PAPER 6 : MANAGEMENT INFORAMTION AND CONTROL SYSTEM
MAY 1999

Question 1 is compulsory.
Answer any four from the remaining six questions.

Question 1

(a) Discuss the characteristics of an effective Management Information System. **(10 Marks)**

(b) Let us assume that you have inherited Rs.1,00,000 from your father-in-law that can be invested in a combination of only two stock portfolios, with the maximum investment allowed in either portfolio set as Rs.75,000. The first portfolio has an average rate of return of 10%, whereas the second has 20%. In terms of risk factors associated with these portfolios, the first has a risk rating of 4 (on a scale from 0 to 10), and the second has 9. Since you wish to maximize your return, you will not accept an average rate of return below 12% or a risk factor above 6. Hence, you then face the important question. How much should you invest in each portfolio?

Formulate this as a Linear Programming Problem and solve it by Graphic Method. **(10 Marks)**

Question 2

(a) Discuss in detail, how the analysis of present system is made by the system analyst. **(10 Marks)**

(b) To stimulate interest and provide an atmosphere for intellectual discussion, a finance faculty in a management school decides to hold special seminars on four contemporary topics: leasing, portfolio management, private mutual funds, swaps and options. Such seminars should be held once in a week in the afternoons. However, scheduling these seminars (one for each topic, and not more than one seminar per afternoon) has been to be done carefully so that the number of students unable to attend is kept to a minimum. A careful study indicates that the number of students who cannot attend a particular seminar on a specific day is as follows:

	Leasing	Portfolio Management	Private Mutual Fund	Swaps & Options
Monday	50	40	60	20
Tuesday	40	30	40	30
Wednesday	60	20	30	20
Thursday	30	30	20	30
Friday	10	20	10	30

Find an optimal schedule of the seminars. Also find out the total number of students who will be missing at least one seminar. **(10 Marks)**

Question 3

(a) Explain in detail, the guidelines that should be observed for "form design". **(10 Marks)**

(b) A company has three warehouses W_1, W_2 and W_3. It is required to deliver a product from these warehouses to three customers A,B and C. The warehouses have the following units in stock:

Warehouse	W_1	W_2	W_3
No. of Units	65	42	43

And customer requirements are:

Customer	A	B	C
No. of Units	70	30	50

The table below shows the cost of transporting one unit from warehouse to the customer:

		Warehouse		
		W_1	W_2	W_3
Customer	A	5	7	8
	B	4	4	6
	C	6	7	7

Find the optimal transportation route. **(10 Marks)**

Question 4

(a) Discuss briefly, various activities that are involved for successful conversion of an existing manual system to a computerized information system. **(10 Marks)**

(b) A company manufactures around 200 mopeds. Depending upon the availability of raw materials and other conditions, the daily production has been varying from 196 mopeds to 204 mopeds whose probability distribution is as given below:

Production per day	Probability
196	0.05
197	0.09
198	0.12
199	0.14
200	0.20
201	0.15
202	0.11
203	0.08
204	0.06

The finished mopeds are transported in a specially designed three storeyed lorry that can accommodate only 200 mopeds. Using the following 15 random numbers 82, 89, 78, 24, 53, 61, 18, 45, 04, 23, 50, 77, 27, 54, 10, simulate the process to find out:

(i) What will be the average number of mopeds, waiting in the factory?

(ii) What will be the average number of empty spaces on the lorry? **(10 Marks)**

Question 5

(a) List the advantages and disadvantages of using a computer service bureau for a medium sized business organization. **(10 Marks)**

(b) Arrivals at a telephone booth are considered to be Poisson, with an average time of 10 minutes between one arrival and the next. The duration of the phone call is assumed to be distributed exponentially, with mean 3 minutes.

i. What is the probability that a person arriving at the booth will have to wait?

ii. The telephone department will install a second booth when convinced that an arrival would expect waiting for at least 3 minutes for phone. By how much should the flow of arrivals increase in order to justify a second booth?

iii. Find the average number of units in the system.

iv. Estimate the fraction of a day that the phone will be in use. **(10 Marks)**

Question 6

(a) Explain the various measures that can be taken to ensure software and data security in an organization. **(10 Marks)**

(b) Given the following information:

Activity	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration (in days)	2	8	10	6	3	3	7	5	2	8

(i) Draw the arrow diagram.
(ii) Identify critical path and find the total project duration.
(iii) Determine total, free and independent floats. **(10 Marks)**

Question 7

Write short notes on the following: **(5+5+5+5)**

(i) Payroll accounting.
(ii) Disaster recovery.
(iii) Resource smoothing.
(iv) Expected value of perfect information.