

MANAGEMENT (Paper II)

Time Allowed : Three Hours

Maximum Marks : 300

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

There are EIGHT questions divided in two Sections.

Candidate has to attempt FIVE questions in all.

Question Nos. 1 and 5 are compulsory and out of the remaining, any THREE are to be attempted choosing at least ONE question from each Section.

The number of marks carried by a question/part is indicated against it.

Wherever any assumptions are made for answering a question, they must be clearly indicated.

Word limit in questions, wherever specified, should be adhered to.

SECTION 'A'

1. Read the situation given below and answer the questions given at the end of it. A company is dealing with two products A and B. The company uses three resources to make the products, namely: machines, men and material. To produce the products, the total capacity available per week is as follows: machines – 180 hours, men – 150 hours and material – 200 kg. Every unit of product A requires 9 hours of machines, 7 hours of men and 4 kg of material. The corresponding figures for product B are: 5 hours of machines, 3 hours of men and 4 kg of material. The company has estimated that the cost of machine is ₹ 50 per hour, cost of men is ₹ 30 per hour and cost of material is ₹ 10 per kg, regardless of the product made. The company sells these products in the domestic market and as per the company records, the profit of the company is ₹ 40 per unit of product A and ₹ 20 per unit of product B. (kg = kilograms)
 - (i) Formulate the following problem as Linear Programming Problem: How much of products A and B should be produced to minimise the weekly total cost of machines, men and material? 10
 - (ii) Formulate the following problem as Linear Programming Problem: How much of products A and B should be produced to maximise the weekly total profit of the company? 10
 - (iii) Solve question (i) using graphical method, to minimise the weekly total cost. 20
 - (iv) Do you think it is possible to have multiple solutions resulting in the same minimum weekly total cost in case of minimisation problem and resulting in the same maximum weekly total profit in the maximisation problem? If yes, how should the company identify such situations? 10
 - (v) Prepare a typical Tableau to solve the minimisation problem by using Simplex Method. 10
2. Read the case described below and answer the questions given at the end of the case. Quant Corporation is a major manufacturer of hard disk drives and other high technology storage components. Quant faced two key challenges in its manufacturing process. The first was streamlining the component supply process, to reduce on hand inventory. Its traditional ordering process was labour intensive, involved numerous phone calls and manual inventory checks, leading to high inventory levels. Quant needed a solution to automate the ordering process to increase accuracy, efficiency and reduce the needed inventory to 3 days' supply. This would also provide the company's purchasing agents with more time for non-transactional tasks. Quant's second challenge was to improve the quality of the components' data in its Material Requirement Planning (MRP) system. The solution that Quant used to automate its component supply process was an inter-enterprise system that

automatically e-mails reorders to suppliers, using an innovative event detection and notification solution. It scans Quant's databases twice daily, assessing material requirements. Orders are automatically initiated and sent to suppliers as needed, allowing suppliers to make regular deliveries to match Quant's production schedules. To elevate data quality, Quant implemented a system called "Categoric Alerts" to proactively catch any data errors or omissions in its MRP database. The estimated value of the improved ordering process using the new system is crores of rupees in inventory reductions each year. The buyers have reduced transaction costs and tasks. Both Quant and its buyers get lot more information with a lot less work. The analysts have been freed from the drudgery of scanning reports. Employee satisfaction has greatly increased. Data integrity of MRP rose from 10% to 100%. Response to customer demand is much quicker. The system paid for itself in the first year.

