

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E.

Branch: Institutional Elective

Course Code: 21EE8OE3ES

Course: Holistic Approach to Electrical Safety

Semester: VIII

Duration: 3 hrs.

Max Marks: 100

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

- 1 a) What is safety and what is its significance? What are the general precautions and safety measures to be taken when an electrical work is carried out? **10**
- b) Electric shock is a major Hazard due to Electricity. Justify the statement with relevant factors affecting the severity. **10**

UNIT - II

- 2 a) What are the hazards due to borrowed neutral? How can it be prevented? **06**
- b) Discuss the consequences of voltage fluctuation? How can it be prevented? **06**
- c) Briefly explain the various safety devices used in ground fault protection and arc protection. **08**

OR

- 3 a) Bring out the differences between ELCB and RCCB. Enumerate the limitations of each **06**
- b) What are the basic characteristics of lightning? Why is protection against lightning very essential? **06**
- c) What are the common causes and the signs of a power surge? How can power surges be prevented? **08**

UNIT - III

- 4 a) Discuss in detail the significance and basic steps of LOTO procedure. Give relevant examples with respect to electrical safety. **10**
- b) Discuss about the different safety zones in any hazardous atmosphere. What are the standard safety recommendations for installation of electrical equipment in such hazardous environments? **10**

OR

- 5 a) State the standard mandated by National Fire Protection Association with regard to Arc Flash? Why is it necessary to safeguard persons from arc flash? What are the different categories of protective equipments necessary to safeguard persons working in such an environment? Give examples for each. **10**

- b) What are the hazards due to static electricity? What are the operations and machines that could generate static electricity? What are the control measures to combat its effect? **10**

UNIT - IV

- 6 a) What are the regulations mandated by Central Electric Authority for testing of electrical equipments? **08**
- b) What is SOP and significance? What is the difference between SOP documentation and Process documentation? What are the features of SOP? What are the general steps to write an effective SOP? **12**

UNIT - V

- 7 a) What are the factors contributing to accidents in any industry. Write a note on accident case studies with reference to electrical safety and Indian Factories Act. **10**
- b) Write a note on IEC 60204 with reference to Safety of Machinery and Electrical Equipments. **10**
