B. Tech.

(SEM. VIII) EXAMINATION, 2006-07
PROJECT ENGINEERING

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions.

1 Attempt any two parts of the following :
   (a) Discuss the role of a project engineer in a project organization. 10
   (b) What are the typical preliminary data required for construction projects? Discuss the special requirements for foreign projects. 7+3
   (c) Write notes on any two of the following : 5,5
      (i) Flow diagram
      (ii) Plant layout
      (iii) Engineering design and drafting

2 Attempt any four parts of the following :
   (a) What is the organization and operation of a procurement department? 5
   (b) Discuss the different procurement procedures. 5
   (c) What is basis of a contract? 5

V-9095] 1 [Contd...
(d) Discuss different types of the control. 5
(e) What are contractor’s liabilities? 5

(f) Write notes on the following: \[ \frac{2}{2} + \frac{1}{2} \]
   (i) Technical writing
   (ii) Filing systems.

3 Attempt any two parts of the following:

(a) Write the specification sheet for (1-1) shell and tube heat exchanger, packed column for absorption, and an electric motor. 10

(b) Discuss the advantages and disadvantages of saturated and superheated steam as heating media. What do you mean by one ton of refrigeration? 8.2

(c) Enumerate the various types of pumps used in chemical industries. A multistage compressor is used to compress air at 300 K and 1 bar to 27 bar in 3 stages. If the compression rate is 3 kg per second, find the compression work. 5

4 Attempt any four parts of the following:

(a) What are different types of foundations used for equipment buildings and steel structures? 5

V-9095] 2 [Contd...
(b) What is jurisdictional dispute? Give some guidelines for its reasonable solution.

(c) Mention some of the site activities at the start of construction operations.

(d) Name five insulating materials used in chemical industry. How would you evaluate an insulating material?

(e) Explain the term “Optimum Insulation Thickness.”

(f) Write notes on any two of the following:
   (i) Labour Relations
   (ii) Erection of major equipment
   (iii) Installation of piping.

5 Attempt any “two” of the following:

(a) A network with normal time in days is as follows:

```
  1 --- 2
  |   |    |
  6   3   5
  4 --- 7
  2   4

  2   2
  3 --- 4
    |
  2

Find the critical path and free float of all activities.
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V-9095] 3 [Contd...
(b) The following additional information applies to prob 5(a)

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<th>Normal Days</th>
<th>Normal Rs.</th>
<th>Crush Days</th>
<th>Crush Rs.</th>
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Find the minimum cost for completing the project in 10 days.

(c) Discuss PERT network in the light of construction of a chemical process plant.