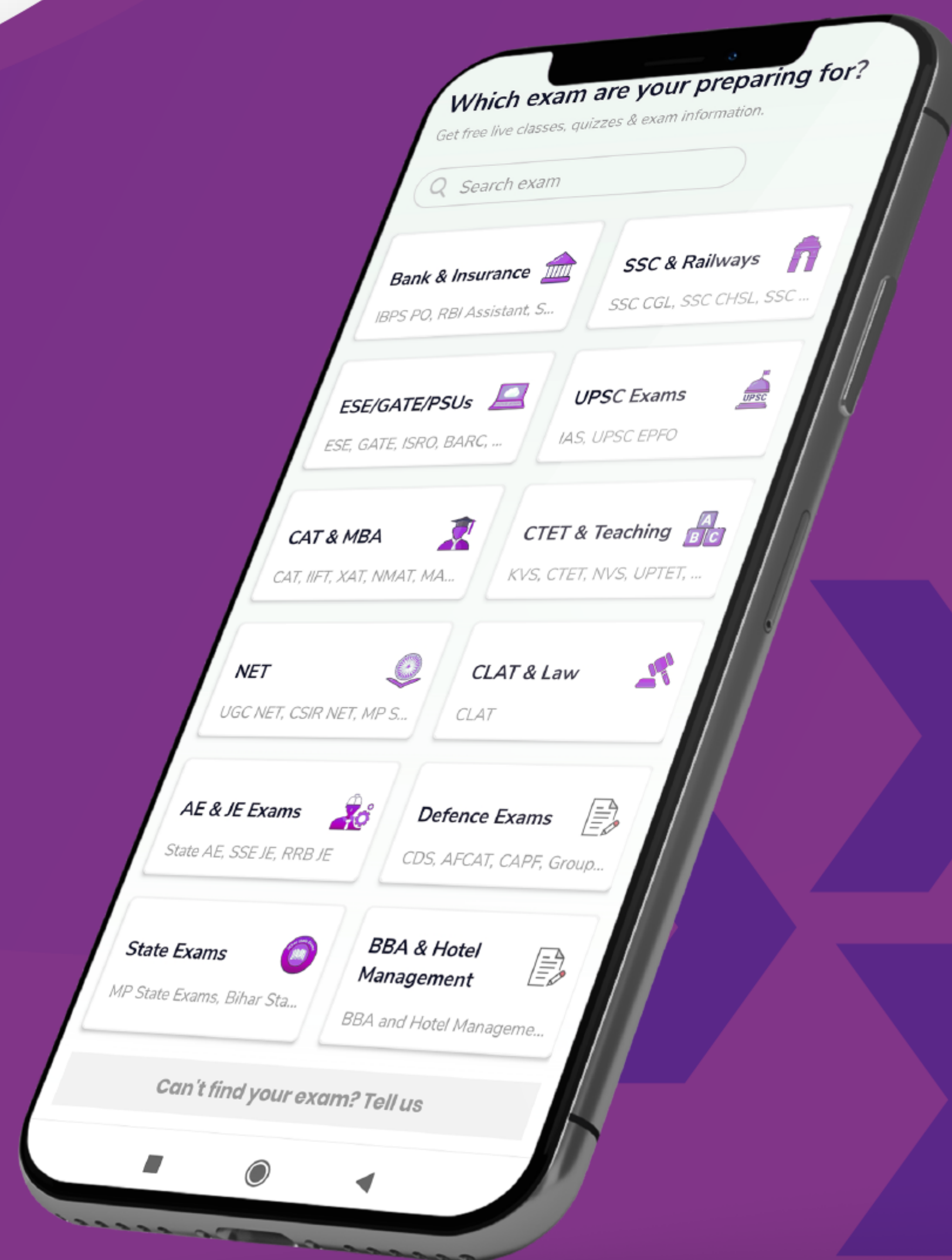
**13. Divisibility by 13:** The divisibility of a number by 13 is determined as following:

Step 1: First form pairs of three-three digits from the right end of the given number.

Step 2: Now add all the alternating pairs at odd places and even places simultaneously and find the difference between them.

Step 3: Now multiply the last digit of the obtained difference with 4 and add it to rest of the number.

Step 4: If the result is 0 or 13 or a multiple of 13, then the given number will be divisible by 13 otherwise not.



