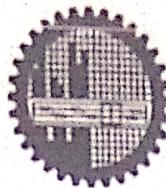


## EXAMINATION SCRIPT

STUDENT NO.

1 7 0 5 0 4 5



DEPARTMENT:

CSE

FL-2T-2

BANGLADESH UNIVERSITY OF  
ENGINEERING AND TECHNOLOGY

COURSE NO.

DATE

COURSE TITLE

## SECTION B

Declaration on the Online Course Conduct by Undergraduate Student of BUET for  
COVID-19 Situation

Please write the declaration (as per no. 2 of 'Instructions' given in the footer) below in your own handwriting and sign it.

On my honour, I bearing Student No. 1705095

I shall not misuse, in any form or method, the course materials, Audio, and video Records of the lectures of this course. I shall not adopt any unfair means during the Final examination and shall not receive any help or offer/provide help to anyone. I shall preserve hard copy and soft copies of the answer scripts and will not expose the same to any person/party/media. I agree to accept any punitive measure taken by BUET authority if any time during or after the completion of the course it is revealed/ violated otherwise.

Signature..... Iftekhar Hatim Kaosar

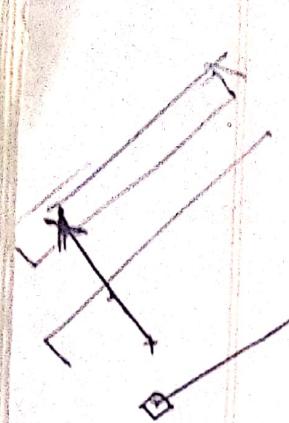
Date.....

## Instructions

1. Clearly enter your Student ID, Course Number, Course Title, and Date in the space provided. Complete the declaration exactly as below with your signature and date. You can also insert the scanned image of your handwritten declaration in this box.
2. Declaration: I shall not misuse, in any form or method, the course materials including Lecture Notes, Reading Materials, Audio and Video Records of the lectures of this course. I shall not adopt any unfair means during the Final Examination and shall not receive any help or offer/provide help to anyone. I shall preserve hard copy and soft copies of the answer scripts and will not expose the same to any person/party/media. I agree to accept any punitive measure taken by BUET Authority if at any time during or after the completion of the course it is revealed/ violated otherwise.
3. Do not put your name or any other form of identification except the Student No. anywhere in the answer script.
4. Use offset/normal white paper of A4 size for writing the answer. Use only one side of the paper for writing. On each page, clearly write your Student ID and Page numbers.

17-05045

B-1



97  
98  
96

+1

97  
95

96

97

98

97

96

95

(1, 2)

96  
97  
95

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97

95

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96

96

94

~

, 3

, 3

6

0 0

5

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11031  
B-2

$$f_i = \frac{1}{2} \times 1 + \frac{1}{2} \times f_1 = \frac{1+f_1}{2} \Rightarrow 2f_i = 1+f_1$$

$$\Rightarrow f_i = 0$$

f

$$f_1 = \frac{1}{2} \times 1 + \frac{1}{2} \times \frac{1}{2} (1+f_1)$$

$$\Rightarrow f_1 = \frac{2+f_1}{2}$$

$$\Rightarrow f_1 = 2$$

$$n=1, f=2$$

B-3

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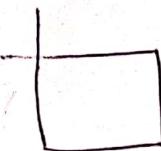
7

6

4

A1 C1

π



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20.03

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B-4

2 3

2

3

2+2

110  
101  
611  
11011

11011

11011

2×2×3

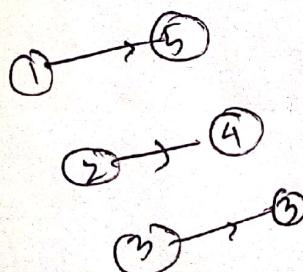
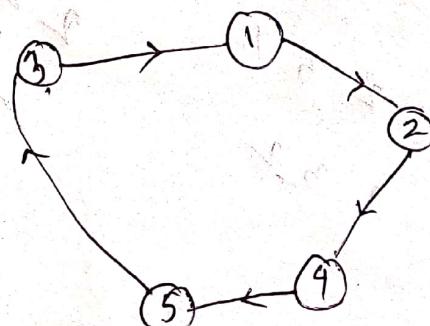
110 110 110

