**ASSIGNMENT-1**

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| 1. What is the principle of solar cell? What are the main effects of solar radiation on its efficiency? |  |
| * Solar cell principle with neat sketches | **4M** |
| * Effect of solar radiation on its efficiency |  |
| 2. What is a thermo electric generator? Explain the principle and working of Thermo electric generator? |  |
| * Definition of thermo electric generator | **1M** |
| * Seebeck effect explanation | **2M** |
| * Working of thermo electric generator | **3M** |
| 3. State the working principle of Hot air Engine with neat sketch? |  |
| * Diagram | **2M** |
| * Explanation of 4 cycles | **4M** |
| 4. Draw the characteristics of a solar cell and define , FF and efficiency of solar cells. |  |
| * Diagram and Explanation | **2M** |
| * Definition and Formulae of Short circuit Current | **1M** |
| * Definition and Formulae of open circuit voltage | **1M** |
| * Definition and Formulae of form factor FF | **1M** |
| * Definition and Formulae of Efficiency | **1M** |
| 5. What are the different types of losses in solar cells and how to minimize them? |  |
| * Unavoidable losses | **3M** |
| * Technological losses | **3M** |
| 6. Give the one diode and two diode model of a solar cell. How are Optical and electrical losses represented in the model? In what Condition is One diode Model used? |  |
| * One diode model diagram and Equation | **2M** |
| * Two diode model Diagram and Equation | **2M** |
| * Explanation about optical losses, electrical losses and Applications | **2M** |

**MID-I**

**SECTION-A 6\*1=6M**

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| 1. a) List any two renewable sources of energy |  |
| * List any 2 Renewable Energy sources | **1M** |
| b) What is the approximate amount of total power generation in India? |  |
| * Give total installed capacity of India in watts | **1M** |
| c) What is wind power? |  |
| * Definition of wind power | **1M** |
| d) Mention two important wind turbine generator installations in India? |  |
| * Mention two wind farms in India | **1M** |
| e) What is meant by Bio Mass? |  |
| * Definition of Bio – Mass | **1M** |
| f) Write any four differences between renewable and Non Renewable Sources. |  |
| * Write any four differences | **1M** |

**SECTION-B 1\*6=6M**

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| 2. What is thermo electric generator? Explain its principle of operation and working. |  |
| * Definition of thermo electric generator | **1M** |
| * Seebeck effect explanation | **2M** |
| * Working of thermo electric generator | **3M** |
| 3. What is MHD? What is the principle behind its working? How it works |  |
| * Definition of Magneto Hydro Dynamic Generator | **1M** |
| * Explain principle | **2M** |
| * Working of Magneto Hydro Dynamic Generator | **3M** |

**SECTION-C 1\*6=6M**

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| 4. Draw the characteristics of solar cell and explain about Short Circuit Current Open Circuit Voltage, Fill Factor Efficiency of a solar cell. |  |
| * Diagram and Explanation | **2M** |
| * Definition and Formulae of Short circuit Current | **1M** |
| * Definition and Formulae of open circuit voltage | **1M** |
| * Definition and Formulae of form factor FF | **1M** |
| 5. Explain the effect of shunt and series resistance parameters on the solar cell performance. |  |
| * Effect of shunt resistance on I-V characteristics | **3M** |
| * Effect of series resistance on I-V characteristics | **3M** |