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 Section: BCS-6C
 Subject: Graph Theory
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Assignment : 03

Q. A commutation b/w ...?

Section-1 \Rightarrow A commutation b/w ...?

Answer: $\begin{bmatrix} 2 \\ 2 \end{bmatrix} \begin{bmatrix} 3 \\ 3 \end{bmatrix} \begin{bmatrix} 5 \\ 5 \end{bmatrix} \begin{bmatrix} 7 \\ 7 \end{bmatrix} \begin{bmatrix} 11 \\ 11 \end{bmatrix} \begin{bmatrix} 13 \\ 13 \end{bmatrix} \begin{bmatrix} 17 \\ 17 \end{bmatrix} \begin{bmatrix} 19 \\ 19 \end{bmatrix} \begin{bmatrix} 23 \\ 23 \end{bmatrix}$

$\begin{bmatrix} 29 \\ 29 \end{bmatrix} \begin{bmatrix} 31 \\ 31 \end{bmatrix} \begin{bmatrix} 37 \\ 37 \end{bmatrix} \begin{bmatrix} 41 \\ 41 \end{bmatrix}$

\Rightarrow Step-2

$\begin{bmatrix} 5 \\ 5 \end{bmatrix} \begin{bmatrix} 7 \\ 7 \end{bmatrix} \begin{bmatrix} 11 \\ 11 \end{bmatrix} \begin{bmatrix} 13 \\ 13 \end{bmatrix} \begin{bmatrix} 17 \\ 17 \end{bmatrix} \begin{bmatrix} 19 \\ 19 \end{bmatrix} \begin{bmatrix} 23 \\ 23 \end{bmatrix} \begin{bmatrix} 29 \\ 29 \end{bmatrix}$

\Rightarrow Step-3

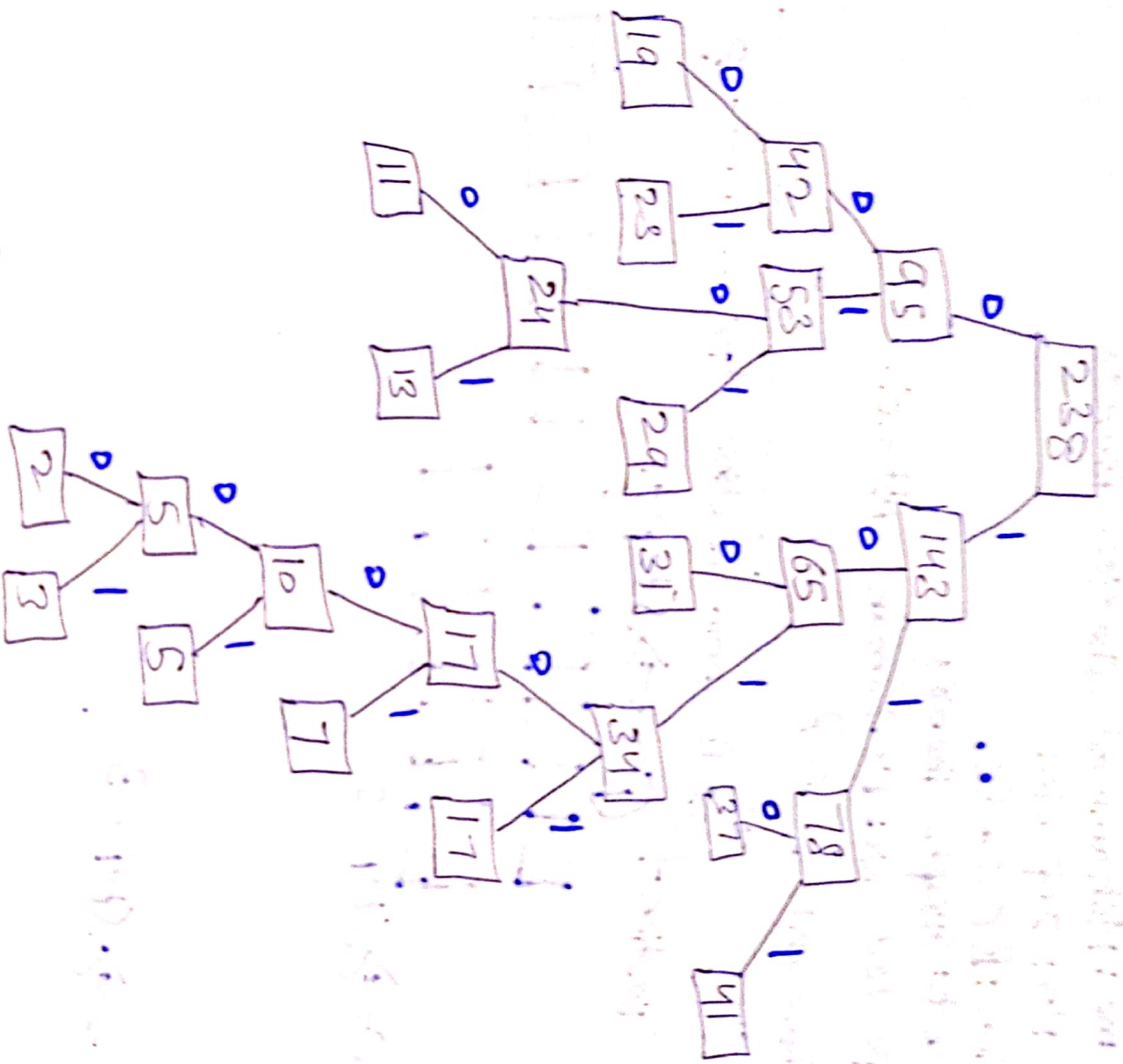
$\begin{bmatrix} 10 \\ 10 \end{bmatrix} \begin{bmatrix} 7 \\ 7 \end{bmatrix} \begin{bmatrix} 11 \\ 11 \end{bmatrix} \begin{bmatrix} 13 \\ 13 \end{bmatrix} \begin{bmatrix} 17 \\ 17 \end{bmatrix} \begin{bmatrix} 19 \\ 19 \end{bmatrix} \begin{bmatrix} 23 \\ 23 \end{bmatrix} \begin{bmatrix} 29 \\ 29 \end{bmatrix}$