101 101 101 101 101

110 110 110    110 110 110  
101 101

110 110 110

011



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B-5

2 4 1 5 3

2 4 1 3 5

2 1 4 3

5

2 4 1 5 3

2 4 1 3 5

(2) 1 3 4 5

1 2 3 5 4

1 2 3 4 5

1 2 3 ↑  
1 3 2  
2 3 4 1  
2 3 1 4  
2 1 3 4  
2 1

2 1 4 3  
2 1 3 4  
2 1 3 4

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B-6

121

1 2 1 → 1

1 2 2

$$18_{C6} = 18561 \\ 22132 \\ 38760 \\ 59269$$

 $s_{Cn} = 5$  $n+1c_n - n c_n$ 

$$= \frac{(n+1)!}{(n+1-\pi)!\pi!} - \frac{n!}{(n-\pi)!\pi!}$$

$$= \frac{(n+1)! \times n! \times (\pi-\pi+\pi)}{\pi! (n+1-\pi)!}$$

$$\underline{(n+1)(\cancel{n!})} - \underline{\cancel{n!}}$$

 $\begin{pmatrix} a^{16} & c_{12} \\ \end{pmatrix}$ 

$$s_{C2} \\ x_3, x_{C3} = 21 \\ x_{C2}, x_{C3} = 21 \\ 8_{C3}, 8_{C3} = 28 \\ 34 \\ 95 \\ 9$$

 $8_{C3}$ 

120

$$8_{C2}, x_{C2} = 35 \\ 9_{C2}, 9_{C2} = 56$$

$$(n+1)c_n - n c_n \\ = \frac{(n+1)!}{(n+1-\pi)!\pi!} - \frac{n!}{(\pi-1)!\pi!}$$

$$= \frac{(n+1)! - n!(n+1-\pi)!}{\pi!(n+1-\pi)!}$$

$$= \frac{n!(n+1-\pi)! - n!(n+1-\pi)!}{\pi!(n+1-\pi)!}$$

$$= \frac{n!n}{\pi!(n+1-\pi)!} \\ = \frac{n!}{(\pi-1)!\pi!}$$

 $n c_{n-1}$

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B-7

$${}^{n+1}P_n - {}^nP_n$$

$$= \frac{(n+1)! - n!}{n!}$$

$$= \frac{(n+1)n! (n+1-1)}{n!}$$

$$= \frac{n! n}{n!}$$

$$x_1 + x_2 + x_3 \leq 1$$

$$\begin{matrix} 4 \\ c_3 \\ c_2 \end{matrix}$$

$$\begin{matrix} 4 \\ c_3 \\ c_2 \end{matrix}$$

$$x_1 + x_2$$

$$\begin{matrix} 1 & 2 & 3 \\ x_1 & x_2 & x_3 \end{matrix}$$

$$\begin{pmatrix} 0 & 1 & 0 & 0 \\ 2 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

$$x_1 + x_2 + x_3 = 1$$

$$\begin{matrix} 4 \\ x_3 \\ 1 \\ c_1 \end{matrix}$$

$$6 \sqrt{9}$$

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B-8

$$a \cdot x i_1 + b \equiv a \cdot x i_2 + b \pmod{m}$$
$$\Rightarrow A \cdot x (i_1 - i_2) \equiv 0 \pmod{m}$$

$$dp[3] = -50$$
$$dp[4] = -50$$

dp[1]

