

R18

Code No: 154BW

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, February -2024

**POWER SYSTEM - I
(Electrical and Electronics Engineering)**

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

- 1.a) What is the need for cogeneration? [2]
- b) Brief about energy conservation and storage. [3]
- c) Define maximum demand. [2]
- d) Give brief about base load plant. [3]
- e) What are the different types of insulators? [2]
- f) What do you understand by grading of cable? [3]
- g) What is composite conductor? [2]
- h) Explain corona. [3]
- i) State the differences between D.C distribution and A.C distribution. [2]
- j) Contrast between distributor and feeder. [3]

PART - B

(50 Marks)

2. Design the schematic diagram of a steam power plant and explain the operation. [10]

OR

3. With neat sketch explain basic concept of hydro power plant. [10]

- 4.a) Discuss about Load duration curve and load curve. [10]
- b) What is a tariff? Discuss and compare various tariff used. [4+6]

OR

5. A customer has the following connected loads: 15 lamps of 50W each and two heaters of 1,000W each. His maximum demand is 14000W. On the average he uses 10 lamps 5 hours a day and each heater for 3 hours a day. Find his average load. [10]

6. A string of six insulator units has a self-capacitance is 8 times the pin to earth capacitance. Find voltage distribution across various units as a percentage of total voltage across the string. [10]

OR

- 7.a) Discuss about overhead lines versus underground cables. [5+5]
- b) Obtain the capacitance of a single core.

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- 8.a) Obtain the expressions for critical disruptive and visual critical voltage.
b) Derive the inductance of single phase line with unsymmetrical spacing. [5+5]
9. Obtain the capacitance of a three phase line with unsymmetrical spacing with suitable diagrams. [10]
10. Explain Radial and Ring main and interconnected systems. [10]

OR

11. A d.c two-wire distributor AB, 600 meters long is loaded as under:
Distance from A (meters): 150 290 360 450
Loads in Amperes: 100 200 250 300
- The feeding point A is maintained at 440V and that of B at 430V. If each conductor has a resistance of 0.03Ω per 100 meter, find the current supplied from A to B. [10]

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