Huffman Code

→ Compression technique

→ Greedy Algo

menge = BCCA BBDDAB CC

BBAEDDCC

cost of menge = 20 ~~bits~~ byte = Length

160 bit

A   65   01000001

Make your own encoding ⑦

e.g.   1 bit 0/1 = represent

2 ~~value~~ bit represent 4 value

~~4 bit~~ 3 bit = 8 value

0 --- 7

So

A	~~5~~	3	000
B	~~8~~	~~6~~ 5	001
C		6	010
D		4	011
E		2	100

Size of encoding = 5×8bit 5×3

$40 + 15$

$= 55$ bit

total $= 55 + 60 = 115$ bit

Steps Huffman

1~ find ~~the~~ frequency of all alphabet

A = 3

B = 5
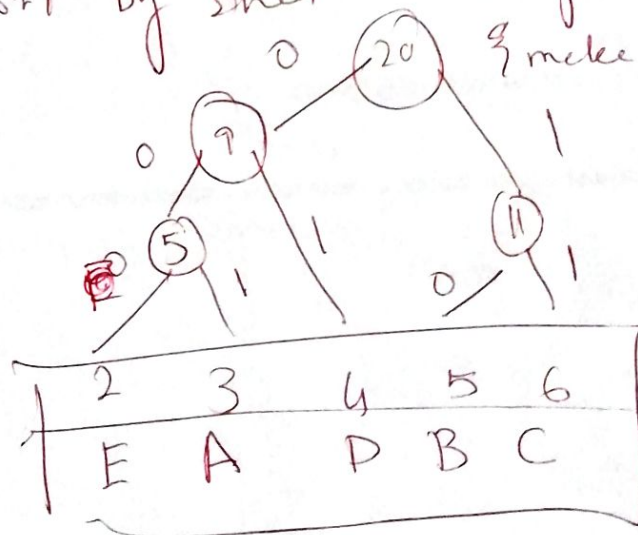
C = 6

D = 4

E = 2.

2~ Sort by Shal.   3~ merge two smallest & make three

```
                    0    (20)
              0   (9)              1        A = 001
                                           B = 10
         (5)       1      (11)             C = 11
       E    1          0      1            D = 01
  ┌──────────────────────────────┐        E 000
  │  2    3    4    5    6   │              ↓
  │  E    A    D    B    C   │            45 bits
  └──────────────────────────────┘          for leaf
```

