NON-CONVENTIONAL ENERGY SOURCES

Full Marks: 70

Time: 3 hours

Question No. 1 is compulsory. Answer any *five* from the rest.

The figures in the right hand margin indicate marks. *Symbols carry usual meanin*

Q1. Answer all questions.

a) Give the classification of energy sources?

b) What are the environmental impacts of coal based thermal power plants?

c) What is crystalline silicate cell?

d) What are the demerits of wind power?

e) What are the potential states identified for wind energy?

f) How fuel cell works.

g) List the types of batteries.

h) How lithium- Ion battery works.

i) How ultra-capacitors work.

j) What is a micro grid

Q2. a) Write down about homo junction and hetero junction PV cells.

b) Discuss about the high concentration PV technology performance.

Q3. a) How solar thermal power works.

b) Explain about different solar collectors for appropriate application areas.

Q4 a) How to measure the solar power collector performance and efficiency?

b) Write down the role of rotor in wind turbines.

Q5. a) What is drive train in wind turbine and explain the advantages of drive train.

b) Explain about different offshore wind technology development.

Q6. a) Differentiate between first, second and third generation biofuels.

b) What are the limitations of biofuels?

Q7. a) Explain about rotor construction.

b) What are the issues affecting the renewable energy integration.

Q8. a) What are the effects of voltage sags?

b) Discuss about the technical methods for the prevention and correction of voltage sags.