Sum of natural no = $\frac{n(n+1)}{2}$

$\frac{n(n+1)}{2}$

Q1

Sol Input P = 10

Res = 0 , i = 1

updated Res = 1+2+3+4+5+6+7+8+9+10 = 55

Condition i > P

① Res = 0 , i = 1

check 1 > 10

↓ NO

Res = 0+1 = 1

i = 1+1 = 2

② Res = 1 , i = 2

check 2 > 10

↓ NO

Res = 1+2 = 3

i = 2+1 = 3

③ Res = 3 , i = 3

check 3 > 10

↓ NO

Res = 3+3 = 6

i = 3+1 = 4

④ Res = 6 , i = 4

check 4 > 10

↓ NO

Res = 6+4 = 10

i = 4+1 = 5

⑤ Res = 10 , i = 5

check 5 > 10

↓ NO

Res = 10+5 = 15

i = 5+1 = 6

⑥ Res = 15 , i = 6

check 6 > 10

↓ NO

Res = 15+6 = 21

i = 6+1 = 7

⑦ Res = 21 , i = 7

check 7 > 10

↓ NO

Res = 21+7 = 28

i = i+1 = 7+1 = 8

⑧ Res = 28 , i = 8

check 8 > 10

↓ NO

Res = 28+8 = 36

i = 8+1 = 9

Date: / /
Page No.:

(9) Res = 36, i = 9
check 9 > 10
↓ No
Res = 36 + 9 = 45
i = 9 + 1 = 10

(10) Res = 45, i = 10
check 10 > 10
↓ No
Res = 45 + 10 = 55
i = 10 + 1 = 11

(11) Res = 55, i = 11
Check 11 > 10
Yes / True ↓

Print Res
Res = 55

Ans

Q2
Sol → i = 0
condition i < 20

(I) i = 0
check i < 20
↓ Yes
i = 0 + 2 = 2

(II) i = 2
check 2 < 20
↓ Yes
i = 2 + 2 = 4

(III) i = 4
check 4 < 20
↓ Yes
i = 4 + 2 = 6

(IV) i = 6
check 6 < 20
↓ yes
i = 6 + 2 = 8

(V) i = 8
Check 8 < 20
↓ yes
i = 8 + 2 = 10

(VI) i = 10
check 10 < 10
↓ yes
i = 10 + 2 = 12

(VII) i = 12
Check 12 < 20 → yes → i = 12 + 2 = 14

(vi) i=14
Check 14<20
↓Yes
i=14+2=16

(vii) i=16
Check 16<20
↓Yes
i=16+2=18

(viii) i=18
Check 18<20
↓Yes
i=18+2=20

(ix) i=20
Check 20<20
↓No
Print i
i=20

Ans

Q3
Sol → N=5
a=1, b=1

① b=b*a=1x1=1
a=N? ⇒ 1=5
↓No
a=1+1=2

② a=2, b=1
b=1*2=2
2==5?
↓No
a=2+1=3

③ a=3, b=2
b=2*3=6
3==5?
↓No
a=3+1=4

④ a=4, b=6
b=6*4=24
4==5?
↓No
a=4+1=5

⑤ a=5, b=24
b=24*5=120
5==5? → Print b b=120
yes

Ans

Q4

Sol → N = 5

① i = 1
fact = 1
Condition: 1 <= 5 ?
↓ Yes
fact = 1 * 1
i = 1 + 1 = 2

② i = 2
fact = 1
2 <= 5 ?
↓ Yes
fact = 1 * 2 = 2
i = 2 + 1 = 3

③ i = 3, fact = 2
3 <= 5 ?
↓ Yes
fact = 2 * 3 = 6
i = 3 + 1 = 4

④ i = 4, fact = 6
4 <= 5 ?
↓ Yes
fact = 6 * 4 = 24
i = 4 + 1 = 5

⑤ i = 5, fact = 24
5 <= 5 ?
↓ Yes
fact = 24 * 5 = 120
i = 5 + 1 = 6

⑥ i = 6, fact = 120
6 <= 5 ?
↓ No
Print fact
fact = 120

Ans

Q5

Sol → num = 371, Sum = 0, n = num = 371

① 371 >= 1
↓ Yes/True
rem = 371 % 10 = 1
rem = n mod(%) 10
rem = 1

Sum = 0 + (1 * 1 * 1)
Sum = 0 + 1 = 1
n = 371 / 10 ⇒ 37

(2) 37 >= 1 ?

↓ True

rem = 37 % 10 = 7

Sum = 1 + (7 * 7 * 7) = 1 + (343) = 344

n = 37/10 = 3

(3) 3 >= 1 ?