$$dp[1] = -50$$

$$dp[2] = -50$$

$$dp[3] = -50$$

$$dp[4] = -10$$

$$dp[1] = -10$$

$$dp[2] = -30$$

$$dp[3] = -20$$

$$dp[4] = -30$$

$$dp[1] = -30$$

$$dp[2] = -30$$

$$dp[3] = -30$$

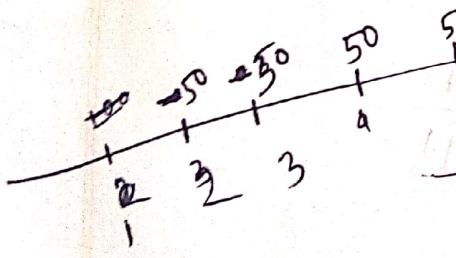
$$dp[4] = -30$$

$$dp[1] = -30$$

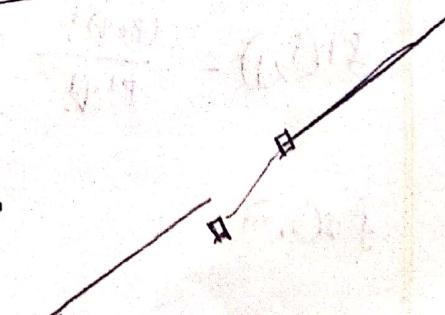
$$dp[2] = -30$$

$$dp[3] = -30$$

$$dp[4] = -30$$



$$dp[1] = -10$$
$$dp[2] = -30$$
$$dp[3] = -60$$



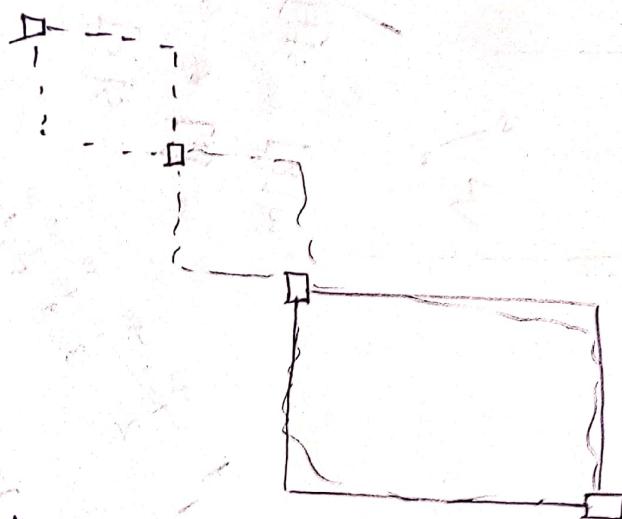
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B-9

K  
o

1	9	6
3	3	3
4	5	5
7	8	8

□ □ □



$$dp[i][j][0] = \text{for } i < k < j:$$

$\sum_{x=1}^y \{ dp$

$$f_2(i, j) = \text{for } i < k < j:$$

$$\sum_{k=i+1}^{j-1} f_1(i, k) * \cancel{f(k, j)} \frac{(x+y)!}{x!y!}$$

$$f_1(i, j) = \frac{(p+q)!}{p!q!} - f_2(i, j)$$

$$f_2(1, m)$$

$$v^m \quad \cancel{v^m} \quad 2^m$$

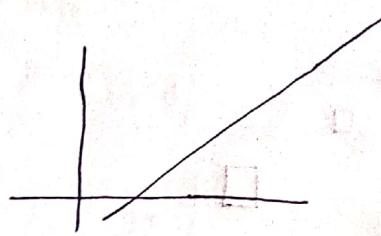
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B-10

$$(b-a)+1$$

$$(l+1)^2 = l^2 + 2l + 1$$

$$(h_j - h_i)^2 + \cancel{dp[l] + c} \\ = h_j^2 + h_i^2 - 2[h_j]_i + dp[j] + c$$

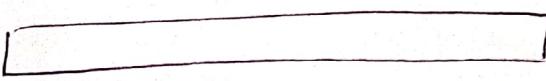


$$y_j = -2h_j x + C_1 - \frac{dp[l+3]}{01} \quad 9 \\ 3 \quad 8 \quad 15 \\ 3 \quad 8 \quad 15$$

$$dp[l] + 18 + c \quad dp[l+i] + 4 + c \quad dp[l+i] + 9 + c$$

$$\begin{array}{c} A \\ dp[l] + c + 1 \\ \hline 2 \end{array} \quad \begin{array}{c} A+3 \\ dp[l+i] + c \\ \hline 5 \end{array} \quad \begin{array}{c} 4+8 \\ dp[l+i] + c \\ \hline 15 \end{array} \quad \begin{array}{c} dp[l+i] + 16 + c \\ \hline 16 \end{array}$$

