



**Q.P. Code: 25416**

**Duration:- Three 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

**Q 1 Answer the following questions**

- a. What are the different types of electrical projects? [5]
- b. State the various criteria for selection of a battery for back up power supply [5]
- c. What do you understand by the term "Optimizing input energy requirement"? [5]
- d. What are the various energy analysis techniques? [5]

**Q 2a Explain the role of following in system design [10]**

(i) Coordination (ii) Discrimination (iii) Temporary power supply

**Q 2b Following loads are connected to a distribution transformer. [10]**

- Calculate (i). KVA rating of transformer  
(ii) State and justify the various assumptions related to the selection of transformer and other ratings  
(iii) Draw a single line diagram showing various metering instruments, protections and load connections

Sr No	Load	Rating	Efficiency	Power Factor	Load Factor	Diversity Factor
1	Machine Shop	300	0.8	0.8	0.8	0.7
2	Paint Shop	500	0.9	0.75	0.7	0.4
3	Auxiliary Plant	700	0.9	0.8	0.9	0.6
4	Misc Load	100	0.6	0.8	0.85	0.5

**Q 3a What are the different types of distribution systems? State the selection and design criteria for each. [10]**

**Q 3b Discuss the various steps to be followed while selecting a cable and its size for a given rating of load [10]**

**Q 4a Discuss the various assumptions in the design of an illumination system for a given room with specific purpose. Also state the procedure for calculation of number of lamps required. [10]**

**Q 4b Discuss the various elements of Monitoring and Targeting in energy management. [10]**

Q 5a What is the need of energy audit? Discuss the role of various energy auditing instruments. [10]

Q 5b Discuss the steps followed for energy performance assessment of lighting system [10]

Q 6a Discuss the role of following energy efficient technologies and corresponding saving potential [10]

(i) Automatic power factor controller

(ii) Energy Efficient Transformer

Q 6b State the various features of Energy Conservation Act 2003 [10]