

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. Answer the following questions (each not exceeding 150 words):

- (a) In an educational institution, the stipends earned by the students in the first year summer internships of the two year post graduate programme are used to decide the amount of financial aid to be given to the students in the second year of the programme. The stipends earned by the students have the following distribution:

Stipend earned (in ₹)	Number of students
0 – 49,999	231
50,000 – 99,999	304
1,00,000 – 1,49,999	400
1,50,000 – 1,99,999	296
2,00,000 – 2,49,999	123
2,50,000 – 2,99,999	68
3,00,000 or more	23

What is the mode value of the stipend earned? If financial aid is restricted to those students whose stipend earnings are at least 10% lower than the mode value, how many of the applicants qualify?

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- (b) A job shop incurs different costs per day, for processing 5 different jobs in the shop on a single machine. All jobs are available at time $t=0$. The data for the jobs is given below:

Job	Processing time, days	Due date, days
1	5	13
2	3	15
3	7	22
4	2	9
5	4	7

Draw Gantt chart for SPT rule, slack time sequence rule, to compute average tardiness and lateness for each of the above rules.

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- (c) What is the difference between “Micro”, “Small” and “Medium” enterprises in the Manufacturing Sector? What are the main arguments in support of Small Scale Enterprises in India?

12

- (d) What do you understand by the term “Strategy”? How do you distinguish between “Business Strategy” and “Corporate Strategy”? What role do “External Assessment” and “Internal Scrutiny” play in strategy formulation?

12

- (e) Why are information systems so essential for running and managing business today? Explain how Management Information System (MIS) differs from Transaction Processing

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System (TPS) and Decision Support System (DSS).

2. UPD Manufacturing produces a range of healthcare appliances for hospital and home use. Recently the company has undertaken a review of its inventory policies for blood pressure testing kit. The company manufactures all the components for the kit in-house except for the digital display unit. Presently these display units are ordered at six-week intervals from the supplier. Discussions with purchasing manager revealed a cost of ₹ 40 to order and receive a shipment of display units from the supplier. The number of kits assembled by the company per week is normally distributed and has an average of 90 units with a standard deviation of 5 units. The weekly inventory carrying cost is ₹ 0.08 for each display unit. The supplier takes exactly 1 week to deliver an order from the date the order is faxed to the supplier. Assume one week has 5 working days. Answer the following questions (each not exceeding 200 words):
 - (a) Assuming 52 working weeks in a year, what will be the sum total of ordering and inventory carrying costs for the digital display unit, with the present ordering policy? 8
 - (b) What will be the stock level at which an order should be placed, with the present ordering policy? 12
 - (c) If the company wanted to minimize the sum total of annual ordering and inventory carrying costs, what should the company's order quantity be for the display unit? 15
 - (d) How much safety stock should the company provide if the company wanted to ensure that it will not run out of stock more than 1% of inventory cycles? 12
 - (e) In the general context of vendors, distinguish between MRP and JIT, with illustrations. 13
3. A car maker XY Motors sold 12,000 vehicles in the initial year 1994. By 2010, the company had sold 5,00,000 annually. Until 2002, XY ranked at the bottom of annual quality survey of new vehicle owners, with 2.12 defects per vehicle, and industry average of 1.33. XY offered a 10 year/1,00,000 Mile Warranty Program and paid for repairs on all warrantied items. XY had to create a system to report any defects, accidents, or injuries involving its vehicles to the Federal Government. The information was stored in at least seven different systems run by XY's warranty, parts, consumer and legal affairs departments. XY's management decided to create a defect early warning system to identify potential problems, such as faulty brake parts, by combining warranty claims, parts sales and orders, field reports and consumer complaints. A software consulting firm IZ created a software "engine" that examines six XY systems for warranty claims, parts orders and sales, vehicle identification number, master storage files, vehicle inventories and stores the essential information in a single common data repository. The system automatically breaks down and categorizes reports based on individual components, such as steering assemblies or headlights, and links to XY's "Clarify" customer relationship management system, tracking customer complaints received by phone, e-mail or postal mail. Managers are able to analyze the data by daily, weekly, or monthly reporting periods and by specific car models, model year, and components. They can breakdown data in detail to see how many complaints or warranty claims are associated with a specific item, such as a steering assembly. In the quality rankings released recently, XY had 1.40 problems per vehicle, finishing second in the 'compact' car category for quality. Answer the following questions (each not exceeding 200 words):
 - (a) What is the problem with the original information system for tracking the quality of parts? 12
 - (b) How did the company improve the quality of its vehicles with the improved information system? 15
 - (c) In general, what do you understand by information architecture? What are the well known types of information architecture? 13