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| (i) | Identify the internal and external parts of the supply chain enhanced by the system. | 10 |
| (ii) | Explain how purchasing was improved. What functions does MRP perform? How is this improved by automation? | 20 |
| (iii) | How are Quant's customers better served now? | 10 |
| (iv) | How does Quant evaluate the automated system? Is this adequate? | 10 |
| (v) | What additional steps can Quant take? | 10 |

3. Read the case described below and answer the questions given at the end of the case. Jean L, a global jeans manufacturing company reached its peak sales in 1996 and then found its sales steadily declining by 40% within 5 years in value terms, even though the total jeans market grew at an average rate of 10% a year, during the period. A combination of good design, pursuit of new trends and savvy marketing helped competitors take away market share from Jean L. Jean L had traditionally focussed on Jeans for men, but the company's products were found to be too outdated, expensive and rather unresponsive to changing market preferences. Jean L had not moved its manufacturing base to low cost producing countries. The company responded to the declining market share using three key steps. First, the company closed most of its plants in its home country and laid off over 6500 employees, shifting manufacturing to low cost countries. Second, it attempted to stay ahead of fashion trends rather than follow them, paying much more attention to women, with a series of new designs such as "Superflow" line of jeans meant to feel feminine, mass marketing the jeans within three months of testing. Third, the company announced its "Original Spin" program to supply custom made jeans for individual customers, using web based technology and computer controlled production equipment for mass customization. Today a fully stocked Jean L store carries 130 pairs of ready-to-wear jeans and with the "Original Spin" program, the choices available can leap up to 750. Jean L charged a premium of 20% for this service. This helped redefine relationship with customers as customer's personal "Jeans Adviser". The company also installed a device to scan the entire body of the customer to generate custom patterns directly transmitted to production plant.

12×5=60

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| (i) | In general, how do you analyse the competitive forces in an industry? Which forces did Jean L experience? |
| (ii) | What are the generic competitive strategies that companies can adopt? |
| (iii) | How can a company make choice of its competitive strategy? |
| (iv) | What strategy did Jean L pursue originally? Why did the strategy fail? |
| (v) | How do you evaluate the strategic change implemented by Jean L? |

4. Read the situation described below and answer the questions given. A company is selling a product in the domestic market. From the records of the company, data was compiled for 16 quarters and this is shown in the table below.

Quarter no.	Sales in units
1	7
2	10
3	13
4	17
5	8
6	11
7	14
8	18
9	9
10	12
11	14
12	19
13	10
14	11
15	14
16	16

- (i) What are your observations on the sales data given in the table? 5
- (ii) Estimate the sales likely to occur in quarters 17, 18, 19 and 20. 20
- (iii) At present the company is making the product in house. The company wishes to evaluate the option of outsourcing the product. How should the company systematically carry out the make or buy analysis? 10
- (iv) The company is presented with three options: make in house, buy locally, import. There are three market scenarios: demand may increase, demand may decrease and demand may remain at the present level. The table below gives the expected profit the company will make for each combination. Which option should the company choose if the probability of demand increasing is 0.3, probability of demand decreasing is 0.45 and probability of demand remaining as at present level is 0.25?
Expected Profits for Each Combination
- | Options | Demand Scenarios: May increase | Demand Scenarios: May decrease | Demand Scenarios: May remain at present level |
|---------------|--------------------------------|--------------------------------|---|
| Make in house | ₹ 100 | ₹ 20 | ₹ 40 |
| Buy locally | ₹ 50 | ₹ 70 | ₹ 30 |
| Import | ₹ 65 | ₹ 80 | ₹ 35 |
- (v) In question (iv), all other data remaining same, which option will you choose if the probabilities of all market conditions are unknown? Why? 10
- 15**

SECTION 'B'

5. Read the situation given below and answer the questions given at the end of it. A district police officer has collected data regarding 75 crime-sheeters in his district. This data is given in the table below. The data shows the age of the crime-sheeter when the First Information Report (FIR) was registered. Answer questions (i) to (iv) by showing all the steps.