## Divisibility rule of powers of 2:

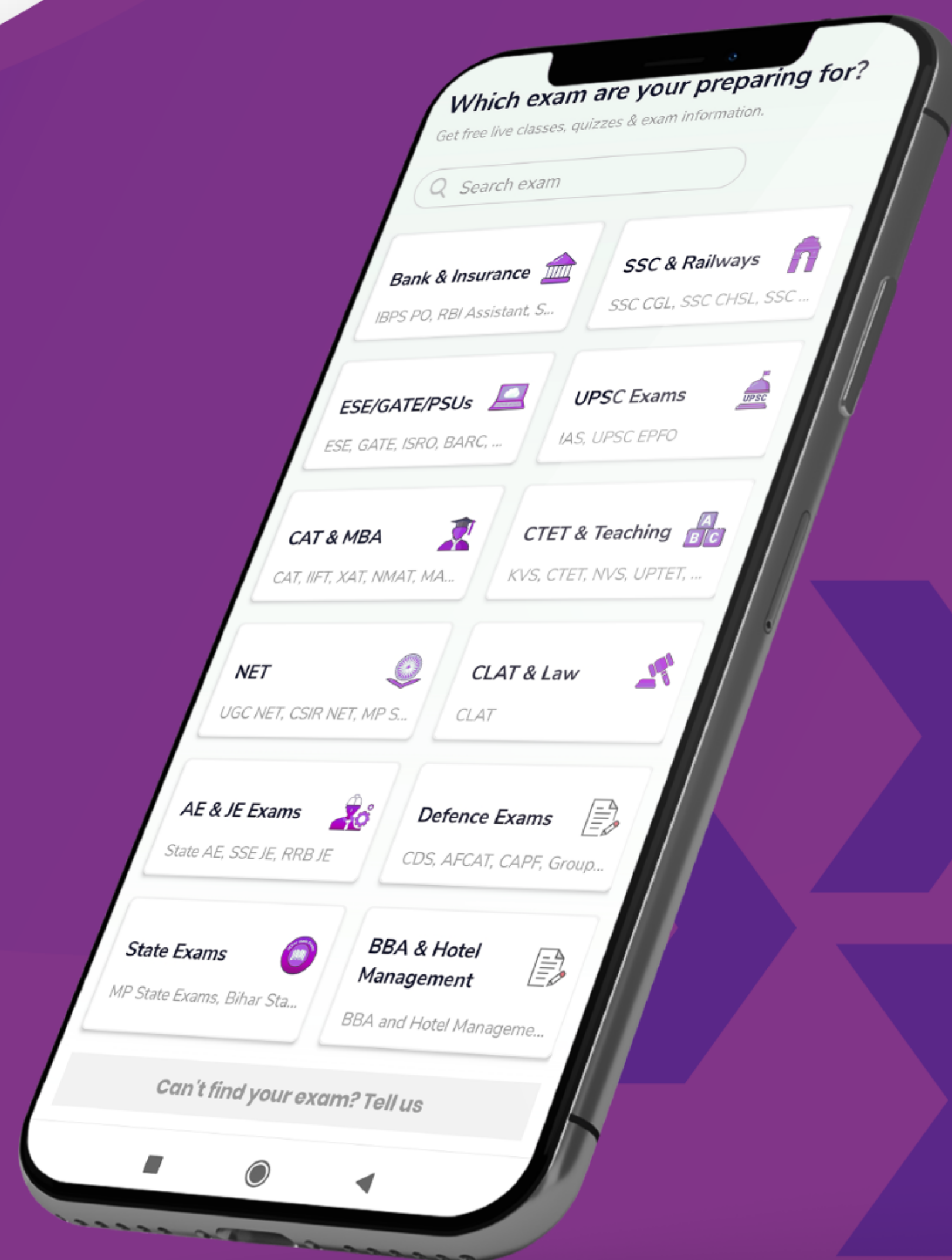
When the divisor is in the form of  $2^n$ , then check the last  $n$  digits of the given number if they are completely divisible by  $2^n$  or not. If yes then the given number will be exactly divisible by  $2^n$ .

## Other Divisibility Rules:

If a number in the form of  $XXXXXX$  (6 times repetition), then the number will be completely divisible by 3, 7, 11, 13, 21, 37, 101.

If a number in the form of  $abcabc$ , then the number will be completely divisible by 7, 11, 13, 1001.

$(an + bn)$  is completely divisible by  $(a + b)$  when  $n$  is an odd number.



## Successive Division:

It is a division in which the quotient of the dividend is taken and is used as dividend of the next division.

Example 21: When 325 is successively divided by 3, 5, 11 then the remainders are:

Solution:

Divisor	Dividend	Quotient	Remainder
3	325	108	1
5	108	21	3
11	21	1	10

Thus, remainders are 1, 3 and 10 respectively.

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