↓ Yes / True

rem = 3 % 10 = 3

Sum = 344 + (3 * 3 * 3) = 371

n = 3/10 = 0

(4) 0 >= 1

↓ No / false

num = Sum

371 = 371

↓ True

Number is Armstrong.

26 →

Ref

num = 370 , Sum = 0

(1) 370 >= 1 ?

↓ True

rem = 0 , Sum = 0 + (0 * 0 * 0) = 0

n = 370/10 = 37

(11) 37 >= 1 ?

↓ True

rem = 37 % 10 = 7 , Sum = 0 + (7 * 7 * 7)

rem = 7 , Sum = 343.

(ii) $n = 37/10 = 3$

(iii) $3 >= 1$?

↓ True

rem = 3 % 10 = 3

Sum = 343 + (3 * 3 * 3) = 343 + 27

Sum = 370.

(iv) $0 >= 1$

↓ False

num = Sum

370 = 370

↓

True

Number is Armstrong.

Q7

Sol $n = 23$

(1) i = 2

i < n ? T

2 < 23 → False

↓

23 % 2 == 0

i = 2 + 1 = 3

(2) i = 3

3 < n ? T

23 % 3 == 0 ? F

↓

i = 3 + 1 = 4

(3) i = 4

4 < n ? T

23 % 4 == 0 ? F

↓

i = 4 + 1 = 5

(4) i = 5

5 < 23 ? True

23 % 5 == 0 ? False

↓

i = 5 + 1 = 6

(5) i = 6

5 < 23 ? T

23 % 6 == 0 ?

↓ False

i = 6 + 1 = 7

(6) i = 7

7 < 23 ? T

23 % 7 == 0 ?

↓ False

i = 7 + 1 = 8

(7) i = 8

8 > 23 ? T → 23 % 8 == 0 ? F

i = 8 + 1 = 9

(8) i = 9
9 < 23 ? True
23 % 9 == 0 ? F
i = 9 + 1 = 10

(9) i = 10
10 < 23 ? True
23 % 10 == 0 ? False
i = 10 + 1 = 11

(10) i = 11
11 < 23 ? True
23 % 11 == 0 ? False
i = 10 + 1 = 12

(11) i = 12
12 < 23 ? True
23 % 12 == 0 ? False
i = 12 + 1 = 13.

(12) i = 13
13 < 23 ? True
23 % 13 == 0 ? False
i = 13 + 1 = 14

(13) i = 14
14 < 23 ? True
23 % 14 == 0 ? Fals
i = 14 + 1 = 15

(14) i = 15
15 < 23 ? True
23 % 15 == 0 ? False
i = 15 + 1 = 16

(15) i = 16
16 < 23 ? True
23 % 16 == 0 ? False
i = 16 + 1 = 17

(16) i = 17
17 < 23 ? Tru
23 % 17 == 0 ?
i = 17 + 1 = 18

(17) i = 18
18 < 23 ? True
23 % 18 == 0 ? False
i = 18 + 1 = 19

(18) i = 19
19 < 23 ? True
23 % == 0 ? False
i = 19 + 1 = 20

(19) i = 20

20 < 23 ? True

23 % 20 == 0 ? False

i = 20 + 1 = 21

(20) i = 21

21 < 23 ? True

23 % 21 == 0 ? False

i = 21 + 2 = 22

(21) i = 22

22 < 23 ? True

23 % 22 == 0 ? False

i = 22 + 1 = 23

(22) i = 23

23 < 23 ? True

23 % 23 == 0 ? Tru

23 == 23 ? Tru

NO. is prim

Ans

Q8 n = 16

i = 2

2 < 16

↓ True

16 % 2 == 0

↓ True

i == n

2 == 16

↓ False

No is not prime Ans

Q9

$X = 60, Y = 36$

(I) Check $Y = 0$?

↓ NO

$X = Y = 36$

$Y = 60 \% 36 = 24$

(II) $X = 36, Y = 24$

$Y = 0$?

↓ NO

$X = Y = 24$

$X = 36 \% 24 = 12$

(III) $X = 24, Y = 12$

$Y = 0$?

