



**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPALLI**  
**DEPARTMENT OF ENERGY & ENVIRONMENT**  
**SUBJECT: ENERGY AND ENVIRONMENT (ENIR 11)**

**Programme: B.Tech.**

**Time: 3 hours**

**Maximum Marks: 60**

**Each Question carries ten marks**

1. Define sustainable energy? Illustrate the working principle and operation any one of the conventional power plants (with schematic diagram)?
2. Draw solar spectrum and calculate the energy associated with UV and visible spectrum? Describe the operation and application of various kinds of solar collectors?
3. Sketch a neat block diagram (indicating name of the parts) of wind kinetic energy to electrical energy conversion system? Draw the arbitrary wind power curve for a 1 MW wind turbine compared to wind speed? Comment on the Betz limit?
4. Explain various types of bio conversion methods? What is geo-thermal energy and illustrate the kinds of hydro-thermal sources?
5. Define national air quality index in details and explain about the various categories and their associated health impacts? Define wastewater and explain the basic of the processes involved in the wastewater treatment plant?
6. List the initiatives or policies taken by GOI to control the environmental pollution? Review the renewable energy technologies needed to control or reduce the environmental pollution?

\*\*\*\*\*THE END\*\*\*\*\*