

BE VIIIth sem R-19 escheme electrical

(3 Hours)

[Total Marks : 80]

Please check whether you have got the right question paper.

- N.B.:
1. Question No.1 is compulsory
 2. Attempt any three Questions out of remaining five Questions.
 3. Assume suitable data if necessary and justify the same.

1. Answer all questions
 - a) Explain objectives of series compensation 05
 - b) Explain the Load compensation, state its objectives. 05
 - c) List all type of shunt compensators. 05
 - d) Explain the merits and demerits of transmission interconnections. 05
2.
 - a) Explain switching converter type series compensation (SSSC). 10
 - b) Explain the Thyristor controlled phase angle regulator (TCPAR). 10
3.
 - a) Explain various basic FACTS controllers on the basis of their connection with needful diagram. Give One example in each categories. 10
 - b) Explain power factor correction in single phase system. 10
4.
 - a) Enlist common power quality issues from the consumer point of view. 10
 - b) How harmonics affect the rotating machine, transformers and cables. 10
5.
 - a) Explain voltage and current characteristics of TCR and FCTCR. 10
 - b) Explain different harmonic mitigation technique. 10
6.
 - a) Explain various parameters which limit the loading capabilities of transmission line. 10
 - b) Calculate the total harmonic distortion of a voltage waveform with following harmonic frequency makeup: Fundamental $V_1=114V$, $V_3=4V$, $V_5=2V$, $V_7=1.5V$, $V_9=1V$ 10



Duration: 3 Hours

[Max Marks: 80]

- N.B.: (1) Question No. 1 is compulsory.
 (2) Attempt any three questions out of the remaining five.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it properly.

1. Solve ANY FOUR questions from following. [20]
- a. State the laws of illumination and explain any One.
 - b. Explain LEP's.
 - c. What is Glare and illustrate the different ways to minimize it.
 - d. What is DMX control?
 - e. Explain briefly circadian rhythm.
2. a. Explain with neat diagram construction and working principle of high-pressure mercury vapour lamp. [10]
- b. With neat diagram explain Reflection, Refraction, Diffusion and Absorption type light control. [10]
3. a. State and explain methods of lighting calculation. [10]
- b. A hall 13 m long and 12 m side is to be illuminated and illumination required is 50 mt-candle. Five types of lamps having lumen output have as given below are available:

| | | | | | |
|--------|------|------|------|------|-------|
| Watts | 100 | 200 | 300 | 500 | 1000 |
| Lumens | 1615 | 3650 | 4700 | 9950 | 21500 |

DF = 1.3 & UF = 0.5

Calculate number of lamps needed in each case to produce required illumination. [10]

4. a. State and explain Principles used in Street Light Designing. [10]
- b. The front of a building 50 m * 16 m is illuminated by 16 numbers of 1000 Watt lamps arranged so that uniform illumination on the surface is obtained. Assume Luminous efficiency = 17.4 lumens/Watt, Utilization factor = 0.4, Depreciation factor = 1.3, Waste light factor = 1.2. Determine the illumination on the surface. [10]
5. a. A small assembly shop 16 m long, 10 m wide, and 3 m up to trusses is to be illuminated to a level of 200 lux. The Utilization & Maintenance factors are 0.74 & 0.8 respectively. Calculate the no. of lamps required to illuminate the whole area if the lumen output of the lamp selected is 3000 lumens. [10]
- b. State the necessity of lightning control and explain Direct, Semidirect, Indirect lighting schemes with diagram. [10]
6. a. Explain LED driver types. [10]
- b. Explain smart street lighting with remote monitoring and control. [10]



BE (SEM VIII) C-scheme R-19 Electrical

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09/10/24

(Time: 3 Hours)

Total Marks - 80

- N.B.:- (1) Question No.1 is compulsory.
(2) Attempt any three questions out of remaining five questions.
(3) Assume necessary data wherever necessary.

Q1. Attempt the following

1. State characteristics of load.
2. Describe Bath tub curve.
3. State System and load point indices.
4. Describe peak load forecasting.

20

Q2.

1. Describe important points in Short term load forecasting.
2. Explain the weather sensitive load model.

10

10

Q3.

1. Explain Markov process with two state model.
2. A system is having four components with individual reliability of 0.97, 0.99, 0.92, and 0.95 each. Calculate reliability and unreliability of a system when the components are connected in i) series and ii) parallel.

10

10

Q4.

1. Explain Capacity Outage Probability table Recursive algorithm for systems including no de-rated state.
2. Consider a system containing five units of 40MW each with FOR=0.03. Prepare the capacity outage table for the system. Find Loss of Load Expectation and risk factor if the annual peak load is 180 MW and base load is 40% of peak load.

10

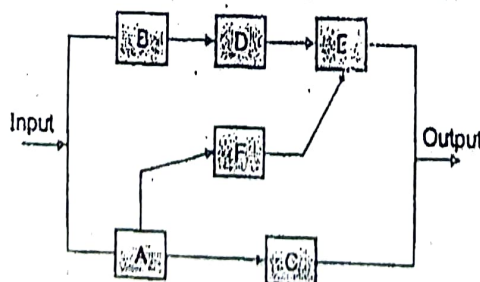
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Q5

1. A generating system has one generator of 25 MW and 2 generators of 50 MW with FOR 0.02. Prepare Capacity Outage Table for the same.
2. Calculate reliability evaluation using conditional probability approach in the following system in with individual component reliability is 0.99.

10

10



Q6.

1. Describe Reliability evaluation of radial distribution Feeder system.
2. Explain the impact of renewable energy on reliability of power system

10

10

