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INTD 290

Number Systems - Asychronous Activity:

0.1?: ① B. . . . .

② B. 10

③ A . B

④ 255
$= 2 \times 10^2 + 5 \times 10^1 + 5 \times 10^0$
$= 2 \times 100 + 5 \times 10 + 5 \times 1$
$= 200 + 50 + 5$
$= 255$ ✓

Base-2 System

0.2? : ① • 1000
$= 1 \times 10^3 + 0 \times 10^2 + 0 \times 10^1 + 0 \times 10^0$
$= 1000 + 0 + 0 + 0$
$= 1000$ ✓

• 1001
$= 1 \times 10^3 + 0 \times 10^2 + 0 \times 10^1 + 1 \times 10^0$
$= 1000 + 0 + 0 + 1$
$= 1001$ ✓

• 1101
$= 1 \times 10^3 + 1 \times 10^2 + 0 \times 10^1 + 1 \times 10^0$
$= 1000 + 100 + 0 + 1$
$= 1101$ ✓

• 1111
$= 1 \times 10^3 + 1 \times 10^2 + 1 \times 10^1 + 1 \times 10^0$
$= 1000 + 100 + 10 + 1$
$= 1111$ ✓

(2.) • 32

$32/2 = 16$ r 0 LSB
$16/2 = 8$ r 0
$8/2 = 4$ r 0
$4/2 = 2$ r 0
$2/2 = 1$ r 0
$1/2 = 0$ r 1 MSB

100000 =
$1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 0 \times 2^0$
$32 + 0 + 0 + 0 + 0 + 0$
$= 32$ ✓

• 42

$42/2 = 21$ r 0 LSB
$21/2 = 10$ r 1
$10/2 = 5$ r 0
$5/2 = 2$ r 1
$2/2 = 1$ r 0
$1/2 = 0$ r 1 MSB

101010
$1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$
$32 + 0 + 8 + 0 + 2 + 0$
$= 42$ ✓

• 11

$11/2 = 5$ r 1
$5/2 = 2$ r 1
$2/2 = 1$ r 0
$1/2 = 0$ r 1

1011
$1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$
$8 + 0 + 2 + 1$
$= 11$ ✓

• 17

$17/2 = 8$ r 1
$8/2 = 4$ r 0
$4/2 = 2$ r 0
$2/2 = 1$ r 0
$1/2 = 0$ r 1

10001
$1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$
$16 + 0 + 0 + 0 + 1$
$= 17$ ✓

「Base-16 system」

① B. C

(2) 255 to hexadecimal

a) 255 / 16 = 15 r 15 } FF
15 / 16 = 0 r 15 }

"Base-20 system"

32: (1)

A = 10 E = 14 I = 18
B = 11 F = 15 J = 19
C = 12 G = 16
D = 13 H = 17

a) $20^0 = 1$

$20^1 = 20$

$20^2 = 400$

b) 401 = [1] × 20^2 = 400
+ [0] × 20^1 + 0 [101]
+ [1] × 20^0 + 1
401 ✓

c) 401 = 101

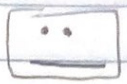
(2) • 25 = [1] × 20^1 = 20
+ [5] × 20^0 + 5 [15]
25 ✓

• 45 = [2] × 20^1 = 2 × 20 = 40 [25]
[5] × 20^0 = 5 × 1 + 5
45 ✓

• 425 = [1] × 20^2 = 400
[1] × 20^1 + 20 [115]
[5] × 20^0 + 5
425 ✓

• 625 = [1] × 20^2 = 400
[6] × 20^1 + 220 [165]
[5] × 20^1 + 5

(3) .25 = 

.45 = 

.425 = 

.625 =