\Rightarrow Step-4

$\begin{bmatrix} 17 \\ 17 \end{bmatrix} \begin{bmatrix} 7 \\ 7 \end{bmatrix} \begin{bmatrix} 10 \\ 10 \end{bmatrix} \begin{bmatrix} 5 \\ 5 \end{bmatrix} \begin{bmatrix} 3 \\ 3 \end{bmatrix} \begin{bmatrix} 2 \\ 2 \end{bmatrix}$

\therefore In the next step, it shows the full tree after following the same

steps.



⇒ Huffman codes:

② → 1010100

③ → 1010101

⑤ → 101011

⑦ → 10100

⑪ → 0100

⑬ → 0101

⑭ → 1011

⑱ → 000

②③ → 001

②④ → 011

③① → 100

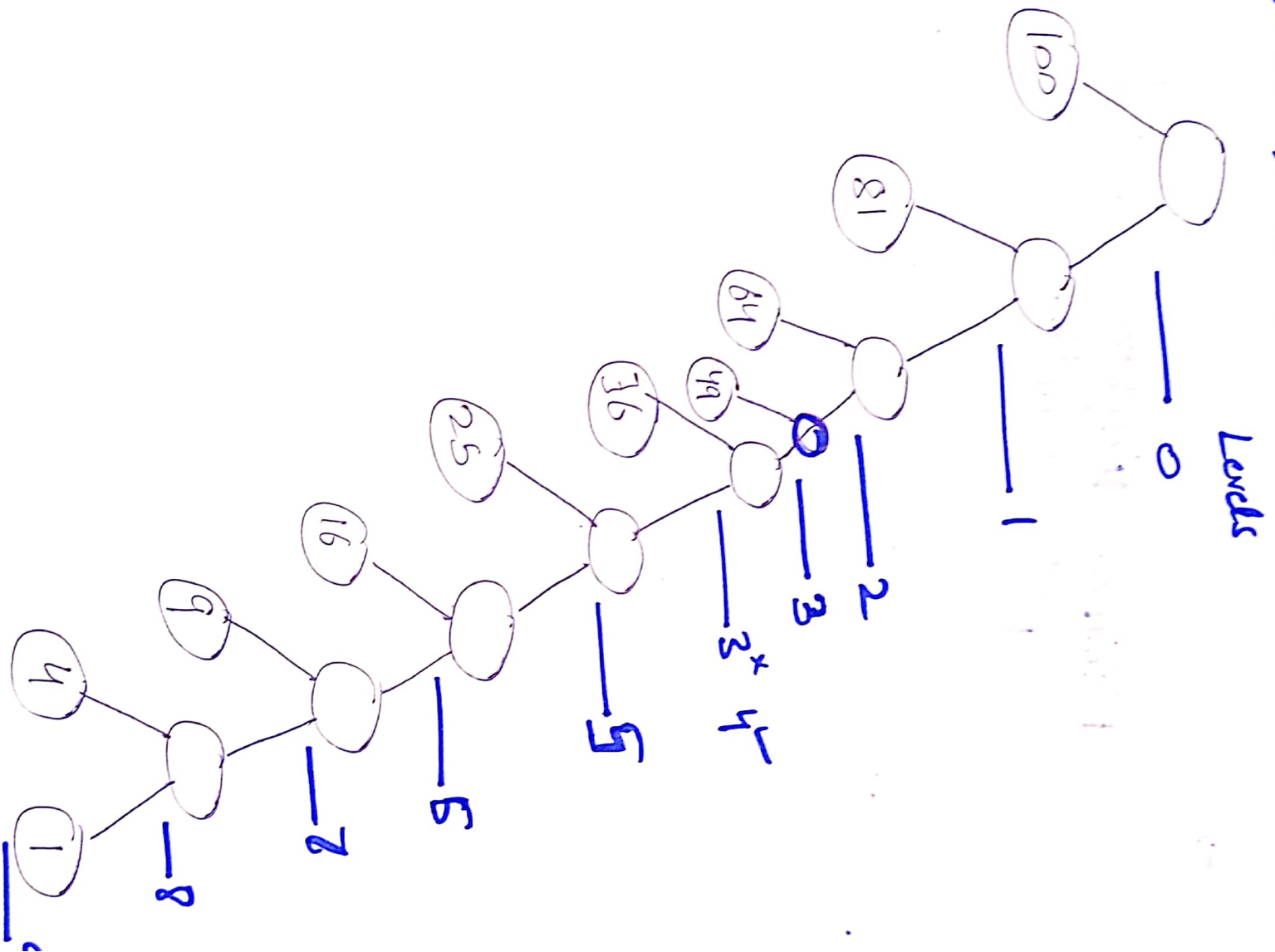
③⑦ → 110

④① → 111

0

Question: 02 :- Construct a min weight 2
 path.....?

1, 4, 9, 16, 25, 36, 49, 64, 81, 100



$$\Rightarrow (1 \times 100) + (2 \times 81) + (3 \times 64) + (4 \times 49) + (5 \times 36) +$$

$$\Rightarrow (6 \times 25) + (7 \times 16) + (8 \times 9) + (9 \times (1+4))$$

$$\Rightarrow 100 + 162 + 192 + 198 + 180 + 150 + 112 + 72 + 45$$

Minimum weighted path length = 1209

