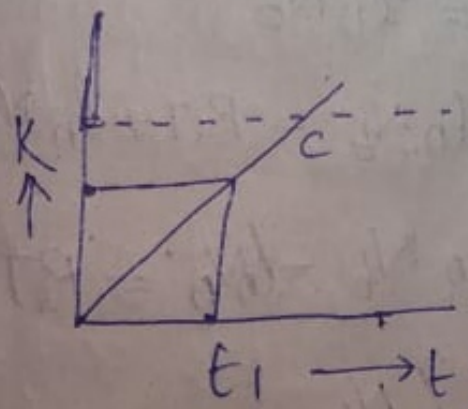
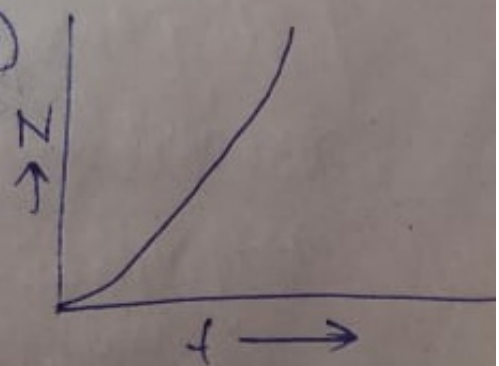
Rahul Jha
CSE, 3rd year, Roll no: 26/021/18024

① what is a difference between logistic and exponential growth model. Prove that $N_0 = N_0 e^{RT}$ where symbol have there usual meaning.

Logictics growth model	Exponetial growth model.
① K is ~~constant~~ considered.	① K is not considered.
② it is logical and gives correct value.	② it is illogical.
③ here $\frac{dN}{dt} \propto N\left(1 - \frac{N}{K}\right)$	③ Here $\frac{dN}{dt} \propto N$
④ 	④ 
⑤ Resource are limited.	⑤ Resource are unlimited.

Prove that $N = N_0 e^{RT}$

⇒ In exponential growth model,

$$\frac{\partial N}{\partial t} \propto N_t$$

or, $$\frac{\partial N_t}{\partial t} = R N_t$$

R = exponential growth Rate

$$\int \frac{\partial N_t}{\partial t} = R \int dt$$

$$\ln N_t = RT + I_c$$

when $t = 0$, $N_t = N_0$

$$\ln N_0 = R \times 0 + I_c$$

~~$I_c = \ln N_0 - \ln N_0$~~

$$I_c = \ln N_0$$

~~N_0~~ : $$\ln N_t = RT + \ln N_0$$

$$\ln N_t - \ln N_0 = RT$$

$$\ln\left(\frac{N_t}{N_0}\right) = RT$$

$$\frac{N_t}{N_0} = e^{RT}$$

$$N_t = N_0 e^{RT}$$

(2) Discuss Different Kind of Chain,

➧ In nature, basically two types of food chain are recognized they are gazing food chain and detirous food chain

(1) Grazing Food chain: This type of food chain starts from the living green plants and goes to gazing herbivorus and auto ~~Carni~~ Carnivorus ecosystem with such type of food chain are directly depends upon intix of Soby radiation.

most ecosystem follow this type of food chain,

photoplankton → zoplankton → fish sequence of grasses → rabbit → fox Sequence are example of it.

(2) Detritus Food chain :- This type of food chain goes from dead organic matter into microorganisms and

then goes to organism. feeding on detritions and there predators. so, such ecosystem are thus less dependent on direct Solar energy.

(3) Write in short about Wien's displacement law. what is black body? In how many ways is heat energy translated.

→ Wein's Displacement law:-

when a temperature of a black body radiator increase, the overall radiated energy increase and the peak of the radiation to shorter wavelength. when the maximum is evaluted from Planck radiation formula; the product of the peak wavelength and temperature found to be constant.

According to Wien's law,

the spectral radiance of black body radiation per unit wavelength peaks at λ_{max}

$$\lambda_{max} = b/T$$

where t is abs temperature, b is constant whose value is 2.9878×10^{-3} km.

Black body:

A surface that absorb all radiant energy falling on it. all light will be absorbed ~~another~~ rather then reflected and therefore surface will appear black.

* Heat is transferred in following ways,

(I) Convection: Heat flux through liquid and gas.

(II) Conduction: Heat flux through solid

(III) Radiation: Heat flux through electro-magnetic wave.

4) what is dissolved oxygen? what is importable as water quantity parameter what is chemical oxygen demand?

Dissolved oxygen (DO) is measure of how much oxygen is disolved in water the amount of oxygen available to.

leaving aquite.

The oxygen disolved by the diffusion from the Sourounding air, aiyation of Dater that has trumbled overfalles and yafids as waste Product.

Chemical oxygen Demand: Chemical oxygen demand (COD) is a measure of the Capicity of Dater to Consume oxygen during decomposition of organic matter and oxident of inorganic chemicals such as ammonia and nitrate.

(5) Write short note on ~~trickling not~~ trickling filters?

→ The microorganism absorb the organic matter in the Sewage and stablize it by corobic metabolism, thereby removing oxygen-demanding substance from the Sewage. Tricicling filteres remove upto 85% of organic

Pollutant from sewage. A trickling filter is simply a tank filled with deep bed Stones.