All left zero, all right 91

Optimal merge pattern tree

```
(3+5 + 40 + 45) = 93
```

5 × 40 + 12 = 52 Bit for table

45 + 12
= 97

To decode

Stort from tree
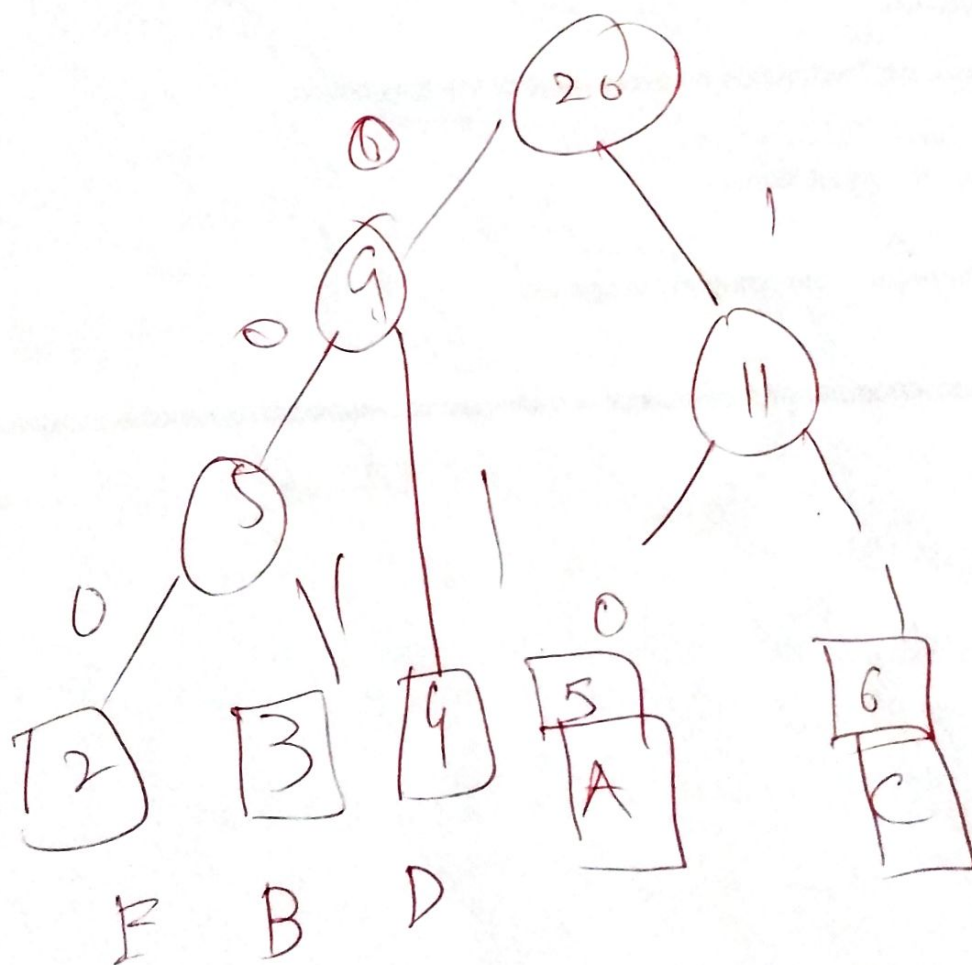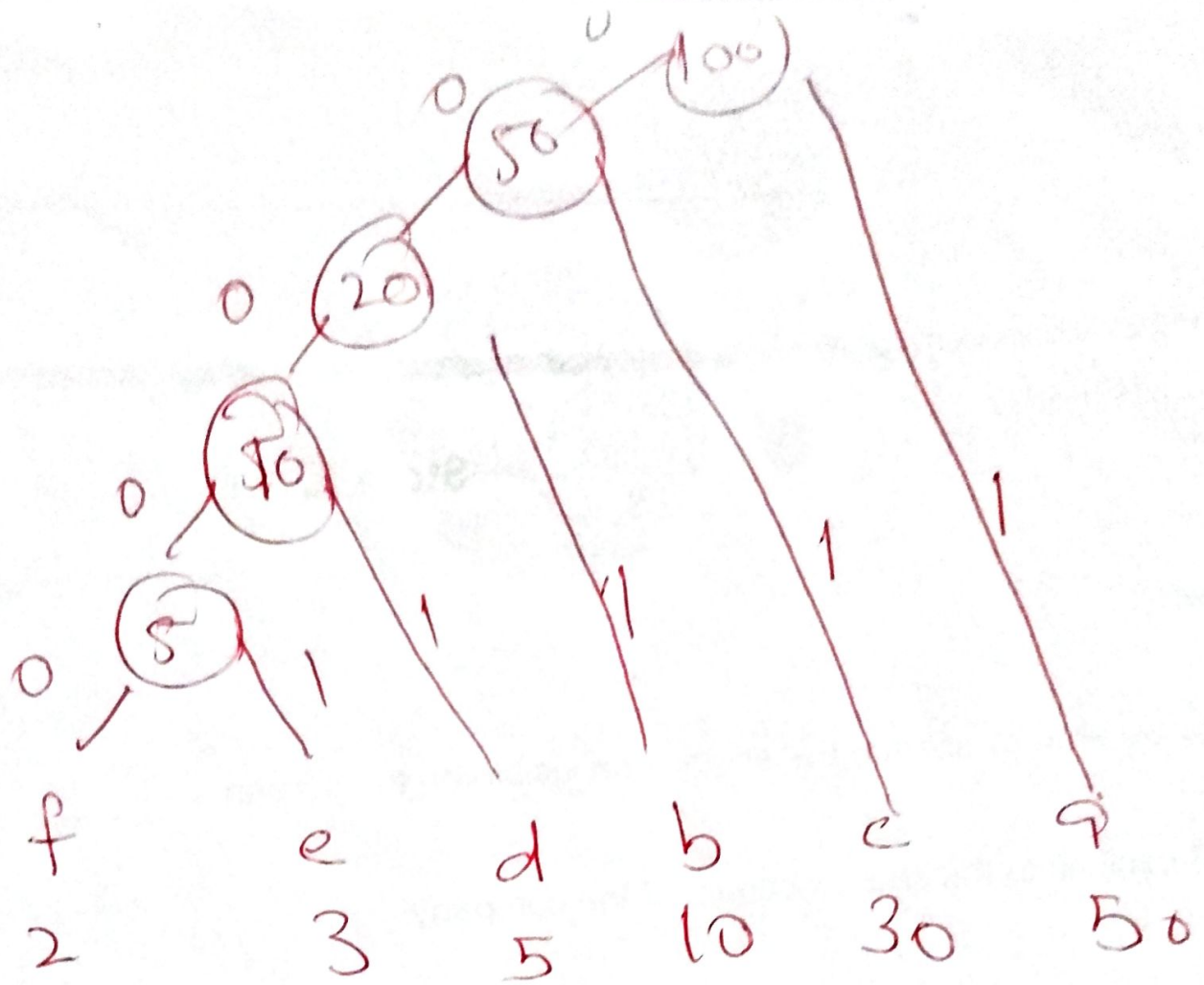
merge = B   C   C   D   A   C
        001 11   11   01   20   11

$a = 1$ $b = 001$ $c = 01$

$d = 0001$ $e = 00001$

$f = 00000$

$= 185$ bits