- (d) How do supply chain management (SCM) systems and customer relationship management (CRM) systems help integrate suppliers and customers better? 20

4. STU Company was a high variety manufacturer of high tensile (HT) fasteners which included over 3000 different types of bolts, nuts, screws, sockets, dry wall screws, specials, etc. The manufacturing plants were located in South India. Although, there were several other competitors, STU was by far the market leader in HT fasteners with a market share of over 60%. These markets mainly included automobile original equipment manufacturers (OEMs) and retail hardware markets. Some product was exported to a variety of countries. The company's dominant position in HT fasteners was built on strong core competence it had built in two areas: cold forging and in-house tool making. However, the company depended heavily for over 90% of its total steel requirements on costly import. The company later began making cold extruded components and powder metallurgy components. The company's competences in these areas were not unique and other competitors claimed better capabilities. Although not a market leader, the company's market shares in each of these product groups was 25% approximately. While the growth rate of HT fasteners was rather low, the rate of market growth for cold extruded and powder metallurgy components was reasonably high. The total market size for the three product groups was as follows: HT fasteners – ₹ 2,000 crores, cold extruded parts – ₹ 600 crores and powder metallurgy parts – ₹ 400 crores. The company's break even point was rather high, at 80% of total sales, due to high cost of imported raw materials. On an average, the variable cost was 60% of the product price. As part of its growth plan, the company looked at three options: (i) Set up a captive steel mill for making the special steels needed. (ii) Set up a new high tensile fastener plant in the North to meet the needs of the customers in the North. (iii) Vigorously pursue the possibility of becoming a supply source for reputed OEMs abroad, particularly in USA. While the captive steel mill was an attractive option, the company had no strength in steel making. Being capital intensive, to be economical, such a mill would need much higher volume, almost 5 times the internal requirement for economy of scale. Setting up a new plant in the North was a mildly attractive option but the customers in the North could also be well serviced by opening a dedicated warehouse in the North. Also the company had no prior experience of operating a manufacturing plant in the North. Being a supply source for OEMs in USA was a very attractive option with very high growth potential, but the company would have to meet stringent volume, quality, rapidly changing design and delivery requirements of OEMs. Answer the following questions (each not exceeding 200 words):

- (a) By what strategy was STU able to build a dominant position in the HT fastener market? Why could it not replicate this in cold extruded and powder metallurgy components? 15
- (b) Draw the Boston Consulting Group (BCG) product portfolio matrix and show on it the position of the company's three product groups: HT fasteners, Cold extruded parts and Powder metallurgy parts. 15
- (c) What is the company's break even sales? What is the company's fixed cost? 15
- (d) Use a suitable strategy analysis technique to evaluate the three growth options. Which option should the company choose? What will the company have to do to successfully implement the option? 15

SECTION 'B'

5. Answer the following questions (each not exceeding 150 words):

- (a) MNP Manufacturing produces ornate, decorative wood frame doors and windows. Each item produced goes through three manufacturing processes: cutting, sanding and finishing. Each door produced requires 1 hour in cutting, 30 minutes in sanding and 30 minutes in finishing. Each window requires 30 minutes in cutting, 45 minutes in sanding and 1 hour in finishing. In the coming week, MNP has 40 hours of cutting capacity, 40 hours of sanding 12

capacity and 60 hours of finishing capacity available. Assume that all doors produced can be sold for a profit of ₹ 500 each and all windows can be sold for a profit of ₹ 400 each. Formulate a linear programming model to solve the problem. Use the graphical method to find the optimal solution.

