1. What is the Advantages of using Booth Algorithm?

ans: Advantages of Booth Algorithm:

negative multipliers efficiently and reduces the number of artithmatic operations.

- a. Wreite the algoreithm for reestoring division. ons Algorithm for Restoring Division:
  - · Initialize remainder and divisore
  - · Left shift dividend and reemovender.
  - · Subtract division from remainder.
  - . If result is negative, restorce remainder and set quotient bit to 0. - military .
  - · If result is positive; keep it and set quotient bit to 1.
    - · Repeat for required bits.
- 3. Algorathm for Non- Restorcing Division:
  - · Initialize remounder and divisor.
  - · left shift and subtract divisor.
  - . If remainder is positive, set quotient bit to]
  - . If negative, set bit to Dand add divisor in next step.
    - . final concrection if remainder is negative.

ARECULE : MURTICINE : 3. REMAINDEN : 2

- Thock streetend bits

4. In floating point numbers when so you say that an underflow or overflow how occurred? one floating Point Under flow Over flow: · Undereflow: Results ?5 Smallore than the smallest representable positive number. · Overflow: Result is larger than the manying treproesentable number. Sec-Birt primatean not cartitionple out offile Generate bit pair recoding of 11010. Bit Paire Recording of 11010 cons · Grap bits: 011010 (Prepend 0). · forces Paires: (01)(10)(10) · Encoding: . . . of the transport too bom 102 000 -10 57+1000 est 410000 91 . . Lot He trailon - 10 - - 10 - 100 may not tong o · Recoding: [+1,-1,-1] a. Using restoring division method, divide and Restoring Division (8 + = 3): · Binarry of 8: 1000, divisor 3: 0011 · Steps: - Shift left and subtract

- Treack quotient bits

- Restorce if regative

· Result: Quotient = 2, Remainder = 2

1. Using non-reestoring division method, divide 8 by 3 ours Step-1: Convert to binoary Dividend (8)=1000
Divisor (3) = 0011

Use 5- bit repræsentation: 8 = 01000, 3 = 00011

· Austient = 0, Remainder = Pro: 1797 2000

Step-3: Repeat for n-bits (4 in this case for 4-bit dividend)

Cycle Steps:

a. left shift remainder and bring neut bit
from divident.

b. Subtreact divisor if przevious remaindere Was Positive, Olse oudd it

c. Based on tresult, set quotient bit:

- If remainder > 0 > set quotient bit=1

- If oremainder < 0 > set quotient bit=0

- · After 4 steps, apply final correction if reorainder is negative (add divisor).
- · Result:
  - · Austient = 0010 (decimal 2)
  - · Remainder = 0010 (décimal 2)
- 2. Carrayout multiplication of below two numbers using both algorithm.

are: Booth's multiplication: (+13) x (-6):

0+13 = 01101, -6 = 11010 Cin B- bit 2's comp. Dishler private of brown : 1-9013 1100 = (8) smalling · Apply Booth's Steps: use 5. bit requiresentation! A -Initialize A, S, and P - Percharm operations boosed on bit Paires (P[1:0]) s bisotions = 0, Remainder not ocos - whifty land regreat togget is got · Afral result = -78 (in 2's complement) 199 1 · Cricle state: a. 1694 Shift reconsorder rend facing pront but . Kind with most b. Sublicact diviser if the views recinatinders Mars . Positive, clee ordert c. Bosod on recent out quotion + but: - If wenninder >0 -> 901 quotient bit-1 -18 occurainder to > set questions tot -0 onthine it excess, capity fixed forces it suppositional is negative took divisors. : Honoras & · (slopped) alor - mailing . (E manied of old : sobonning, and and and welled to application of the low troping. ocing bods olagicities. Reagn's multiplication: (213) x (-6):