

Indian Institute of Technology Delhi
Centre for Energy Studies
2020-2021 (II Semester)
ESL 330: Energy, Ecology and Environment

Major Examination (Through Microsoft Teams > Assignment)
Duration: 60 + 10 minutes

Marks: 20
16th March 2021

Note: The students should keep their video and audio on throughout the examination (1 hrs and 10 minutes). The students must not contact with each other. If the transcripts will be found same for multiple students, all will get zero marks. Within the examination time, the students have to submit (Turn in) their scanned transcript in Microsoft Teams Assignment Section.

Answer all questions

1. A home washing machine removes grease and dirt from cloths in a nearly first order process in which 12% of the grease on the cloths is removed per minute. The washing machine holds 50 L of water and has a wash cycle of 5 minutes before discharging the wash water. What will be the grease concentration (in mg/L) in the discharge water if the cloths initially contain 0.5 g of grease? [5]
2. If gypsy moth egg density is 150 at time t and 200 at $t+1$, what will be its value at time $t+4$, assuming that egg density continues to increase at discrete manner? [5]
3. Define the concept of carrying capacity of an ecosystem as relevant to an environment. Explain how understanding this concept is vital while planning for the sustainable development of a region. [5]
4. Explain about the heterotrophic food nutrition. [5]