↓ NO

$X = 12$

$Y = 24 \% 12 = 0$

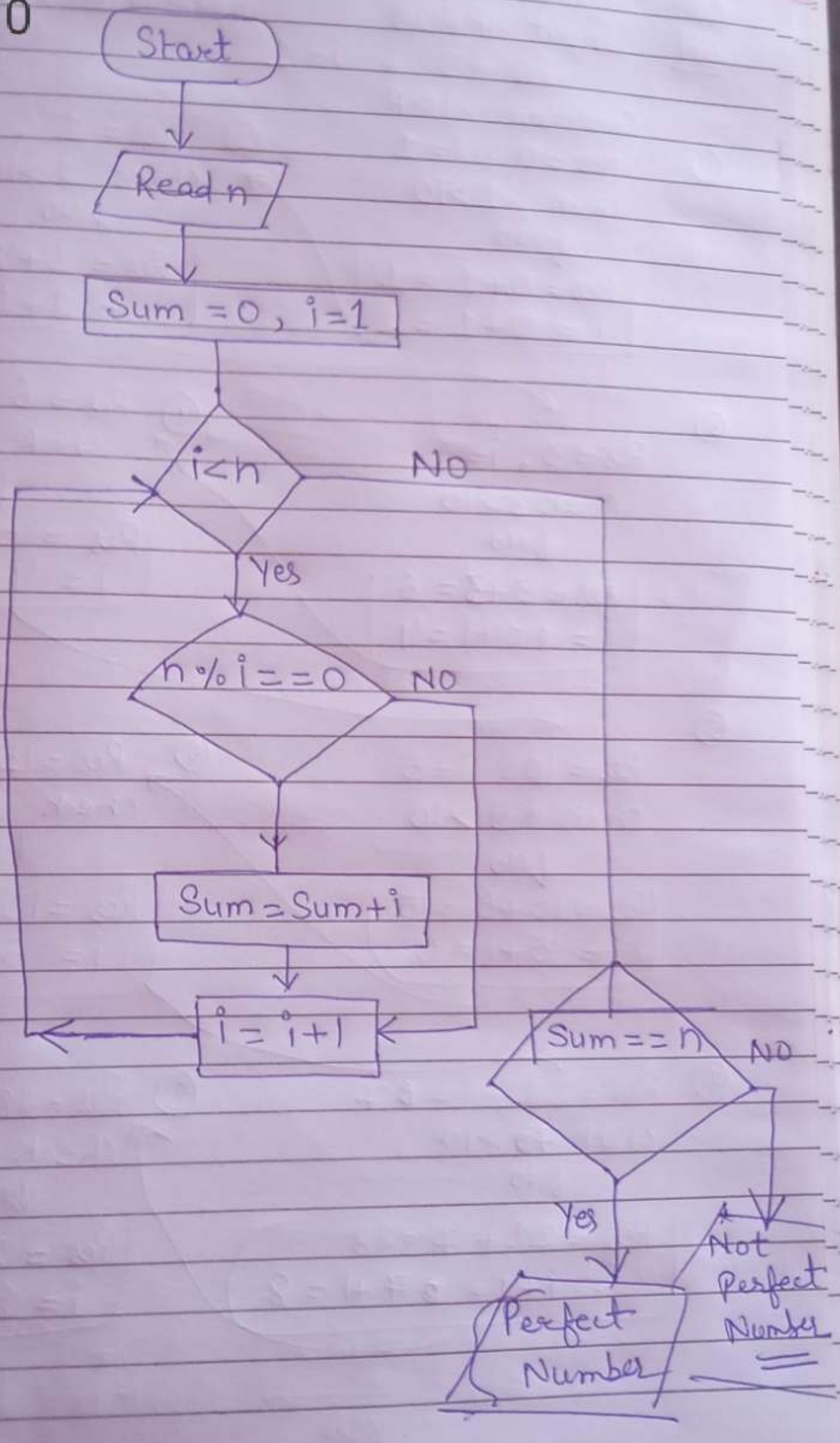
(IV) $X = 12, Y = 0$

$Y = 0$?

↓ Yes

Answer is 12

Q10


Start
Read n
Sum = 0, i=1
i<n
NO
Yes
n % i == 0
NO
Sum = Sum + i
i = i+1
Sum == n
NO
Yes
Perfect Number
Not Perfect Number

Dec 6

Q10 n = 6

(i) Sum = 0, i = 1

1 < 6 ? yes

6 % 1 == 0 ?

↓ Yes

Sum = 0 + 1 = 1

↓

i = 1 + 1 = 2

(ii) Sum = 1, i = 2

2 < 6 ? yes

6 % 2 == 0 ?

↓ Yes

Sum = 1 + 2 = 3

↓

i = 2 + 1 = 3

(iii) Sum = 3, i = 3

3 < 6 yes → 6 % 3 == 0 yes → Sum = 3 + 3 = 6

i = 3 + 1 = 4

(iv) Sum = 6, i = 4

4 < 6

↓ Yes

6 % 4 == 0

↓ NO

i = 4 + 1 = 5

(v) Sum = 6, i = 5

5 < 6

↓ Yes

6 % 5 == 0

↓ NO

i = 5 + 1 = 6

(vi) Sum = 6, i = 6

6 < 6

↓ NO

Sum == n

6 == 6

↓ Yes

Perefect Number