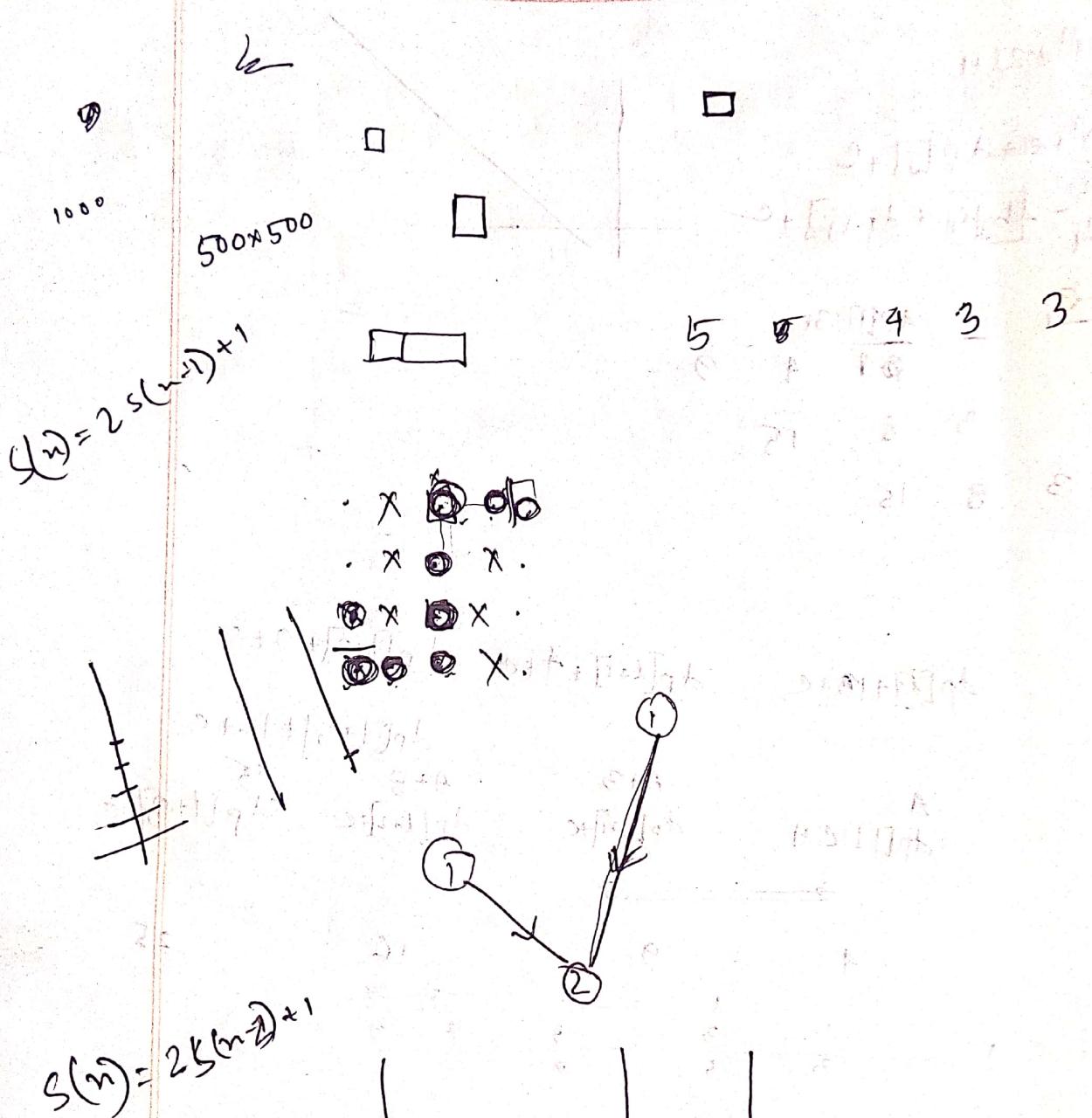
$$\begin{array}{ccccccc} & & & 1 & 9 & 16 & 25 \\ & & & \hline & 1 & 3 & 5 & 7 & 9 & \\ & & & \hline & 3 & 5 & 7 & 9 & 11 & \end{array}$$



