

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Subject: Environmental Science (2-0-0)

Spring End-Semester Examination (2016-2017)

Part-A (25-Marks)

1. Explain 'Ecology' in the perspectives of physics and biology. Elaborate on the general constraints of climate and environment on plants, using (a) sunlight, (b) water and (c) temperature; in the context of bio-geography. [1.5+2.5 = 4 -Marks]
2. What is PS-I and PS-II? Explain them with respect to light absorption in 'Hill's Reaction'; Provide an illustration. [1.5+1 = 2.5 -Marks]
3. What are C3 and C4 plants? Comment on their efficiency in converting solar energy to biomass. Who could be the champion in a warming world and why? [1+1+1 = 3 -Marks]
4. Compute the amount of carbon in atmosphere @ 410 ppm. Calculate how much carbon the World can emit into the atmosphere to stay under 462 ppm. [1+1.5 = 2.5 -Marks]
5. Discuss on Sanitary landfill. Provide illustration and elaborate on planning, design, construction and maintenance of an engineered landfill. Emphasize on (a) Leachate and (b) Flare (gas) system management. [0.5 +1.5 + 1 = 3 -Marks]
6. (a) Give an illustration to explain on Industrial Ecosystem and resource exchange webs; (b) Discuss on various types of Satellite Remote Sensing. How the technique is useful in environmental monitoring and EIA study? [1+1.5 = 2.5 -Marks]
7. Explain that EIA is a tool useful in decision making. How the environmental Impact Assessment (EIA) is calculated? Give an example to (i) discuss on environmental impact quantification, (ii) address adverse environmental impacts, and (iii) propose mitigation measures. [1+1+1.5+1.5+1.5 = 6.5 -Marks]
8. There are 15-species found in community 1 and 25 in community 2. Between them, they have 12 species in common. Calculate the Sorensen's Coefficient. [1 -Mark]
9. Differentiate among the tropical, temperate and boreal forests using any 4-biophysical properties; Provide an illustration to explain that 'Thermal contrasts across the relief simulate differences in temperature along elevation gradients'. [1.5+1 = 2.5 -Marks]
10. What are the various solid and hazardous wastes? Discuss on burning (Incineration) and burying (landfill) of wastes, especially on the advantages and disadvantages of each one. [2.5 +2.5 + 2.5 = 7.5 -Marks]