

Code No: 154BW

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech II Year II Semester (Special) Examinations, January/February - 2021****POWER SYSTEM - I****(Electrical and Electronics Engineering)****Time: 2 Hours****Max. Marks: 75****Answer any Five Questions  
All Questions Carry Equal Marks**

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1. Explain with neat diagram various parts and its function in nuclear power plant. [15]
2. Draw a neat schematic diagram of feed water/steam flow circuit of a modern large thermal power plant. Explain the working. [15]
- 3.a) Define the following with respect to the economic aspects power generation:  
i) Connected load ii) Plant capacity factor.  
b) From the following data, estimate the cost per kWh for the generating station:  
Plant capacity = 50 MW  
Annual load factor = 40%  
Capital cost = Rs  $12 \times 10^6$   
Annual cost of wages, taxes etc = Rs 4,00,000  
Cost of fuel, lubrication, maintenance = Rs 17,52,000  
Annual interest and depreciation = 10% of initial value. [8+7]
4. Explain the following:  
a) Base load and peak load plants  
b) Fixation of tariff to a consumer. [7+8]
5. Each conductor of a three phase transmission line is suspended from a cross arm of a steel tower by a string of four suspension insulators. The voltage across the second unit is 15 kV and across the third is 20 kV. Find the voltage between the conductors and the string efficiency. [15]
6. Discuss the methods for grading of cables. What are the limitations of grading of cables? [15]
7. In a 3 phase transmission line the 3 conductors are placed at the corners of a triangle of sides 2m, 3m and 2.5m. If the diameter of each conductor is 1.6cm and conductors are regularly transposed, calculate the inductance per phase per kilometer. [15]
8. Write short notes on the following:  
a) Difference between d.c. and a.c. distribution.  
b) Current distribution in a 3-wire d.c. system. [8+7]

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