digital circuits session number three 2023

task number one

consider the following numbers

sixteen

negative twenty five

one hundred and twenty seven

negative one hundred and twenty seven

negative one hundred and twenty eight

try to represent the said numbers using the following signed numeric approaches

eight bits two's complement approach

eight bits sign magnitude approach

task number two

consider a system which uses eight bits to represent signed numbers

assume that the system uses the two's complement approach

try to determine the number that each of the following patterns might get regarded as representing

1111 1111

1111 1110

1111 1100

1111 1000

1000 0000

task number three

consider the pattern 1001

try to determine the number that the said pattern might get regarded as representing in the following cases

- four bits unsigned approach is being used
- four bits two's complement approach is being used
- four bits sign magnitude approach is being used

task number four

consider a system which uses four bits to represent signed numbers

assume that the system uses two's complement approach

try to compute the following

0001+1111

0011+1111

0011+1110

0011+1101

0011+1100

1100+0001

0111+0001

1000+1000

task number five

consider the following numeric approaches

eight bits signed integers

sixteen bits signed integers

thirty two bits signed integers

sixty four bits signed integers

let the above approaches use two's complement approach to represent numbers

try to determine the range of values that might get represented by each

of the above approaches

task number six

consider a numeric system which uses three symbols

the said symbols are {0, 1, 2}

try to compute the following

11011 + 22010

111 x 111

22 x 12