

**POWER SYSTEM QUESTION
PAPER
AS PER NEW SYLLABUS**

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Summer Examination – 2023

Course: B. Tech.

Branch : Electrical Engg.

Semester :4th

Subject Code & Name: Power System, BTEEC402

Max Marks: 60

Date:

Duration: 3

Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

| | | (Level/CO) | Marks |
|------------|---|------------|-----------|
| Q.1 | Solve Any Two of the following. | | 12 |
| A) | Draw the schematic diagram of Thermal power plant and explain function of its main component. | L2/CO1 | 6 |
| B) | Explain the major equipments used in electrical substation of power plant. | L2/CO1 | 6 |
| C) | Draw the schematic diagram of Nuclear power plant and Explain function of it's main component. | L2/CO1 | 6 |
| Q.2 | Solve Any Two of the following. | | 12 |
| A) | Write a short note on transposition of power lines. | L2/CO2 | 6 |
| B) | Explain the concept of self GMD for evaluating inductance of transmission lines. | L2/CO2 | 6 |
| C) | Write a short note on Skin Effect, Ferranti Effect, Proximity Effect. | L2/CO2 | 6 |
| Q.3 | Solve Any Two of the following. | | 12 |
| A) | Explain various types of conductor. | L1/CO3 | 6 |
| B) | Discuss the advantage and disadvantages of (i) Pin-type insulators (ii) Suspension type insulators. | L2/CO3 | 6 |
| C) | Why are insulators used with overhead lines? Discuss the desirable properties of insulators. | L2/CO3 | 6 |
| Q.4 | Solve Any Two of the following. | | 12 |
| A) | Discuss the terms voltage regulation as applied to transmission line. | L2/CO4 | 6 |
| B) | Explain different types of medium transmission line. | L2/CO4 | 6 |
| C) | Explain the classification of lines based on their length of transmission. | L2/CO4 | 6 |

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|-------------|--|--------|--|
| | | | |
| Q. 5 | Solve Any Two of the following. | | |
| A) | Write short notes on the following:(i) Distribution Transformers (ii) D.C. distribution. | L2/CO5 | |
| B) | What are the design consideration of distribution system? Explain. | L2/CO5 | |
| C) | What are the advantages and disadvantages of d.c. transmission over a.c. transmission. | L2/CO5 | |
| *** End *** | | | |

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Electrical Engg. & Allied Branches

Semester : IV

Subject Code & Name: (BTEEC402) POWER SYSTEM

Max Marks: 60

Date: 18/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

| | (Level/CO) | Marks |
|---|---------------|-------|
| Q.1 Solve Any Two of the following. | | |
| A) Draw the schematic diagram of Thermal power plant and explain function of its main component. | (Remember) | 6 |
| B) Explain the major equipments used in electrical substation of power plant. | (Understand) | 6 |
| C) Draw the schematic diagram of Nuclear power plant and explain function of its main component. | (Remember) | 6 |
| Q.2 Solve Any Two of the following. | | |
| A) Write a short note on transposition of power lines. | (Remember) | 6 |
| B) Explain the concept of self GMD for evaluating inductance of transmission lines. | (Understand) | 6 |
| C) Write a short note on Skin Effect, Ferranti Effect, Proximity Effect. | (Remember) | 6 |
| Q.3 Solve Any Two of the following. | | |
| A) Discuss the advantages and disadvantages of (i) pin-type insulators (ii) suspension type insulators. | | 6 |
| B) Why are insulators used with overhead lines? Discuss the desirable properties of insulators. | (Application) | 6 |
| C) Discuss the various conductor materials used for overhead lines. | (Remember) | 6 |
| Q.4 Solve Any Two of the following. | | |
| A) Discuss the terms voltage regulation as applied to transmission line | (Application) | 6 |
| B) Explain the classification of lines based on their length of transmission. | (Remember) | 6 |
| C) Deduce an expression for voltage regulation of a short transmission line, giving the vector diagram. | (Analysis) | 6 |
| Q.5 Solve Any Two of the following. | | |
| A) Write short notes on the following : (i) Distribution transformers (ii) 3-wire d.c. distribution | (Remember) | 6 |
| B) What are the design considerations of distribution system? Explain. | (Understand) | 6 |
| C) What are the advantages and disadvantages of d.c. transmission over a.c. transmission? | (Remember) | 6 |

*** End ***

OLD SYLLABUS

QUE PAPERS

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

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE -
RAIGAD -402 103
Semester Examination - May - 2019

Branch:-Electrical Engineering

Sem.:- I

Subject with Subject Code:- POWER SYSTEM-I (BTEEC402)

Marks: 60

Date:- 14/05/2019

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 :60)

Q.1.

- 4 a) Explain the working of thermal power plant with neat diagram (4)
- 4 b) Explain the typical layout for a storage type hydro power plant (4)
- 4 c) Explain the different types of sources for energy generation (4)

Q.2.a) Explain the electrical equipment's used in typical 11KV indoor Sub-station

(6)

- b) The arrangement of conductors of a single phase transmission line is shown in figure 1, wherein the forward circuit is composed of three solid wires of 2.5mm and return circuit of 2 wires of 5mm, placed Symmetrically with respect to forward circuit find Inductance of the line?

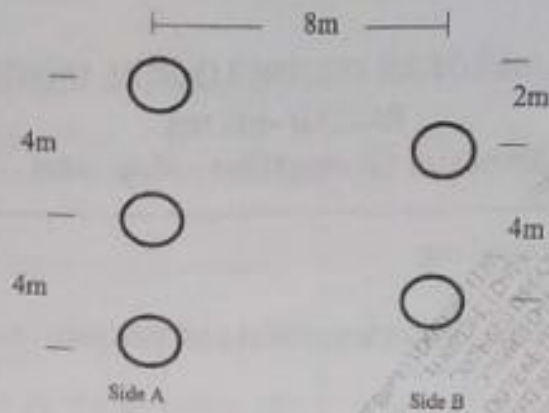


Figure 1

Q3) a) Find the capacitance of three phase line with equilateral spacing (6)

b) Explain the effect of earth on transmission line parameter (6)

Q4) a) Explain the types of Insulators for overhead lines? (4)

b) Explain string efficiency? Enlist the methods to improve string efficiency? (4)

c) Explain the terms Skin effect and Proximity effect (4)

Q5) a) Find the generalized constants for Nominal-T method for medium transmission line along with Phasor diagram? (4)

b) A 3-phase, 50 Hz overhead line is 100Kms long and has following constants :-

Resistance/km/phase

Inductance reactance/phase

Capacitive susceptance : 0.04×10^{-4} Siemen

Determine the sending and receiving end current? (8)

(Use Nominal T method)

Q6)

a) Explain the calculation of sag of transmission line for unequal levels?

The tower heights are 30m and 90m respectively supports a transmission line at water crossing. The horizontal distance is 500m. If the tension is 1600 Kg? Find the clearance of conductor and water. (7)

b) What are the factors affecting corona effect? Enlist the advantages of corona? (5)

END