

Name: Rashik Rahman

ID : 17201012

Answer to the Q. No. 1

~~A~~

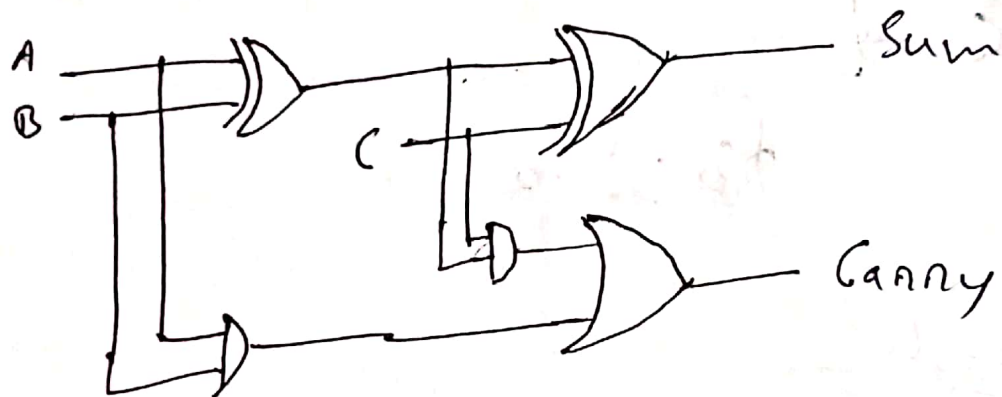


fig: full adder

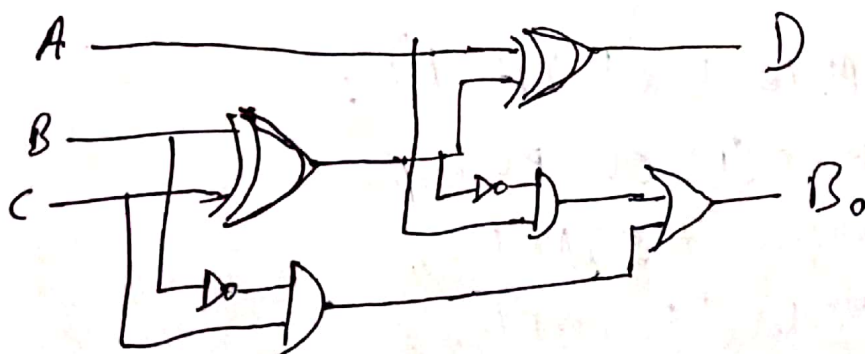


fig: full subtractor.

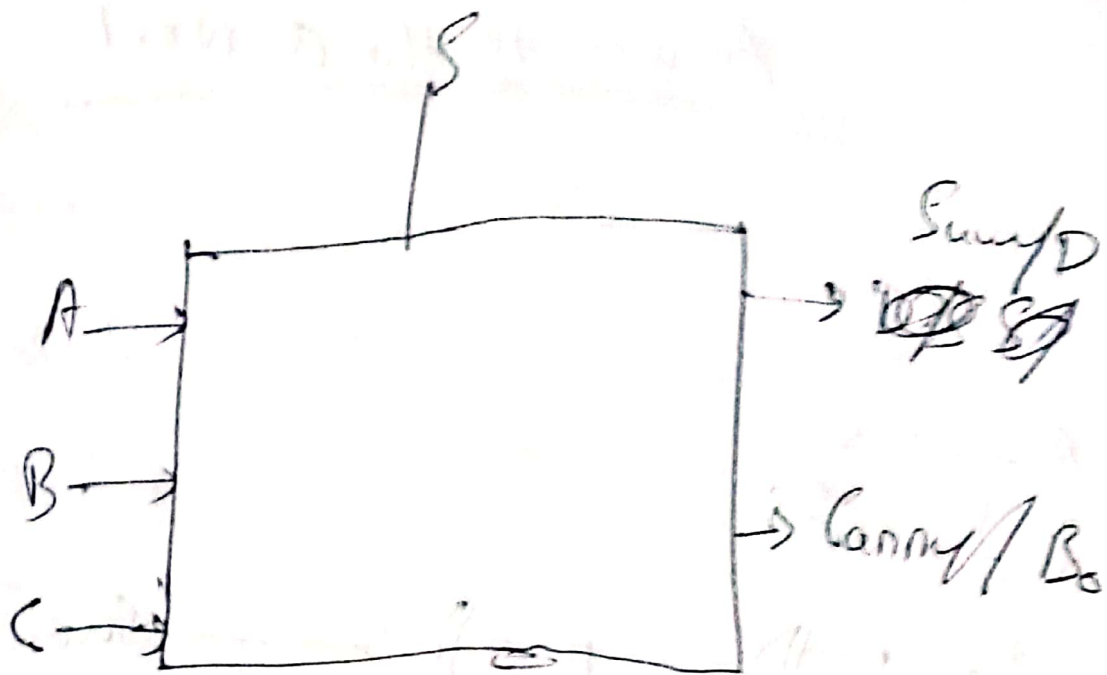


fig: Diagram

Sketch

byte A, B, C, S;

void setup() {

pinMode(13, OUTPUT);

pinMode(12, OUTPUT);

pinMode(7, INPUT);

pinMode(8, INPUT);

pinMode(9, INPUT);

pinMode(10, INPUT);

}

```
void loop() {
```

```
    s = digitalRead(10);
```

```
    if (s == 0) {
```

```
        A = digitalRead(7);
```

```
        B = digitalRead(8);
```

```
        C = digitalRead digitalRead(9);
```

```
        if (s == 0) {
```

```
            digitalWrite(12, A ^ B ^ C);
```

```
            digitalWrite(13, (A & B) | (B & C) | (A & C));
```

```
        }
```

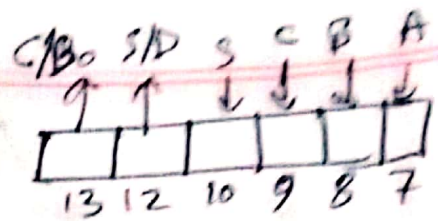
```
    } else {
```

```
        digitalWrite(12, A ^ B ^ C);
```

```
        digitalWrite(13, (!A & C) | (!A & B) | (B & C));
```

```
    }
```

```
}
```



Answer to the Q.No. 2

10 = 17201012

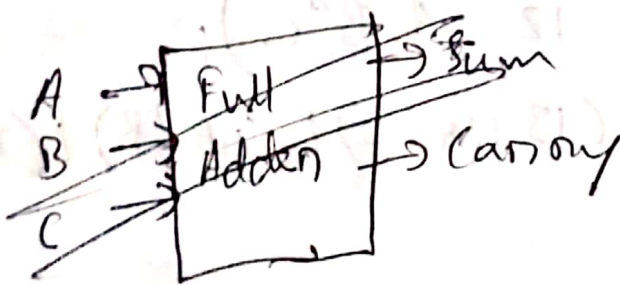
last three digit binary

0 = 0000

1 = 0001

2 = 0010

∴ Three bits = 010



A	B	C	Sum	Carry
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

Fig : Truth table.

From this table we can see that addition of 010 is indeed $s=1$ and $c=0$. So my answer is correct. [Proved]