

FACULTY OF ENGINEERING**B.E. 2/4 (Civil / ECE / CSE / AE) II – Semester (Suppl.) Examination, December 2015****Subject: Environmental Studies****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part A. Answer any five questions from Part B.****PART – A (25 Marks)**

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| 1 | Explain the distribution of water resources on earth. | 2 |
| 2 | Write short notes on energy flow in an ecosystem. | 2 |
| 3 | What are the biogeographical zones of India? | 2 |
| 4 | What is Montreal Protocol? | 2 |
| 5 | What are the ill effects of population explosion? | 2 |
| 6 | Define soil erosion and desertification. Mention any two causes and effects. | 3 |
| 7 | What are the various trophic levels of an ecosystem? | 3 |
| 8 | Briefly explain the conservation methods of Biodiversity. | 3 |
| 9 | What are the hazards of plastics on the environment? | 3 |
| 10 | Write short notes on Environmental Ethics. | 3 |

PART – B (5x10 = 50 Marks)

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| 11 a) | Differentiate between renewable and non-renewable resources. Explain the merits and demerits of nuclear energy. | 5 |
| b) | Why does the construction of big dams often face opposition from the public? Justify your answer giving examples. | 5 |
| 12 a) | Define ecological pyramids. Explain the various types of pyramids. | 5 |
| b) | Give the classification of aquatic ecosystems. Explain the structure and function of a pond ecosystem. | 5 |
| 13 a) | Explain the values of biodiversity. | 5 |
| b) | Explain why India is called as a Mega Diversity nation. | 5 |
| 14 a) | What are the causes of water pollution? Explain the effects of Eutrophication and Biomagnification with reference to water quality. | 5 |
| b) | What are the objectives and salient features of the Wild Life Protection Act? | 5 |
| 15 a) | Explain rain water harvesting and its objectives. | 5 |
| b) | What are the various types of disasters? Explain the basic principles of disaster mitigation. | 5 |
| 16 a) | Explain the hotspots of Biodiversity in India. | 5 |
| b) | What is green house effect? Explain the consequences of each of the gases responsible for global warming. | 5 |
| 17 | Write short notes on the following: | |
| a) | Causes and effects of deforestation | 5 |
| b) | Carbon cycle with a neat sketch | 5 |

FACULTY OF ENGINEERING**B.E. 2/4 (EEE) II-Semester (Supplementary) Examination, December 2015****Subject : Power Systems - I****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

- 1 What points should be considered while selecting the type of turbine for hydro electric plant? 2
- 2 Define : Binding energy and nuclear fission. 3
- 3 What are the advantages and limitations of tidal power? 3
- 4 Classify solar collectors. 2
- 5 What is sag? Why is it disadvantageous to have too low or too high sag? 2
- 6 Classify the underground cables according to insulation used, voltage and number of cores. 3
- 7 How inductance and capacitance of a transmission line are affected by the spacing between the conductors? 2
- 8 Define : skin effect and proximity effect. 3
- 9 Define the terms maximum demand, demand factor and load factor. 3
- 10 List out the advantages and disadvantages of 3 – wire DC system. 2

PART – B (50 Marks)

- 11 a) Discuss about necessity of superheated steam, pulverized coal and preheated air in thermal power plant. 3
- b) With the help of the neat sketch describe the working of a pressurized water reactor used in a nuclear power plant. 7
- 12 a) With necessary diagrams explain in detail about solar concentrators. 5
- b) Discuss the advantages and disadvantages of interconnected system of power stations. 5
- 13 a) Derive the expression for the insulation resistance of a single core cable in terms of specific resistance of dielectric, its core and sheath diameters. 5
- b) A transmission line conductor crossing a river is supported from two towers at heights of 30 m and 80 m above the water level. The horizontal distance between the tower is 450 meters. If the tension in the conductor is 1500 kg and weight of the conductor is 1.4 kg/m length, find the minimum clearance of the conductor and water clearance mid-way between the supports. 5
- 14 a) Derive the expression for inductance of a transmission line per km per conductor. 6
- b) Calculate the capacitance of a single phase transmission line 35 km long consisting of two parallel wires each 5 mm in diameter and 1.8 m apart. The height of the conductor's above ground is 7.5 km. 4

- 15 a) Compare the conductor material (volume) for three phase, 4 wire distribution system with that of 2 wire De distribution system. 5
- b) A 2 wire feeder ABC has a load of 60 A at C and 30 A at B both p.f. 0.8 lagging. The impedance AB is $(0.8+j0.16)$ ohms and that of BC is $(0.16+j0.124)$ ohms. If the voltage at the far end C is to be maintained at 440V, determine the voltage at A and voltage at B. 5
- 16 a) Discuss about economics of power factor improvement. 5
- b) Discuss in detail about wind turbine rotor constructions with necessary diagrams. 5
- 17 a) The maximum demand of a power supply is 30 MW. The annual factors as follows :
Load factor – 60% ; Capacity factor – 50% and use factor – 75%. Determine
i) The annual energy production ii) reserve capacity iii) the hours during which the plant is not in service per year. 6
- b) With suitable example explain about flow duration curve and hydrograph. 4