1+

$$y = -10x + 25 \times 6 \\ = -10x + 30 \\ , 9 + 16$$

112 1705045

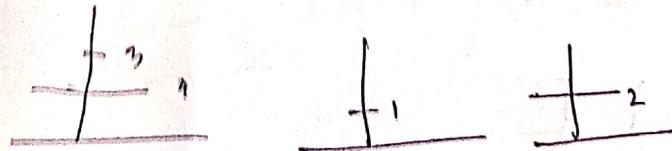
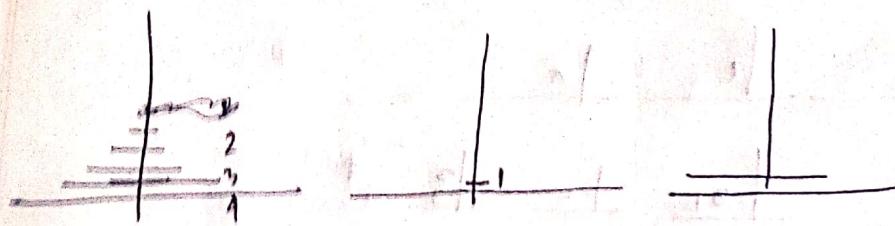


$$S(n) = 2^{k(n-1)^{+1}}$$

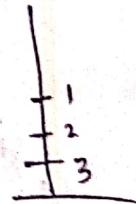
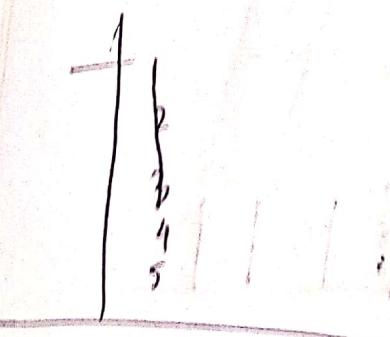
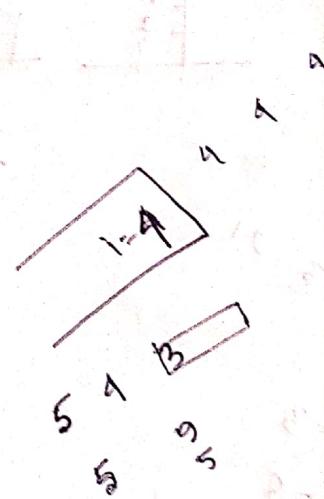
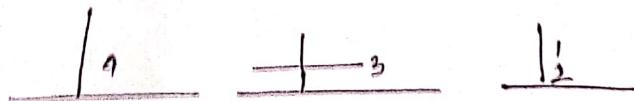
$$\begin{aligned}
 S(8) &= 2^8 S((\cancel{8}-1)^{+1}) \\
 S(k) &= 2^k ((S((k-1)^{+1}))^{+1})^{+1} \\
 &= 2^k ((S(2)^{+1})^{+1})^{+1} \\
 &= 2^{(3+1)^{+1}}
 \end{aligned}$$

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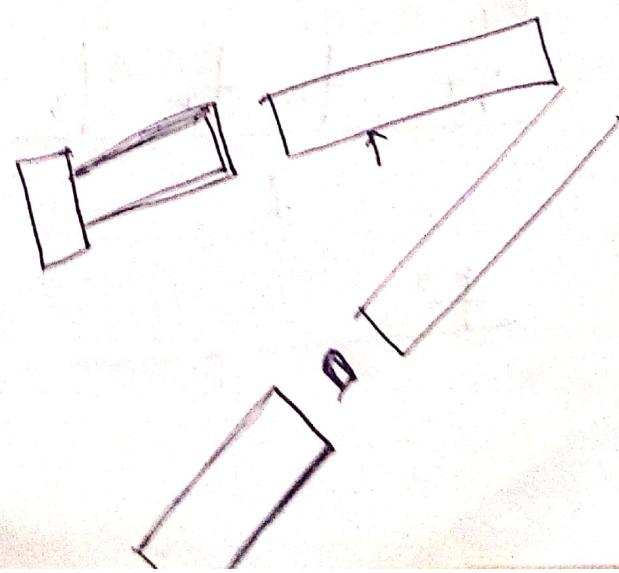
B-12



