

BASHIR ABUBAKAR IDRIS 2001
CHEMICAL ENGINEERING

18/ENG01/011

$$y = y_0 e^{kt}$$

$$y = 3y_0; \frac{y}{y_0} = 3$$

$$A \quad \frac{y}{y_0} = e^{kt} = 3 \quad \text{at } t=9$$

$$B \quad \frac{y}{y_0} = e^{kt} = 9 \quad \text{at } t=18$$

$$\therefore A \quad y_0 = 50 \dots \textcircled{i}$$

$$B \quad y_0 = 150 \dots \textcircled{ii}$$

$$\therefore y = 50 e^{kt} \dots \textcircled{iii}$$

$$y = 150 e^{kt} \dots \textcircled{iv}$$

$$A, \quad 3 = e^{kt}$$

$$\ln 3 = kt$$

$$\ln 3 = 9k$$

$$k = \frac{\ln 3}{9}$$

$$k = 0.122$$

$$B \quad 9 = e^{kt}$$

$$\ln 9 = 18k$$

$$\frac{\ln 9}{18} = k$$

$$k = 0.122$$

$$\therefore y = 50 e^{0.122t} \dots \textcircled{A}$$

$$\therefore y = 150 e^{0.122t} \dots \textcircled{B}$$

$k = 0.1, 10$

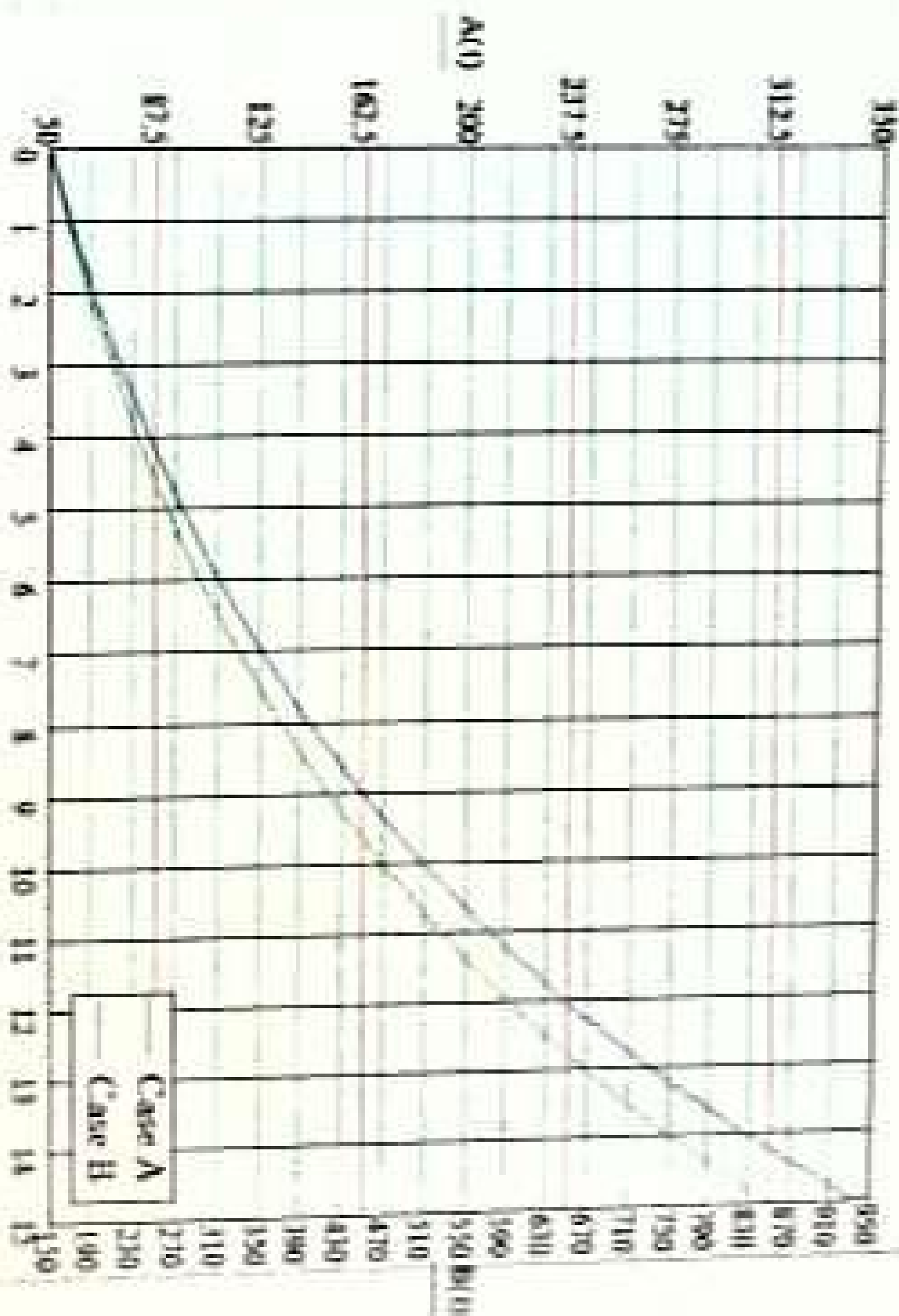
AO - 50 mgp(0.122-0)

BO - 150 mgp(0.122-0)

AO	BO
56,400	169,463
61,817	191,457
72,090	216,293
81,453	244,150
92,022	276,003
103,962	311,805
117,491	352,354
132,691	398,073
149,908	449,725
169,359	508,078
191,124	574,003
216,161	648,483
244,209	732,626
275,896	827,687
311,694	935,083

AO	BO
56,400	169,463
61,817	191,457
72,090	216,293
81,453	244,150
92,022	276,003
103,962	311,805
117,491	352,354
132,691	398,073
149,908	449,725
169,359	508,078
191,124	574,003
216,161	648,483
244,209	732,626
275,896	827,687
311,694	935,083

Number of bacteria for case A



Number of bacteria for case B

Numbers of bacteria versus time