

Third Semester B.E. Degree Examination, Dec. 07 / Jan. 08
Electric Power Generation

Time: 3 hrs.

Max. Marks:100

Note : Answer any FIVE full questions.

- a. Explain with sketches the working of single basin and double basin Tidal power plant. (06 Marks)
- b. State the principle of Wind Energy Conversion System. Explain with block diagram the basic components of Wind Energy Conversion System. (08 Marks)
- c. Explain the concept of co-generation and combined heat power generation. (06 Marks)
- a. State the field of use of Diesel-Electric Station. (04 Marks)
- b. Explain the principle of working of Gas Turbine Plant. Also explain open cycle and closed cycle for Gas Turbine Plant. (08 Marks)
- c. State the principle of bio-generation. Explain with block diagram the working of bio-generation plant. (08 Marks)
- a. Describe the main features of the substructure and superstructure of a hydroelectric power station. (04 Marks)
- b. Explain with diagram the principle of operation of pumped storage plant. How does it help to take up sudden peak load in a power system? (06 Marks)
- c. Describe the schematic arrangement of a thermal power station. Explain the function of each, briefly. (10 Marks)
- a. State the main components of a nuclear power station. Describe the function of each. (10 Marks)
- b. What are the Pros and Cons of nuclear power station? (06 Marks)
- c. How the nuclear fuel is extracted? (04 Marks)
- a. What is diversity factor? State the advantages of diversity of load in a power system. (06 Marks)
- b. A generating station has a maximum demand of 80 MW, a reserve capacity of 50 MW, an average demand of 52 MW, a rated capacity of 104 MW, sum of individual maximum demand of 162 MW and the maximum energy that could be produced if plant is running all the time is 1560 MWh. Calculate: i) Diversity factor ii) Plant capacity factor iii) Plant use factor and iv) Plant utilization factor. (08 Marks)
- What do you understand by load duration and energy load curves of a power system? What are the uses of load duration curve? (06 Marks)
- State different types of tariffs. Explain them briefly. (06 Marks)
- A consumer is taking a load of 20 kW at power factor of 0.8 lagging. Find the rating of capacitor to raise the power factor to 0.95 lagging. (04 Marks)
- State different types of bus schemes of substation. Explain them briefly. (10 Marks)
- What is a reactor? Explain different types of reactors. Obtain an expression for short circuit MVA calculation. (10 Marks)
- What is ground resistance? How to evaluate the resistance for different grounding systems? (10 Marks)
- State the conditions of resonant grounding, illustrate them with expressions. What is the function of arc suppression coil? (10 Marks)
- Explain transformer earthing and neutral ground practices. (06 Marks)
- Determine the value of inductance of arc suppression coil to neutralize the charging current of overhead line having line to ground capacitance $0.4 \mu\text{F}$. If the supply frequency is 50 Hz and the operating voltage is 132 kV, find the kVA rating of the coil. (04 Marks)
