

**B.TECH**  
**(SEM V) THEORY EXAMINATION 2022-23**  
**ELECTRICAL STANDARDS AND ENGINEERING PRACTICES**

Time: 3 Hours

Total Marks: 100

**Note:** Attempt all Sections. If you require any missing data, then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 10 = 20**

- (a) What is the low and high voltage level as per IEEE standard.
- (b) Define the thermal resistivity of the soil.
- (c) What is the purpose of IS-3646?
- (d) Which standards are used to design the electric motor?
- (e) Differentiate between the current transformer and voltage transformer.
- (f) Which tests are called routine test of the HV switchgear?
- (g) List the material used to enhance earthing resistance in rocky land.
- (h) List out any four protective devices needed in 132/33 kV substation.
- (i) What are the basic parameters to estimate the load of any electrical system?
- (j) "CEA regulations" are very important for electrical design purpose. What do you mean by CEA?

**SECTION B****2. Attempt any three of the following: 10 x 3 = 30**

- (a) What is the requirement of various Indian and International standards? What is the difference between IS and IEEE standards?
- (b) List out the IEEE standards used to design the electric cables. Explain any two standards with their purpose.
- (c) Describe the causes of hot spot formation in transformer and state the methods of identification.
- (d) Explain the precautions taken while carrying out maintenance of capacitor bank in substation.
- (e) How can you estimate the electric load of the shopping mall having three floors? Explain the step-by-step procedure. Assume necessary data.

**SECTION C****3. Attempt any one part of the following: 10 x 1 = 10**

- (a) Design a house wiring system with all labelled for a load of 5 kW.
- (b) Discuss the important points to design the distribution system.

**4. Attempt any one part of the following: 10 x 1 = 10**

- (a) List out the IS standards used to design the electric motors. Explain any two standards with their purpose.
- (b) What is the difference between type test and routine test as per IEEE/IS standards? List out the all type and routine tests. Discuss any two tests in detail.

- 5. Attempt any *one* part of the following: **10 x 1 = 10****
- (a) Determine the ratings of LA, CT, PT, DO fuse and circuit breaker (with Justifications) for mounting of 500kVA, 11/0.4kV plinth mounted substation.
  - (b) Describe the procedure followed to undertake breakdown maintenance of dry type power transformer.
- 6. Attempt any *one* part of the following: **10 x 1 = 10****
- (a) What is the earthing? What are the requirements of earthing? Discuss any one type of earthing in detail.
  - (b) Define the following terms and their importance with regards to safety: (i) Step potential (ii) Touch potential (iii) Mesh potential and (iv) Transferred potential.
- 7. Attempt any *one* part of the following: **10 x 1 = 10****
- (a) Consider a power plant of 250\*4 MVA, 33 kV rating. Draw a single line diagram with labelled all transformers, cables and circuit breakers with their specifications.
  - (b) Discuss the procedure to design the switchgear protection system for a substation.

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