UPES

End Semester Examination, December 2024

Course: Industrial Electrical Utility System Semester: VII
Program: B.Tech. – Electrical Engg Time   : 03 hrs.
Course Code: EPEG 4012 Max. Marks: 100
Instructions: Attempt all the questions.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Justify the use of low voltage in public systems. However, power transmissions are done at very high voltage.	4	CO1
Q 2	Illustrate the hazards due to the poor design of the electrical system and the preventive measures required to improve it.	4	CO1
Q 3	Enumerate the key characteristics of a good electromagnetic relay.	4	CO1
Q 4	Describe the key characteristics of a good lighting luminaire system for a classroom	4	CO2
Q 5	Elucidate an appropriate protection system for a 100-kW squirrel cage induction motor.	4	CO2

SECTION B
(4Qx10M= 40 Marks)

Q 6	Illustrate the architecture of a PLC for controlling the lighting-saving	10	CO4
Q 7	Highlight the major protection issues for Distributed Energy Resources.	10	CO2
Q 8	Elucidate the key highlights of the amended NEC 2023 as compared to NEC 2011	10	CO3
Q 9	Justify that, Functional requirements specify what is a SCADA system supposed to do, and Non-functional requirements specify how a system should behave concerning: • Availability • Maintainability • Scalability • Security • Interoperability/Openness **OR** Reinforce the statement "SCADA is an excellent tool for better maintenance and Operation".	10	CO4

SECTION-C
(2Qx20M=40 Marks)

Q 10	Examine the design and implementation of an electrical safety system in a newly constructed residential building, outlining the objectives, challenges, and outcomes.	20	CO3
Q 11	Design a well-coordinated electrical protection system for a typical big hostel having a food mess and sports area also. **OR** Design a lightning arrestor used for the protection of a high-tension substation. Also, Compare the not suitability of other type of lightning arrestors available.	20	CO4