CYCLE-2

21/12/24.

Q2) Experiment - 13

Q2):) Write a program for error detection code using CRC-CCITT (16 bits).

code:

```
def xor(a,b):
    result = []
    for i in range(1, len(b)):
        if a[i] == b[i]:
            result.append('0')
        else:
            result.append('1')
    return ''.join(result)

def mod2div(dividend, divisor):
    pick = len(divisor)
    tmp = dividend[0:pick]
    while pick < len(dividend):
        if tmp[0] == '1':
            tmp = xor(divisor, tmp) +
                  dividend[pick]
        else:
            tmp = xor('0'*pick, tmp)
                  + dividend[pick]
        pick += 1
    if tmp[0] == '1':
        tmp = xor(divisor, tmp)
    else
        tmp = xor('0'*pick, tmp)
    checkword = tmp
    return checkword
```

```
def encode (data, key):
    l_key = len(key)
    appended_data = data + '0' *
                    (l_key - 1)
    remainder = mod2div(appended_
                data, key)
    codeword = data + remainder
    print ("Remainder:", remainder)

    print ("Encoded Data [Data+remainder]
           codeword)
    return codeword.

def decode data(encoded_data, key)
    remainder = mod2div(encoded_data,
                key)
    print("Remainder after decoding:",
          remainder)

    if '1' not in remainder
        print("No error detected in
          received data")

    else
        print ("Error detected in
               received data")
```

data = "100100100010010"

key = "1101"

encoded_data = encodedData(data, key)

decoded_data = encodedData(data

output:

Remainder = 11

encoded_Data(Data + Remainder) =

100100100010010011

Remainder after decoding = 000

No error detected in received data.

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26/12/24