

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 3170920****Date: 19/06/2023****Subject Name: Industrial Electrical Systems****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|-----|---|-----------|
| Q.1 | (a) | Desirable characteristics of fuse elements. | 03 |
| | (b) | Explain loop-in-system of energy distribution and state its advantages and disadvantages. | 04 |
| | (c) | State general rules for residential and commercial wiring. | 07 |
| Q.2 | (a) | Compare protective devices (i) MCB (ii) ELCB | 03 |
| | (b) | Explain conduit system of wiring in detail. | 04 |
| | (c) | Explain MPCB with its Function and working.
Also compare MPCB with MCCB. | 07 |
| OR | | | |
| | (c) | Define tariff. Explain different types of Tariff Structure. | 07 |
| Q.3 | (a) | Define the terms M.H.C.P., M.S.C.P. and M.H.S.C.P. | 03 |
| | (b) | A 200-V lamp takes a current of 1.2 A, it produces a total flux of 2,860 lumens. Calculate:
1. The MSCP of the lamp and
2. The efficiency of the lamp. | 04 |
| | (c) | Explain Construction and working of compact fluorescent light (CFL). | 07 |
| OR | | | |
| Q.3 | (a) | Define the terms (a) Waste light factor (b) Utilization factor (c) Space-height ratio. | 03 |
| | (b) | Calculate the average intensity of illumination on the surface, which is inclined at an angle of 30°. it is kept at a distance of 8 m from a 1000 candela power lamp. | 04 |
| | (c) | Describe various lighting schemes. | 07 |
| Q.4 | (a) | Explain importance of Earthing. | 03 |
| | (b) | Name the factors that should be taken care of while designing and erecting a substation. | 04 |
| | (c) | Distinguish between LT and HT Motor? Analyze with an example. | 07 |
| OR | | | |
| Q.4 | (a) | Explain need of Lightning Protection system, | 03 |
| | (b) | List out different types of UPS. Mention applications of UPS. | 04 |
| | (c) | Explain Importance of Power Factor Improvement. Discuss the various methods for power factor improvement. | 07 |
| Q.5 | (a) | Write short notes on Electrical Systems for the elevators. | 03 |
| | (b) | Develop a block diagram of PLC with basic components and its Functions. | 04 |
| | (c) | Build architecture of SCADA system with neat diagram. | 07 |
| OR | | | |
| Q.5 | (a) | Compare PCC and MCC panels. | 03 |
| | (b) | List out steps for selections of transformer. | 04 |
| | (c) | Define: industrial automation. State its need and importance. | 07 |
