



24/9/2014

DOON UNIVERSITY, DEHRADUN

Mid Semester Examination, 2014, First Semester

M.Tech. (Environmental Technology)

ETC-500: Course: Fundamental of Biological Processes & Environmental Engineering

Time Allowed: 2 Hours

Maximum Marks: 30

Note: Attempt All Questions from Sections A, B, C.

SECTION: A (Short Answer Type Questions/ to be answered in about max 200 words).

Attempt any TEN questions.

(Marks: $1 \times 10 = 10$)

1. Define Ecosystem, Ecology and Environment
2. Explain Photosynthesis and Respiration
3. Define biotic and abiotic components of an ecosystem
4. Explain Gross primary production (GPP), Net primary production (NPP) and Secondary production
5. Explain why photo-autotrophs are dependent on the influx of solar energy
6. Explain various functions of ecosystem
7. Define standing crop, material removed and production rate
8. Explain the effect of humidity and pressure on ecosystem
9. Define renewable and nonrenewable resources
10. Explain how simpler inorganic substances are released into the soil
11. Explain thermal stratification
12. Explain why fixation of nitrogen is important

SECTION: B (Short Answer Type Questions to be answered in about 500 words).

Attempt any FOUR questions.

(Marks: $2.5 \times 4 = 10$)

1. Give only a schematic representation of the structure of an ecosystem? Explain why heterotrophs are not dependent on chemo-autotrophs for their food
2. Describe Sulphur cycle with the help of suitable diagrams
3. Explain in detail the structural features of an ecosystem and also explain the role of decomposers in ecosystem
4. Explain forest and cropland ecosystem in details
5. Explain energy flow in ecosystem with the help of single channel and Y shaped model

SECTION: C (Medium Answer Type Questions to be answered in about 1000 words).
Attempt any TWO questions.

(Marks: 5 x 2 =10)

1. What are ecological pyramids? Explain different types of ecological pyramids with the help of suitable examples.
2. What are food chains and food webs? Explain different types of food chain with the help of suitable examples and diagrams. Also, explain how food chains are different from food webs? Give a diagrammatic sketch showing the food web in grassland.
3. What are biogeochemical cycles? Describe nitrogen and carbon cycle in details with the help of suitable diagrams.