

**Indian Institute of Engineering Science and Technology, Shibpur**  
**B.Tech. 1<sup>st</sup>Semester (Gr-I/II/III/IV) Mid-Semester Examination, January- 2023**  
**Environment and Ecology (CE-1101)**  
**Full Marks: 30 Time: 2 Hours**

**N.B:** Clearly mention the part you are answering at the top of the page of your answer script. Answer to the questions should be given in the respective part only. Use a fresh page to start with a part.  
Answers should be brief and to the point.

**Part A**

Answer any two questions from part A

1. Define sustainable development? Mention the goals of sustainable development.
2. What do you mean by ecosystem? Classify different components of ecosystem and its function (1+4=5)
3. Define the term 'Niche'. No two different species of same niche can co-exist—explain. (1+4=5)  
(1+4=5)

**Part-B**

Answer any two (2) from part B.

4. (a) What is CDI? Define CDI. Explain potency factor for Carcinogens.  
(b) A drinking water is found to be contaminated with Chloroform which is probable carcinogen. In order to restrict the Risk one (1) in 1 million population considering person of 70 Kg body mass who drinks 2 L/day in his or her entire life (assume: 70 years), what will be the concentration of Chloroform in the water [Given: Potency factor for chloroform  $6.1 \times 10^3$  (mg/kg-day) $^{-1}$ ] (2+3=5)
5. (a) Explain Wien's displacement rule for spectral emissions of black body with diagram  
(b) A planet is found to radiate energy with a peak wave length of 9850 nm. If the surface area of the planet is  $5 \times 10^{14} \text{ m}^2$ , estimate the energy radiation rate corresponding to the peak wave length. (Given: Stefan-Boltzmann Constant  $- 5.68 \times 10^{-8} \text{ W/m}^2 \cdot \text{K}^4$ , Plank's constant  $- 6.6 \times 10^{-34} \text{ J-s}$ , Speed of light  $- 3 \times 10^{10} \text{ cm/s}$ ) (2+3=5)
- 6.(a) Define "Fund Pollutant" with example  
(b) Identify group/ category as per behavioral properties of the following pollutants.  
Carbon tetra-chloride, Poly chlorinated bi-phenyl, Methane, Benzo-pyrene  
(c) A truck containing tons of sugar accidentally fell into a pond in your locality. The truck was rescued but sugar got dissolved in water. Sugar being non-toxic, the local authority paid no attention. Days later, local people observed that fishes & other aquatic species in the pond were dying. Explain cause(s) of such happening from the perspective of Ecology & Environment (answer should be brief, 4-5 lines maximum) (1+2+2 =5)

(1+2+2 =5)

70kg  $\rightarrow$  2 L/day

P.T.O

2.750  
2.50