

**B.E. PRODUCTION ENGINEERING
FOURTH YEAR FIRST SEMESTER EXAMINATION -2019**

**ECOLOGY & ENVIRONMENT
FOR SUSTAINABLE DEVELOPMENT**

Time : Three Hours

Full Marks : 100

*The figures in the margin indicate full marks
Answer any FIVE questions. All questions carry equal marks*

- Q1.** What is Sustainable Development? What is its significance? What are the Goals for Sustainable Development? What are the main domains of Sustainable Development? What is the significance of intergenerational equity? Why is sustainable development so often associated with protecting the environment? What does ecological footprint measure? How does Ecological Footprint relate to Carrying Capacity? What is permaculture? (1+2+5+2+2+2+2+2+2)
- Q2.** (a) Write short notes on Green Consumption and Life Cycles Assesment (5+5)
- (b) What is Green Economy and Eco Capitalism (2+2)
- (c) What is Greenhouse debt? What are its consequences? (6)
- Q3.** (a) What are the differences between primary and secondary air pollutants? Give examples. What are the control devices? How does CFCs effect our environment? What is ideal air quality value for outdoor activities? (3+3+2+2)
- (b) What are the key ingredients of marine litter? How does it effect the marine ecosystem? What are its preventive measures? What is a garbage patch? Name the largest one recently found? (2+3+3+1+1)
- Q4.** (a) What is demography? How it is related to sustainable development? What is the fundamental law of population growth according to Sir Thomas Malthus? What are the factors that affects population density? (2+3+3+2)

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- (b) What is the difference between a Stable and a Stationary population? What is Metapopulation and Deme? Distinguish between Exponential and logistic population growth with equations. (2+2+6)
- Q5.** (a) Why waste water needs to be get treated? What are the objectives of Sewage Treatment Plants? How Sewage Treatment Plant works? Explain with diagram (1+2+7)
- (b) What are the remedies for thermal pollution? (6)
- (c) What are soil contaminants? How can we prevent it? (2+2)
- Q6.** (a) Compare between Effluent treatment plant (ETP) and Sewage treatment plant (STP) with diagrams (12)
- (b) How can we prevent water pollution? (4)
- (c) How does noise pollution affect the marine ecosystem? (4)
- Q7.** (a) Why are nutrient cycles essential in ecosystem? How does nitrogen become part of the food chain? Describe the $\text{CO}_2 - \text{O}_2$ cycle in terrestrial and aquatic systems (diagramatic) (2+2+6)
- (b) What is eutrophication and acid rain? State the differences between leaching and fragmentation process (2+2+4)
- (c) What is the difference between BOD and COD? What does it indicate? (3+1)
- Q8.** (a) Whhat are the green house gasses? Explain how it effects our environment? (4+6)
- (b) Explain (i) Carbon trading (ii) Climate change (iii) Global warming (iv) Carbon tax and (v) Cap and Trade (10)