USN | | | | | | | | | | |

10EE36

Third Semester B.E. Degree Examination, January 2013
Electric Power Generation

Time: 3 hrs. Max. Marks:100

Note: *1. Answer FIVE full questions, selecting at least TWO questions from each part.*
2. Assume missing data if any.

PART – A

1 a. With block diagram, explain the working of wind energy conversion system. **(08 Marks)**
b. With a neat sketch, explain the working of geothermal plant. **(06 Marks)**
c. With a neat sketch, explain the working of fuel cell. **(06 Marks)**

2 a. Explain how the use of regenerator intercooler and reheater in gas turbine plants help in improvement in thermal efficiency. **(08 Marks)**
b. With a neat sketch, explain the working of biogeneration plant. **(08 Marks)**
c. Mention the application of diesel electric power plant. **(04 Marks)**

3 a. Explain the factors to be considered for the selection of site for a hydro electric power plant. **(06 Marks)**
b. Explain the functions of the following in a thermal plant:
i) Air pre heater
ii) Boiler
iii) Condenser. **(08 Marks)**
c. Explain the power station structure and control in hydro electric power plant. **(06 Marks)**

4 a. Explain the functions of the following in a nuclear reactor:
i) Nuclear fuels
ii) Moderator
iii) Control rod
iv) Coolants
v) Reflector
vi) Biological shield. **(12 Marks)**
b. Explain the advantages and disadvantages of nuclear power plant. **(08 Marks)**

PART – B

5 a. Explain the following terms as applied to power system:
i) Load factor
ii) Demand factor
iii) Diversity factor
iv) Plant capacity factor
v) Plant use factor. **(10 Marks)**

b. The yearly load duration curve of a certain power station can be approximated as a straight line the maximum and minimum loads being 80 mw and 40 mw respectively. To meet this load three alternator units, two rated at 20 mw each and at 10 mw are installed. Calculate:
   i) installed capacity
   ii) kwh generated per year
   iii) load factor
   iv) plant factor
   v) utilization factor. **(10 Marks)**

6 a. Explain:
   i) Block rate tariff
   ii) Two part tariff. **(04 Marks)**

b. Calculate the power factor of an installation supplying following loads:
   i) 20 kw at unity power factor
   ii) 100 kw at 0.707 lagging power factor
   iii) 50 kw at 0.9 leading power factor. **(10 Marks)**

c. With neat sketch, explain single bus bar with sectionalizing scheme. **(06 Marks)**

7 a. With a neat sketch, explain ungrounded system in power system. **(10 Marks)**

b. With a neat sketch, explain solid grounding. **(10 Marks)**

8 a. With a neat sketch and phasor diagram, explain resonant grounding. **(12 Marks)**

b. With a neat sketch, explain the grounding system through an earthing transformer. **(08 Marks)**

* * * * *