

**PAPER: 5 SYSTEMS ANALYSIS, DATA PROCESSING & QUANTITATIVE TECHNIQUES
MAY 1997**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1

- (a) What are the factors on which information requirement of executives depend? Explain with relevant examples. **(10 Marks)**
- (b) An agriculturist has a farm with 125 acres. He produces Radish, Muttar and Potato. Whatever he raises is fully sold in the market. He gets Rs.5 for Radish per kg., Rs.4 for Muttar per kg. and Rs.5 for Potato per kg. The average yield is 1,500 kg. of Radish per acre, 1,800 kg. of Muttar per acre and 1,200 kg. of Potato per acre. To produce each 100 kg. of Radish and Muttar and to produce each 80 kg. of Potato, a sum of Rs.12.50 has to be used for manure. Labour required for each acre to raise the crop is 6 man days for Radish and Potato each and 5 man days for Muttar. A total of 500 man days of labour at a rate of Rs.40 per man day are available. **(10 Marks)**

Question 2

- (a) Discuss with examples, the commonly used coding schemes for data processing. **(10 Marks)**
- (b) XYZ airline operating 7 days a week has given the following time-table. Crews must have a minimum layover of 5 hours between flights. Obtain the pairing flights that minimizes layover time away from home. For any given pairing the crew will be based at the city that results in the smaller layover:

Chennai – Mumbai			Mumbai - Chennai		
Flight No	Depart.	Arrive	Flight No	Depart.	Arrive
A1	6 A.M.	8 A.M.	B1	8 A.M.	10 A.M.
A2	8 A.M.	10 A.M.	B2	9 A.M.	11 A.M.
A3	2 P.M.	4 P.M.	B3	2 P.M.	4 P.M.
A4	8 P.M.	10 P.M.	B4	7 P.M.	9 P.M.

(10 Marks)

Question 3

- (a) List the sequence of events which occur immediately in the sales order entry computer program in the on-line, real-time system. **(10 Marks)**
- (b) Define a project and briefly explain the four common implications which characterize a project, and state the five steps that the five steps of the working methodology of critical path analysis. **(10 Marks)**

Question 4

- (a) Explain all the five basic control functions of the operation department in operating standards. **(10 Marks)**
- (b) A company has four terminals U, V, W and X. At the start of a particular day 10,4,6 and 5 trailers respectively are available at these terminals. During the previous night 13,10,6 and 6 trailers respectively were loaded respectively has come up with the costs between the terminals and plants as follows:

		Plants			
		A	B	C	D
Terminals	U	20	36	10	28
	V	40	20	45	20
	W	75	35	45	50
	X	30	35	40	25

Find the allocation of loaded trailers from plants to terminals in order to minimize transportation cost.

(10 Marks)

Question 5

- (a) Explain the main requirements and techniques of input controls of data. **(10 Marks)**
- (b) Write short notes on the following:
- Resource Smoothing.
 - Monte Carlo Simulation. **(5+5 Marks)**

Question 6

- (a) List the advantages and disadvantages of leasing computers from a third party leaser. **(10 Marks)**
- (b) A businessman has an option of selling a product either in domestic market or in export market. The available relevant data are given below:

Items	For Export Market	For Domestic Market
Probability of selling	0.6	1.0
Probability of keeping delivery schedule	0.8	0.9
Penalty for not meeting delivery schedule (Rs.)	50,000	10,000
Selling price(Rs.)	9,00,000	8,00,000
Cost of third party inspection(Rs.)	30,000	Nil
Probability of collection of sale amount	0.8	0.9

If the product is not sold in foreign market, it can always be sold in domestic market. There are no other implications like interest and time.

- Draw the decision tree using the data given above.
- Should the businessman go for selling the product in the foreign market? Justify your answer. **(5+5 Marks)**

Question 7

- (a) Briefly discuss with examples the five program design tools available today. **(10 Marks)**
- (b) The following payoff table is given:

Action	Event			
	E1	E2	E3	E4
A1	40	200	-200	100
A2	200	0	200	0
A3	2	100	0	150
A4	-50	400	100	0

- Calculate the opportunity loss table.
- Suppose that the probabilities of the events of this table are $P(E1) = 0.20$, $P(E2) = 0.15$, $P(E3) = 0.40$, $P(E4) = 0.25$, calculate the expected payoff and the expected loss of each action.

(2+8 Marks)