$s_n = 2^{(n)}$



$x[i-1]$



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B-13

$$\begin{array}{c} f_2 \\ \hline \end{array} \quad \begin{array}{c} b \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} f_{01} \\ \hline 1 \end{array} \quad \begin{array}{c} f_2 \\ \hline 2 \end{array} \quad \begin{array}{c} f_3 \\ \hline 3 \end{array}$$

$$\begin{array}{c} f_2 \\ \hline \end{array} \quad \begin{array}{c} f_3 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} f_3 \\ \downarrow \\ \hline \end{array} \quad \begin{array}{c} b \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} b \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

1

$$\begin{array}{c} f_3 \\ \hline \end{array}$$

$$\begin{array}{c} f_2 \\ \hline \end{array} \quad \begin{array}{c} f_3 \\ \hline \end{array}$$

$$\begin{array}{c} f_2 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$f(2) = 3$$

$$f(3) = 5$$

$$\begin{array}{c} f_3 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} f_2 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} f_9 \\ \hline \end{array} \quad \begin{array}{c} f_1 \\ \hline \end{array} \quad \begin{array}{c} f_2 \\ \hline \end{array} \quad \begin{array}{c} f_3 \\ \hline \end{array}$$

$$\begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

$$\begin{array}{c} f_4 \\ \hline \end{array}$$

$$\begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array} \quad \begin{array}{c} 1 \\ \hline \end{array}$$

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B-14

3 3 4 5

0, 3, 6,

3 [3 4] [5]

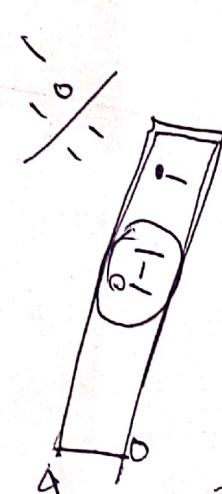
⑦ 5

5

⑦

1/8  
1/x  
1/c  
1/g  
1/a  
1/m

3, 2, 1



$$\begin{aligned} 1-2 &= 6 \\ 3 & \\ 2 & \quad 14 = 7 \\ 63 &= 31 \end{aligned}$$

7 3

5 4 3 3

8

⑤

$$\begin{aligned} x &= 1 \\ y &= 6 \end{aligned}$$

4 5  
 $3x + 16$

3

$3x + 8$   
5

9

3 4

0, 3  
0, 3, 6

0, 3, 6,  
7, 10

1 3

3

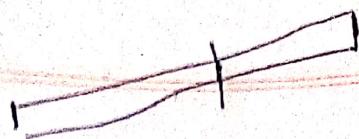
$x^2 + y^2$

3

3

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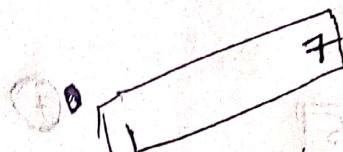
B-15



3 7

1 3

odd + even =

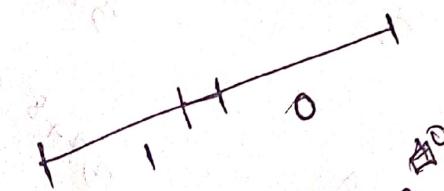
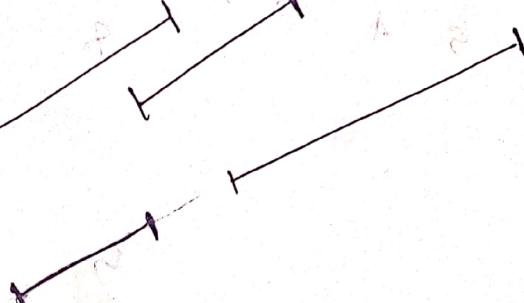
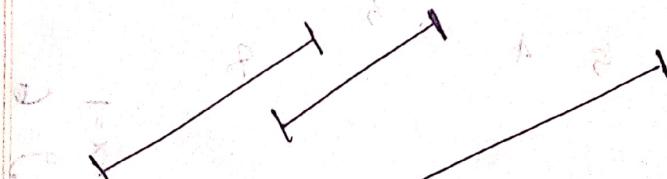


$f(1, 7) =$

8  
6  
 $\text{gcd} = 2$

$(\lambda_1, \mu_1)$

$(\lambda_2, \mu_2)$



240