

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –
RAIGAD -402 103
Semester Winter Examination – Nov - 2019

Branch: Electrical Engineering

Sem.:- IV

Subject with Subject Code:- Power System I (BTEEC402)

Marks: 60

Date:- 26/11/2019

Time:- 3 Hr.

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

(Marks)

Q.1. Attempt the following questions

- a) Enlist and explain different sources of electrical energy **(4)**
- b) A consumer has following connected load:
10 lamps each of 60W
2 heaters each of 100W
Maximum demand 1500W
On the average he uses 8 lamps for 5 hours per day, each heater 3 hours per day. Find i) average load , ii) monthly energy consumption, iii) load factor **(4)**
- c) Enlist and explain different types of turbines and their selection **(4)**

Q.2. Attempt the following questions

- a) Explain the role of excitation system, transformer, control panel, metering and other control equipment in power system. **(6)**
- b) Derive an expression for loop inductance of a single phase line **(6)**

Q.3. Attempt the following questions

- a) Derive the expression for capacitance of three phase line with symmetrical spacing **(6)**
- b) Explain the effect of earth on three phase transmission line parameter **(6)**

P.T.O.

Q.4. Attempt the following questions

- a) Explain the terms skin effect, Ferranti effect and proximity effect. (6)
- b) Derive an expression for string efficiency. Also explain various methods to improve string efficiency. (6)

Q.5. Attempt the following questions

- a) Give classification and representation of transmission lines. (6)
- b) A single phase line transmits 1000kW at 10kV At a p.f. of 0.85 lagging. It has total loop resistance of 2 ohm and inductive reactance of 3 ohm. Determine (i) voltage regulation, (ii) transmission efficiency. (6)

Q.6. Attempt the following questions

- a) Explain the phenomenon of corona. With various factors effecting on corona enlist its disadvantages (6)
- b) The towers of height 30m and 90m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 500m. if the tension in the conductor is 1600kg, find the minimum clearance of the conductor and water, and clearance midway between the supports. Weight of conductor is 1.5 kg/m. Bases of the towers can be considered to be water level. (6)

Paper End