

BE 1200 MIDTERM 2

21) Long Lane

$$1) 110010 \quad 32+16+2=50$$

1) C

$$2) \begin{array}{r} 45/2 = 22 \quad 1 \\ 22/2 = 11 \quad 0 \\ 11/2 = 5 \quad 1 \\ 5/2 = 2 \quad 1 \\ 2/2 = 1 \quad 0 \\ 1/2 = 0 \quad 1 \end{array}$$

$$101101 \quad 2) B$$

$$3) B \quad 2) C$$

$$18421 \quad 8421$$

$$10110010$$

$$10110010$$

$$4) 00011011$$

$$1 \quad B$$

$$0x1B$$

$$4) C$$

$$5) 20/2 = 10 \quad 0$$

$$10/2 = 5 \quad 0$$

$$5/2 = 2 \quad 1$$

$$2/2 = 1 \quad 0$$

$$1/2 = 0 \quad 1$$

$$6) 2C$$

$$128+32+8+4=172 \quad 172) B$$

$$32+8+4=44$$

$$00010100$$

$$1 \quad 4$$

$$5) A$$

$$7) 10101100$$

$$128+32+8+4=172 \quad 172) B$$

$$8) 168/2 = 84 \quad 0$$

$$84/2 = 42 \quad 0$$

$$42/2 = 21 \quad 0$$

$$21/2 = 10 \quad 1$$

$$10/2 = 5 \quad 0$$

$$5/2 = 2 \quad 1$$

$$2/2 = 1 \quad 0$$

$$1/2 = 0 \quad 1$$

$$9) E301-0001$$

$$11100011 \quad 9) A$$

$$11100011 \quad 0000 \quad 0001$$

$$11100011 \quad 0000 \quad 0001$$

$$11100011 \quad 0000 \quad 0001$$

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$$11100011 \quad 0000 \quad 0001$$

10) 16, 8, 4, 2, 1

1, 1, 1, 1, 1

16+8+4+2+1

31

$$Q2) R_{total} = 90 + 45 + 180$$

$$= 135 + 180$$

$$= 315 \Omega$$

✓
I_R

$$R_1 = 9V, R_2 = 9V, R_3 = 9V$$

$$I_{R_1} = \frac{9}{90} = 0.1 \text{ Amps}$$

$$I_{R_2} = \frac{9}{45} = 0.2 \text{ Amps}$$

$$I_{R_3} = \frac{9}{180} = 0.05 \text{ Amps}$$

Q3) A) 0 1 0 0 1 1 1 1
00010111 and
0.00001111

B) 1 0 1 0 1 0 1 0
00001110 100
1.0100100

C) 0 1 0 0 1 0 0 0
00111000 or
0.11110000

D) 1 1 1 1 0 0 0 1
00001110

64 32 16 8 4 2 1
E) 1 0 0 0 0 1 0 not
0.111101

F) 64 32 16 8 4 2 1
1 0 0 0 0 0 0 0

G) 32 16 8 4 2 1
1 0 0 0 0 1 0 0 0

H) 64 32 16 8 4 2 1
1 1 0 1 0 1 0
0.000110

Q4) x =
1
2

3
4
5

Q5) A) data
latch
clock
counter

void
pin
pin
pin

void
f0

3
3

B) for

C) 128

1
8

Q4) x =

1	0	1	1	0	0	1	0
1	0	1	1	0	1	1	0
1	0	1	1	0	1	1	0
0	1	0	0	1	0	0	1
1	1	1	1	1	0	0	1
0	1	0	0	1	0	0	1
1	1	1	1	1	0	0	1
1	0	1	1	0	0	0	0
0	0	0	0	1	0	1	1

or ~

4 10r 774

Q5) A)

```
dataPin = 2;
latchPin = 3;
clockPin = 4;
counter = 0;
```

```
void setup() {
  pinMode(dataPin, OUTPUT);
  pinMode(latchPin, OUTPUT);
  pinMode(clockPin, OUTPUT);
}
```

```
void loop() {
  for (counter = 0; counter <= 255; counter++) {
    digitalWrite(latchPin, HIGH);
    shiftOut(dataPin, latchPin, MSBFIRST, counter);
    digitalWrite(latchPin, LOW);
    delay(500);
  }
}
```

repeat this

B) for (counter = 32; counter <= 126; counter++) {

C) 128 64 32 16 8 4 2 1

8 LEDs

Q6) Change the array `seq[]` to:
`seq[] = {3, 6, 12, 24, 48, 96, 192}`
change `n` in for loop:
`for(int n=0; n<7; n++) {`