

**PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
NOVEMBER 1999**

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

Question 1

- (a) What are the main pre-requisites of an effective MIS? Explain them briefly. **(10 Marks)**
- (b) An advertising firm desires to reach two types of audiences- customers with annual income of more than Rs.40,000 (target audience A) and customers with annual income of less than Rs.40,000 (target audience B). The total advertising budget is Rs.2,00,000. One programme of T.V. advertising costs Rs.50,000 and one programme of Radio advertising costs Rs.20,000. Contract conditions ordinarily require that there should be at least 3 programmes on T.V. and the number of programmes on Radio must not exceed 5. Survey indicates that a single T.V. programme reaches 7,50,000 customers in target audience A and 1,50,000 in target audience B. One Radio programme reaches 40,000 customers in target audience A and 2,60,000 in target audience B. Formulate this as a linear programming problem and determine the media mix to maximize the total reach using graphic method. **(10 Marks)**

Question 2

- (a) What are main objectives of a production scheduling department? **(5 Marks)**
- (b) Distinguish between top down and bottom up approaches to systems development. **(5 Marks)**
- (c) The following table shows all the necessary information on the available supply to each warehouse, the requirement of each market and the unit transportation cost from each warehouse to each market:

		Market				Supply
		I	II	III	IV	
Warehouse	A	5	2	4	3	22
	B	4	8	1	6	15
	C	4	6	7	5	8
Requirement		7	12	17	9	

The shipping clerk has worked out the following schedule from his experience:

- 12 Units from A to II
- 1 Unit from A to III
- 9 Units from A to IV
- 15 Units from B to III
- 7 Units from C to I and
- 1 Unit from C to III.

You are required to answer the following:

- (i) Check and see if the clerk has the optimal schedule;
- (ii) Find the optimal schedule and minimum total shipping cost; and
- (iii) If the clerk is approached by a carrier of route C to II, who offers to reduce his rate in the hope of getting some business, by how much should the rate be reduced before the clerk should considering giving him an order? **(10 Marks)**

Question 3

- (a) What is data flow diagram? Explain briefly with suitable example. **(5 Marks)**
- (b) Explain the two primary methods by which an analyst collects the data during preliminary investigation. **(5 Marks)**
- (c) Solve the assignment problem represented by the following effective matrix:

	a	b	c	d	e	f
A	9	22	58	11	19	27
B	43	78	72	50	63	48

C	41	28	91	37	45	33
D	74	42	27	49	39	32
E	36	11	57	22	25	18
F	3	56	53	31	17	28

Question 4

- (a) For a cost estimation system, draw the system flow chart and explain the following:
- i. System interfaces
 - ii. Files and inputs
 - iii. Reports.

(10 Marks)

- (b) A project has the following time schedule:

Activity	Time in Weeks	Activity	Time in Weeks
1-2	2	4-6	3
1-3	2	5-8	1
1-4	1	6-9	5
2-5	4	7-8	4
3-6	8	8-9	3
3-7	5		

Construct PERT network and compute:

- (i) total float for each activity; and
- (ii) critical path and its duration.

(10 Marks)

Question 5

- (a) Discuss the basic functions and activities of a Computer Service Centre. **(5 Marks)**
- (b) Explain the main reasons for the development of performance standards. **(5 Marks)**
- (c) A foreign bank is considering opening a drive-in window for customer service. Management estimates that customers will arrive for service at the rate of 12 per hour. The teller whom it is considering to staff the window can serve customers at the rate of one every three minutes. Assuming Poisson arrivals and Exponential service, find:
- (i) Utilization of teller
 - (ii) Average number in the system
 - (iii) Average waiting time in line
 - (iv) Average waiting time in the system.

(10 Marks)

Question 6

- (a) What is the year 2000 problem? Suggest ways and means to tackle this problem. **(10 Marks)**
- (b) A bakery shop keeps stock of a popular brand of cake. Previous experience indicates the daily demand as given here:

Daily Demand	0	10	20	30	40	50
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Consider the following sequence of random numbers: R. No. 48, 78, 19, 51, 56, 77, 15, 14, 68, 09.

Using this sequence, simulate the demand for the next 10 days. Find out the stock situation if the owner of the bakery decides to make 30 cakes every day. Also, estimate the daily average demand for the cakes on the basis of simulated data. **(10 Marks)**

Question 7

- (a) Discuss the following:
- i. Various steps involved in selection of a computer system. **(5 Marks)**
 - ii. Various controls necessary for on-line and data communication systems. **(5 Marks)**

- (b) A T.V. dealer finds that the cost of a T.V. in stock for a week is Rs.30.00 and the cost of a unit storage is Rs.70.00. For one particular model of T.V., the probability distribution of weekly sale is as follows:

Weekly Sales	0	1	2	3	4	5	6
Probability	0.10	0.10	0.20	0.25	0.15	0.15	0.05

How many units per week should the dealer order? Also, find E.V.P.I.

(10 Marks)