

(3 Hours)

[Total Marks: 80]

**NOTE**

1. Question No 1 is Compulsory.
2. Solve any three out of the remaining.
3. Figure to the right side indicates marks.
4. Assume the suitable data and mention the same if required

**QNo 1 Answer the following questions**

- a. Discuss the design features of interconnection drawing with figure [5]
- b. Discuss with examples how to maximise the efficiency of a system for minimising the energy consumption. [5]
- c. Discuss how the soft starter is energy efficient device? If so, then what is the energy saving potential? [5]
- d. How electricity bill will help to implement the monitoring and targeting? [5]

QNo 2a Discuss the design features of different types of distribution systems with figure. [10]

QNo 2b The following loads are connected to a distribution transformer. Calculate (i) KVA rating of transformer (ii) State and justify the various assumption related to the selection of transformer and other ratings (iii) Draw a single line diagram showing various metering instruments, protections and load connections [10]

Sr No	Load	Rating KW	Efficiency	Power Factor	Load Factor	Diversity Factor
1	L1	200	0.85	0.8	0.83	0.7
2	L2	400	0.8	0.75	0.72	0.7
3	L3	500	0.8	0.8	0.63	0.5
4	L4	100	0.65	0.8	0.85	0.5

QNo 3a Discuss the various energy analysis techniques used for energy optimisation [10]

QNo 3b Discuss how to implement the building management system as an energy efficient system design tool. [10]

QNo 4a Discuss in detail procedure involved and assumptions in the design of illumination system for a reading room with a given dimensions. [10]

QNo 4b Discuss in detail procedure involved in the selection of cable conductor size and other specifications, for a cable used for connection of a motor to a control panel through a short length. [10]

QNo 5a Discuss the various features of Energy Conservation Building Code 2007. [10]

QNo 5b Discuss how the energy is managed in transformer and distribution network of an electrical system [10]

QNo 6a Discuss the steps and procedure adopted for energy performance assessment of motors. [10]

QNo 6b Discuss the design features of Busbar and Switch board [10]