

**PAPER 6 : MANAGEMENT INFORMATION AND CONTROL SYSTEM
MAY- 1998**

Question 1 is compulsory.

Answer any four from the remaining six questions.

Question 1:

- (a) Explain the concept of MIS in terms of its three elements **(5 Marks)**
- (b) Discuss the potential impact of computers and MIS on different levels of management **(5 Marks)**
- (c) A firm buys castings of P and Q type of parts and sells them as finished product after machining, boring and polishing. The purchasing cost for castings are Rs.3 and Rs.4 each for parts P and Q and selling costs are Rs.8 and Rs. 10 respectively. The per hour capacity of machines used for machining, boring and polishing for two products is given below:

Capacity per hour	Parts	
	P	Q
Machining	30	50
Boring	30	45
Polishing	45	30

The running costs for machines, boring and polishing are Rs.30, Rs.22.5 and Rs.22.5 per hour respectively.

Formulate the linear programming problem to find out the product mix to maximize the profit.

(5 Marks)

Question 2

- (a) What is the 'physical security' of a computer system? Explain, how the security administrator is responsible for balancing the benefits and costs of various security measures? **(10 Marks)**
- (b) A manufacturing company has four zones A, B, C, D and four sales engineering P, Q, R, and S respectively for assignment. Since the zones are not equally rich in sales potential, therefore it is estimated that a particular engineer operating in a particular zone will bring the following sales:

Zone A	4,20,000
Zone B	3,36,000
Zone C	2,94,000
Zone D	4,62,000

The engineers are having different sales ability. Working under the same conditions, their yearly sales are proportional to 14,9,11 and 8 respectively. The criteria of maximum expected total sales is to be met by assigning the best engineer to the richest zone, the next best to the second richest zone and so on.

Find the optimum assignment and the maximum sales.

(10 Marks)

Question 3

- (a) For a material inventory control system, draw the system flow chart. Mark different runs. Explain relevant details and symbols used. **(10 marks)**
- (b) Customers arrive at a one-window drive according to a Poisson distribution with mean of 10 minutes and service time per customer is exponential with mean of 6 minutes. The space in-front of the window can accommodate only three vehicles including the serviced one. Other vehicles have to wait outside this space. Calculate:
- Probability that an arriving customer can drive directly to the space in-front of the window.
 - Probability that an arriving customer will have to wait outside the directed space?
 - How long an arriving customer is expected to wait before getting the services?
- (10 Marks)**

Question 4

- (a) Explain in detail, the five basic control functions of the computer operation department **(10 Marks)**
- (b) The automobile company manufactures around 150 scooters. The daily production varies from 146 to 154 depending upon the availability of raw materials and other working conditions:

Production per day	Probability
146	0.04
147	0.09
148	0.12
149	0.14
150	0.11
151	0.10
152	0.20
153	0.12
154	0.08

The finished scooters are transported in a specially arranged lorry accommodating 150 scooters. Using following random numbers:

80 81 76 75 64 43 18 26 10 12 65 68 69 61 57

Stimulate the process to find out:

- (i) What will be the average number of scooters waiting in the factory?
- (ii) What will be the average number of empty space on the lorry? **(10 Marks)**

Question 5

- (a) What do you understand by system development life cycle? Explain the various activities involved in it? **(5 Marks)**
- (b) Explain different conversion strategies used for conversion from manual to computerized system. Enumerate the advantages and disadvantages of each strategy **(5 Marks)**
- (c) Consider the following data for the transportation problem:

Factory	Destination			Supply to be exhausted
	(1)	(2)	(3)	
A	5	1	7	10
B	6	4	6	80
C	3	2	5	15
Demand	75	20	50	

Since there is not enough supply, some of the demands at the three destinations may not be satisfied. For the unsatisfied demands, let the penalty costs be rupees 1, 2, and 3 for destination (1), (2) and (3) respectively.

Find the optimal allocation that minimizes the transportation and penalty costs **(10 Marks)**

Question 6

- (a) State the various steps involved in establishing the standards for programming personnel. Explain any two methods to compute the time spent by a programmer on each task. **(10 Marks)**
- (b) Write short notes on:
- (i) Decision trees.
- (ii) Limitations of linear programming problem **(5+5=10 Marks)**

Question 7

- (a) Define personnel information system. List its various basic sub-systems and explain them in detail. **(10 Marks)**

(b) The following information is given:

Activity	(1-2)	(2-3)	(2-4)	(3-5)	(4-6)	(5-6)	(5-7)	(6-7)
Pessimistic time (in weeks)	3	9	6	8	8	0	5	8
Most likely time(in weeks)	3	6	4	6	6	0	4	5
Optimistic time (in weeks)	3	3	2	4	4	0	3	2

Draw the network diagram for the above. Calculate:

- Variance to each activity
- Critical path and expected project length
- The probability that the project will be completed in 23 weeks

Given that:

Z value	1.90	1.91	1.92	1.93	1.94
Probability	0.9713	0.9719	0.9726	0.9732	0.9738

(10 Marks)