Data showing the age of 75 crime-sheeters

14	24	70	65	22	40	55	17	32	34	42	45	19	20	25
16	26	72	67	24	42	27	19	34	36	44	37	21	22	27
12	22	68	63	20	38	23	15	30	32	40	23	17	18	23
13	25	71	66	23	41	26	18	33	33	43	33	20	21	26
33	45	53	63	23	13	54	24	64	64	53	72	12	15	54

- (i) Using the data given in the table, find: (a) Mean (b) Median (c) Mode (d) Standard deviation (e) Coefficient of Variation 30

- (ii) What observations can you make with your analysis? 5
- (iii) What is the probability of finding a crime-sheeter who is older than 50 years? 15
- (iv) If a statement is made “Crime-sheeters in the age group of 35 to 50 are more likely than those in the age group of 55 to 70,” how would you verify the statement using Tests of Hypothesis? 10

6. Read the case given below and answer the questions given at the end of the case. A multiproduct household appliance manufacturing company found that its total product range had grown to well over 400 products. Different products competed in different markets, with either same or different competitors. While the company had leading market shares in some products, in several other products, its market shares were well below the main competitors. The company was profitable, but it found that the profits were not growing commensurate with overall sales growth and the efforts put in. As a first step to study the problem in depth, the company decided to carry out a “Product Portfolio Analysis” based on the well-known technique known as “Boston Consulting Group (BCG) Matrix”. First the company chose a representative sample of 10 products and compiled data on its relative market share and rate of growth of market for each of the ten products. The data is given in the table below.

12×5=60

Product	Relative Market Share* %	Rate of Growth of Market %
1	0.2	20
2	0.5	5
3	1.5	5
4	1.0	15
5	0.7	25
6	1.2	20
7	0.4	8
8	1.6	25
9	0.3	20
10	1.4	6

*Relative Market Share, % = $100 \times ((\text{Market Share of the company}) / (\text{Median Market Share for all the companies}))$ In this formula, the companies to be taken into account are those that compete in the market for a specific product. Any growth rate of market above 15% was considered as “High” and below 15% was considered as “Low” growth rate. The company had feared that if the trend of profits not increasing in line with the sales continued, it would soon enter a phase of profitless growth.

- (i) What is Boston Consulting Group (BCG) Matrix?
- (ii) How are products classified using the BCG Matrix?
- (iii) Apply BCG Matrix to classify the sample products in the table.
- (iv) Is the company’s product portfolio balanced? Why?
- (v) What steps should the company take to ensure it doesn’t experience profitless growth?

7. Answer the following questions:

- (i) Distinguish between “competitive advantage” and “comparative advantage”. How are endowments of a country’s factors of production linked to its comparative advantage? 15
- (ii) How do the factors mentioned below impact international trade: (a) Increasing returns to scale (b) Product differentiation (c) Imperfect competition (d) Irreversible investments (e) Externalities and spillover effects 25
- (iii) How does the “Product Life-cycle Theory” explain the globalization of firms? What are the four generic strategies to compete and secure competitive advantage in global markets? What are the key requirements for a product to be a true “global” product? 20

8. Answer the following questions:

- (i) Speedy development of infrastructure is one of the important thrust areas of government policy in recent times. A particular initiative that government has taken in this regard is to engage private enterprise in infrastructure development through “Public Private Partnerships”. An example of such partnership is the “Build-Operate-Transfer (BOT)” Model which is being implemented across most of the areas of infrastructure development. It is believed that India’s success in speedy infrastructure development will depend crucially on the success of the Public Private Partnership (PPP) Model.
- (i)(a) Mention any five areas of infrastructure development where PPP Model has been implemented. 5
- (i)(b) In a typical “Build-Operate-Transfer (BOT)” Model, what are the responsibilities of Government as “Owner” and the private entrepreneur as the “Concessionaire”? 10
- (i)(c) In a typical “Build-Operate-Transfer (BOT)” Model, what are the major risks borne entirely by the “Owner” and by the “Concessionaire” respectively? 10
- (i)(d) In which area of infrastructure development do you think the PPP Model has been most successful? Why? 5
- (ii) What do you understand by Corporate Governance? What factors have led to increasing emphasis on good Corporate Governance? What constitutes good Corporate Governance from the standpoint of different stakeholders? Provide a brief review of Corporate Governance practices in India. 30