

End Semester Examination – December 2015

Sub.: Energy and Environmental Engineering

Time: 03 Hours

Max. Marks: 70

Instructions to the Student:

1. Question No. 1 is compulsory.
2. Solve ANY **FIVE** questions from the remaining.
3. Clearly mention the main question number along with the sub questions.

Que. 1: Select the right choice from the given answers (10)

1. Most of the generators in Thermal power plants are run at -----
 a. **3000 rpm**
 b. 1000 rpm
 c. 1500 rpm
 d. 750 rpm
2. A module is a -----
 a. A newly installed solar cell
 b. **series parallel arrangement of solar cell**
 c. series of solar cell not in use for power generation
 d. None of the above
3. Winds caused by greater solar heating of the earth's surface near the equator than near the northern or southern poles, are known as -----
 a. local winds
 b. equatorial winds
 c. **planatory winds**
 d. trade winds
4. The disadvantage of renewable sources of energy is -----
 a. lack of decidability
 b. availability in low energy densities
 c.) intermittency
 d. **all of the above**
5. An energy audit requires -----
 a. **Quantification of energy use**
 b. Qualification of energy use
 c. Converting all energy use to one single unit
 d. quantum reduction in power consumption
6. The highest number of organisms are
 a. **Insects**
 b. Mammals
 c. Birds
 d. Fishes
7. The worst enemy of the ozone layer is --
 a. CH₄
 b. Liquid NH₃
 c. SO₂
 d. **CO**
8. Gas leaked in Bhopal tragedy was -----
 a. Potassium isothiocyanate
 b. Sodium isothiocyanate
 c. Ethyl isocynnate
 d. Methyl isocynnate
9. Today concentration of green house gases is because of -----
 a. Use of refrigereator
 b. increased combustion of oil and coal
 c. deforestation
 d. **all of the above**
10. The air act was passed in -----
 a. 1980
 b. **1981**
 c. 1972
 d. 1974

- Que. 2 (a) Write the sequence of energy transformation taking place in the following: (6)
- i) Nuclear power plant, ii) Hydro Power plant, and iii) Geo-thermal power plant (6)
- (b) Write the working of a hydro power plant with a neat sketch. What are the advantages and disadvantages of using energy from water? (6)
- Que. 3 (a) Why most of the thermal power plants are set near coal mines or oil reservoirs? Explain the cooling water circuit in a thermal power plant. (6)
- (b) What is a solar cell? What are its uses? What factors make a solar cell very expensive? (6)
- Que. 4 (a) What is OTEC? How is electricity generated from ocean thermal energy plant? Draw a neat sketch. (6)
- (b) What is nuclear chain reaction? Explain. What is the major hazard of nuclear power generation? (6)
- Que. 5 (a) Write a note on the need of environment studies. What are the main effects of deforestation? (6)
- (b) Explain the environment protection act in your own words. What is the relation between the environment and human health? (6)
- Que. 6 (a) What is radiation? Classify the sources of radioactive pollution with a neat flow chart. (6)
- (b) How do solid waste affect the environment? Explain the sources of solid wastes. (6)
- Que. 7 (a) What are the sources of water pollution? How can water pollution be controlled? (6)
- (b) What is meant by acid rain? How does it occur? What are its effects? (6)