**Question No 1:**

Analog input=V=5v

Also the conversion is 10 bit means that the 10 bit ADC is used so

n=10

b=?

As we know that

𝑉 = 5(b/ ((2^n)−1))

Putting values in above equation

5=5(b/ (2^10)-1))

5=5(b/ (1024-1))

5=5(b/1023)

1=b/1023

b=1023

Converting this value in binary will become 11111111 so

b=11111111

**Question NO 2:**

Number =00 0101 1111

**Right justified:**

It means that the six most significant bits are padded with zero.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Right Justified | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | **1** | **1** | **1** | **1** |

Bits 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

**Left justified:**

It means that the six least significant bits are padded with zero.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Left Justified | **0** | **0** | **0** | **1** | **0** | **1** | **1** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | **0** | **0** |

Bits 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

**Question No 3 :**

Baud rate=32895 b/s

Crystal frequency=Fosc=10MHz

SPBRG value= X=?

As crystal frequency is 10MHz so 10MHz/4 =2.5MHz frequency for instruction cycle frequency. This is again divided by 16 before using it so it becomes 2.5MHz/16=156250MHz.As we know that

X= (156250/baud rate)-1

so

X= (156250/32895)-1

X=3.74=4

So 4 will be loaded to SPBRG register.

**Question No 4 :**

**RCIF flag:**

It is receive interrupt flag bit. If it is 1 it mean that the UART has received the byte of data and it is sitting in the RCREG register (receive buffer),

waiting to be picked up. Upon reading the RCREG register the RCIF is cleared to allow the next byte to receive. If it is zero it means that the RCREG register is empty.

**TXIF flag:**

It is transmit interrupt flag bit. If it is zero it is zero it means that the TXREG register is full and if it is one it means that TXREG register (transmit buffer) register is empty. To transmit a byte of data we writ it in TXREG register. Upon writing a byte into TXREG register, the TXIF flag is cleared. When the entire bit is transmitted it is raised to indicate that whole byte is transmitted ad ready for next byte. So we should monitor this flag before writing a new byte in TXREG, otherwise we wipe out the last byte before it is transmitted.