

ETOK NSIBIET-ABASI EDEM

18/ENG02/039

COMPUTER ENGINEERING

$$y = y_0 e^{kt}$$
$$y = 3y_0; \frac{y}{y_0} = 3$$

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

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

$\therefore y_0 = 50$  --- i  
 $\quad y_0 = 150$  --- ii

$\therefore y = 50e^{kt}$  --- iii  
 $y = 150e^{kt}$  --- iv

A  $\therefore 3 = e^{kt}$   
 $\ln 3 = kt$   
 $\ln 3 = 9k$   
 $k = \frac{\ln 3}{9}$   
 $k = 0.122$

$9 = e^{kt}$   
 $\ln 9 = 18k$   
 $\frac{\ln 9}{18} = k$   
 $k = 0.122$

$$\therefore y = 50e^{0.122t} \quad \text{--- A}$$
$$\therefore y = 150e^{0.122t} \quad \text{--- B}$$

$$t = 0, 1, 15$$

$$A(t) = 50 \exp(0.122 t)$$

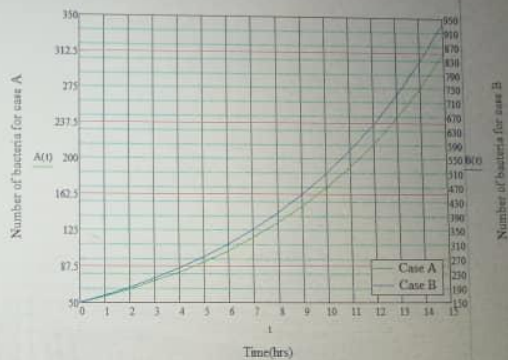
$$B(t) = 150 \exp(0.122 t)$$

A(t) =

50
56.488
63.817
72.098
81.453
92.022
103.962
117.451
132.691
149.908
169.359
191.334
216.161
244.209
275.896
311.694

B(t) =

150
169.463
191.452
216.293
244.358
276.065
311.885
352.354
398.073
449.725
508.078
574.003
648.483
732.626
827.687
935.083



Numbers of bacteria versus time