Eighth Semester B.E. Degree Examination, May/June 2010
Industrial Management, Electrical Estimation and Economics

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　　Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1　a. Explain the following sources of recruitment :
　　　i)　Internal sources
　　　ii)　External sources.
　　　Mention the advantages and disadvantages of each.　　(04 Marks)
　b. How should be the relationship between the employer and employees?　　(06 Marks)
　c. Explain the following methods of settlement of industrial disputes :
　　　i)　Conciliation
　　　ii)　Mediation
　　　iii)　Arbitration.　　(10 Marks)

2　a. Briefly explain the factors to be considered for plant location.　　(04 Marks)
　b. Bring out the differences between PERT and CPM.　　(06 Marks)
　c. What do you mean by automation? What are its characteristics? Enumerate the advantages and disadvantages of automation.　　(10 Marks)

3　a. What are the disadvantages of low power factor?　　(04 Marks)
　b. Discuss the causes for low power factor.　　(06 Marks)
　c. With the help of a vector diagram, explain the power factor improvement using synchronous condensers. Enumerate the advantages and disadvantages.　　(10 Marks)

4　a. What are the advantages of static capacitors?　　(04 Marks)
　b. With the help of a vector diagram derive an expression for the most economical power factor when kW demand is constant.　　(10 Marks)
　c. A fluorescent lamp takes a current of 1A when connected across 230 V, 50 Hz supply. The power consumed by the lamp is 100 W. The power factor of the lamp has to be improved to 0.98 (lag). Calculate the capacitance which has to be connected in parallel with the lamp. Draw the vector diagram.　　(06 Marks)

PART – B

5　a. Define the following factors governing a tariff :
　　　i)　Demand factor
　　　ii)　Diversity factor
　　　iii)　Annual load factor
　　　iv)　Utilization factor.　　(04 Marks)
　b. Explain the following :
　　　i)　Reasons for preferring public supply system
　　　ii)　Generation of electrical energy by exhaust system and industrial wastes.　　(10 Marks)

c. A consumer draws 1.2 x 10⁶ units of electrical energy per annum with a maximum demand of 500 kW. Find LF. If the tariff is Rs.100 per kW of maximum demand and Rs.1.5/kWh, determine the saving when the load factor is improved to 0.75. **(06 Marks)**

6 a. Discuss briefly the following factors to be considered in selecting an equipment :
   i)   First cost
   ii) Cost of repairs and maintenance. **(04 Marks)**
   b. Explain the selection of a machine by annual cost basis. **(06 Marks)**
   c. A motor has a useful life of 25 years and costs Rs.50,000 with a scrap value of Rs.5,000. The annual working expenditure is Rs.20,000. The corresponding figures for a second motor are 25 years, Rs.60,000, Rs.8,000 and Rs.15,000. Money is worth at 12% per annum. Find which of the motors is more economical. Use annual cost basis and sinking fund method to calculate annual depreciation charges. What would be the annual saving in Rs? **(10 Marks)**

7 a. What do you mean by earthing? Explain the necessity of earthing. **(04 Marks)**
   b. A 10 HP (metric), 415 V, 3 – phase, 50 Hz squirrel cage induction motor is to be installed in a workshop, the plan of which is shown in Fig.7(b). Estimate the quantity of materials required. The wiring is to be surface conduit. Assume the efficiency of motor as 85% and power factor 0.8 (lag). **(16 Marks)**
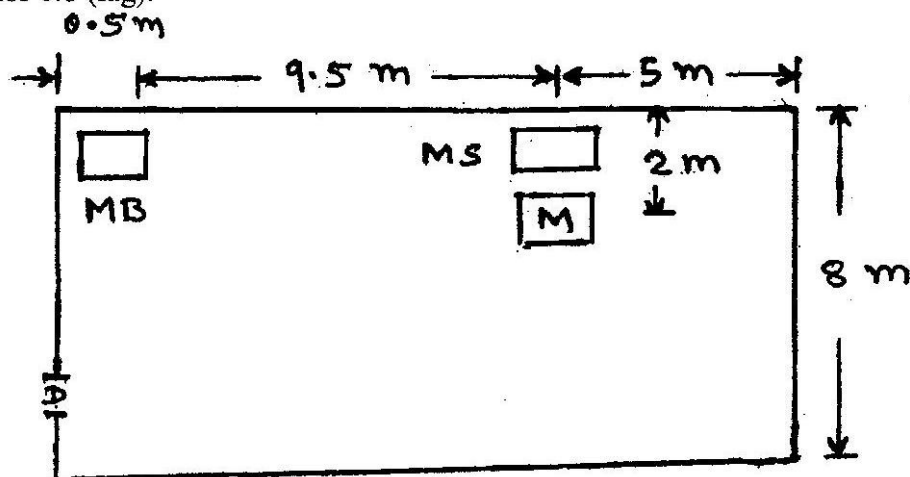

Fig.7(b)

Note : MB → Main board, MS → motor switch and starter, M → motor.

8 a. Define the following terms with respect to depreciation
   i)   Life of an asset
   ii) Salvage value
   iii) Depreciation cost. **(06 Marks)**
   b. The cost of an electrical machine is Rs.80,000 and its salvage value at the end of 10 years is Rs.5,000. Find the book value of the machine at the end of 6 years using i) Straight line method and ii) Reducing balance method. **(08 Marks)**
   c. Define economic order quantity and derive an expression for the same. **(06 Marks)**

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