

**VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY (VSSUT), ODISHA**

**Even Mid Semester Examination for Academic Session 2024-25**

COURSE NAME: B.TECH

SEMESTER: 4<sup>th</sup>

BRANCH NAME: Electrical Engineering

SUBJECT NAME: Power Generation Transmission and Distribution (PGTD)

FULL MARKS: 30

TIME: 90 Minutes

Answer All Questions.

The figures in the right hand margin indicate Marks. *Symbols carry usual meaning. Graph paper needed*

Q1. Answer all Questions. [2 × 3]

- a) What is Catchment area, Reservoir, Dam and Surge Tank in a Hydroelectric Power Plant? - CO1
- b) What is Tariff? What are the different objectives of Tariff? - CO2
- c) What is Skin effect and Proximity effect? - CO3

Q2. [4 × 2]

- a) Draw a schematic arrangement of a hydroelectric power plant and explain the functions of its various components. Explain the merits & demerits of a hydroelectric plant. - CO1
- b) Why hydro-electric stations have high transmission & distribution cost? A hydro-electric generating station is supplied from a reservoir of capacity  $5 \times 10^6$  cubic metres at a head of 200 metres. Find the total energy available in kWh if the overall efficiency is 75%.

OR

- a) Draw a schematic arrangement of a Thermal power plant and explain the functions of its various components. Explain the merits & demerits of a Thermal power plant. - CO1
- b) Draw a schematic arrangement of a Nuclear power plant and explain the operation of nuclear reactor. What are the functions of Compressor, Regenerator, Combustion chamber, Gas turbine, Alternator, Starting motor in a Gas Turbine power plant?

Q3. [8]

What do you mean by connected load, installed capacity, maximum load, maximum demand, average load, load factor, diversity factor, firm power, cold reserve, hot reserve, spinning reserve, plant capacity factor, base load, peak load, load curve, load duration curve? - CO2

OR

The load on a power plant on a typical day is as under:

Time:	12-5 am	5-9 am	9-6 pm	6-10 pm	10-12 midnight
Load (MW):	20	40	80	100	20

Plot the load curve and load duration curve in graph paper. Find the load factor of the plant and the energy supplied by the plant in 24 hrs. - CO2

Q4. [8]

Deduce an expression for Capacitance for a three-phase overhead transmission line when conductors are unsymmetrically placed. What are the ABCD parameters of a medium transmission line when it is pi configured? - CO3

OR

Deduce an expression for Inductance for a three-phase overhead transmission line when conductors are unsymmetrically placed. What are the ABCD parameters of a short transmission line? - CO3