

**B. Tech. (Electrical Engineering) 8<sup>th</sup> Semester,  
(G-Scheme) Examination, May-2024**

**ADVANCES IN POWER TRANSMISSION &  
DISTRIBUTION**

**Paper-PEC-EE-410-G**

*Time allowed : 3 hours]*

*[Maximum marks : 75*

*Note : Attempt any five questions, selecting at least one question from each section. Question No. 1 is compulsory. All questions carry equal marks.*

1. (i) What are the opportunities for FACTS?  
(ii) How power flow in meshed distribution system?  
(iii) Write down the loading capability limit in transmission line.  
(iv) Write brief about battery storage system.  
(v) Write down the function of distribution substation.

15

**Section-A**

2. Classify the various types of line compensation in transmission line. 15
3. How the transient stability enhanced using FACTS Components? 15

**Section-B**

4. What is the component of distribution substation?  
Explain in brief. 15
5. Draw the flowchart for optimal location of substation. 15

**Section-C**

6. Write down the algorithm for the analysis of load flow in distribution system. 15
7. How we can do the optimal switching of feeder for the loss minimization problem? 15

**Section-D**

8. Compare the modern and classical distribution system. 15
9. Write about the modern grid and how it will work. 15

**B. Tech. (Electrical Engineering) 8<sup>th</sup> Semester,  
(G-Scheme) Examination, May-2024**

**ENERGY MANAGEMENT AND AUDITING**

**Paper-OEC-EE-414-G**

*Time allowed : 3 hours]*

*[Maximum marks : 75*

*Note : Attempt five questions in all, selecting one question from each section. Question No. 1 (Section-A) is compulsory. All questions carry equal marks.*

**Section-A**

1. (a) Describe the objectives of Energy Management in brief.
  - (b) Write down the expression to calculate efficiency of a motor. Also explain the conditions at which maximum efficiency is achieved.
  - (c) Explain the phases involved in energy auditing.
  - (d) What is the need of industrial energy audits?
  - (e) Explain energy audit instruments in brief.
  - (f) Explain the effects of unbalanced voltages on the performance of motors and the importance of power factor correction.
- $6 \times 2.5 = 15$

**Section-B**

2. Give the detailed process of energy audit and briefly discuss process flow diagram with the help of a suitable example.

15

or

3. Describe the key components of an organizational energy policy. Discuss the process of energy planning and the steps involved in setting energy efficiency targets and strategies. Provide examples of successful energy policy implementation. 15

### Section-C

4. Describe the Energy Auditing Services in detail. 15  
or
5. Discuss the specialized audit tools used in energy auditing, particularly in industrial settings. Explain their functions and applications in assessing energy consumption patterns and identifying energy-saving opportunities. 15

### Section-D

6. Describe the Power Supply Effects of Unbalanced Voltages on the Performance of Motors in detail. 15  
or
7. Describe the process of electric motor efficiency management. Explain the sensitivity of load to motor RPM and its implications for energy consumption. 15

### Section-E

8. (a) Explain wind speed monitoring, classification of wind and its characteristics. 8

- (b) List out and explain safety and environmental aspects of wind energy potential and installation in India. 7

or

9. Explain the principles of solar energy and wind energy conversion. Discuss the technologies used for harnessing solar and wind energy and their suitability for different geographical locations. 15



**B. Tech. (Electrical Engg.) 8<sup>th</sup> Semester (G-Scheme)**

**Examination, May-2024**

**ELECTRICAL SAFETY & STANDARDS**

**Paper-OEC-EE-404G/PEC-EE-404-G**

*Time allowed : 3 hours]*

*[Maximum marks : 75*

*Note : Attempt five questions in all. Q. 1 is compulsory. Attempt four more questions from the sections A, B C and D by selecting at least one question from each section.*

1. (a) Explain the primary and secondary hazards associated with electrical systems.  $6 \times 2.5 = 15$
- (b) Describe the safety equipment used for electrical work, including flash and thermal protection, head and eye protection, rubber insulating equipment, and insulated tools.
- (c) Discuss the importance of grounding and bonding in electrical systems.
- (d) Explain the purpose of a safety electrical one-line diagram. Describe its components and how it aids in ensuring electrical safety.
- (e) Discuss the six-step safety methods used in electrical work. Explain the significance of pre-job briefings, safe switching of power systems, lockout-tagout procedures, and flash hazard calculations.

- (f) Describe the process of calculating the required level of arc protection. Explain the factors involved and the approach distances to maintain safety during electrical work.

### Section-A

2. Conduct a detailed analysis of primary and secondary hazards associated with electrical systems. 15
3. Describe in detail the safety equipments used in electrical work, such as flash and thermal protection, head and eye protection, and rubber insulating equipment. 15

### Section-B

4. Explain the general requirement for grounding and bonding in electrical systems. 15
5. Discuss the techniques and procedures for grounding electrode systems and connecting grounding conductors to electrodes. 15

### Section-C

6. Explain the six-step safety methods used in electrical work. Discuss the importance of pre-job briefings, hot-work decision trees, and safe switching of power systems. 15

7. Describe the structure and development of an electrical safety program. 15

**Section-D**

8. Discuss the significance of safety-related standards for electrical equipment. Describe various standards such as IEEE, IEC and IS and explain how they contribute to ensuring electrical safety. 15
9. Identify and discuss the regulatory bodies responsible for electrical safety standards. 15