- (b) What is meant by “Statistical Process Control”? What are range and mean charts? The range and mean charts were used to determine the mean and standard deviation of a process making a cylindrical component. The mean value of the outer diameter was found to be 7.724994 centimetres and the standard deviation of the outer diameter was 0.000433 centimetres. The specification for the outer diameter was 7.72500 ± 0.00050 centimetres. Does the process have desired capability to produce the component as per the specifications? 12
- (c) What is a “Strategic Alliance”? What are the different types of strategic alliances? What are their advantages and disadvantages? Distinguish between strategic alliance and joint venture. 12
- (d) What are the major capabilities of Data Base Management System (DBMS)? Why is a relational DBMS so powerful? What are the principal technologies for accessing information from databases to improve business performance and decision making? 12
- (e) What is “Foreign Direct Investment”? What is “Foreign Portfolio Investment”? How do these differ? Explain the product life cycle theory of “Foreign Direct Investment”. 12

6. The Beta Container Company is a large manufacturer in the container industry. The Company’s production factory enjoyed good employee relations, due to absence of frequent ‘hiring-firing’ practice. If necessary, the factory employed temporary workers and college graduates to fill extra manpower needs during the peak summer and monsoon months. The factory had 14 can lines, with 12 workers and 1 supervisor per line. The average shift hourly rate for workers and supervisors was ₹ 61 and ₹ 94 respectively. A 50% overtime premium was paid for all overtime work not exceeding 20 hours per worker per week (maximum 4 hours per day). The supervisor also received overtime on the same basis. The factory produced, stocked and transported cans in truckloads. Each truckload occupied 3200 cubic feet of space. A monthly charge of 2% of the average monthly inventory value was applied to cover inventory carrying costs. The factory’s average production capacity was 30 truckloads of cans/month/can line on regular time. The factory could use upto a maximum of 14 can lines in any month, if needed. The manufacturing cost was ₹ 50,000/truckload. Table below shows the anticipated sales forecast. Assume each can line works for 160 hours per month on regular time. Table: Anticipated Sales Forecast

Month	Demand in truckloads
January	30
February	54
March	145
April	186
May	217
June	262
July	317
August	346
September	299
October	251
November	101
December	119

Answer the following questions (each not exceeding 200 words):

- (a) How should the factory plan its production? 10
- (b) What will be the annual production plan that will result in least total annual cost using seven can lines in each month? 30

- (c) How will the production plan be affected if the factory had an initial inventory of 100 truckloads at the beginning of January? 10
- (d) How will the production plan be affected if the factory wanted an inventory of 150 truckloads at the end of December, but had no inventory at the start of January? 10
7. IJK Clothing Ltd. signed up with a well known shirt company in USA for licensed manufacture of “Ar” brand shirts in India. The first plant with a capacity to produce up to 4000 shirts per day was set up in Bangalore at a cost of ₹ 16 crore, with state of art facilities, working conditions and over two dozen quality check points in the plant for high quality and precision work. The plant was among the few in the world which could make shirts with 2 ply 140s and 3 ply 100s cotton fabrics using 16 – 18 stitches per inch. The plant’s reputation spread far and wide and export orders started pouring in from renowned global brands. The company had to take over four more factories in Bangalore on wet lease to cope with demand. The company set up another large export oriented factory in the vicinity of Bangalore with capacity to make up to 9000 shirts per day at a cost of ₹ 15 crore. Several cutting edge technologies were used in the plant including CNC fabric cutting machines, automatic collar and cuff stitching machines, foam finishers, pneumatic holding for shoulder joining, etc. Computerized apparel production management system enabled continuous monitoring of production processes. The plant employed 800 persons, almost one-third needed in its original plant. The lifting of countrywide quota regime helped the company boost its global sales. “Ar” brand shirts were displayed in exclusive showrooms, across the largest network of exclusive outlets and also in 30 retail chains in India. Later it branched into 200 select multibrand outlets. The company expanded its product range from formal dress shirts to casual shirts, T-shirts and trousers. It tied up with a renowned Italian designer to design its spring and summer collection. The company announced its intention to license the “Ar” brand to lifestyle accessories like footwear, watches, undergarments, fragrances, leather goods. Answer the following questions (each not exceeding 200 words):
- (a) By what strategy did IJK Clothing Ltd. globalize its “Ar” shirt business? What explains the phenomenal growth of “Ar” shirt business? 15
- (b) Is the strategy too India centric? What efforts are needed to transform it into a truly global strategy? 15
- (c) Will the strategy work when competition intensifies in branded shirt business? 15
- (d) In general, what are the generic strategies by which companies can globalize? What are their advantages and disadvantages? 15
8. Answer the following questions (each not exceeding 300 words):
- (a) What have been the key contributions made by the Public Sector Enterprises (PSEs) to the overall growth of India’s economy? What are the main causes for their unsatisfactory performance? 15
- (b) What are the advantages and disadvantages of implementing Corporate Social Responsibility (CSR) for an organization? What are the well known models of CSR? Mention a few industrial organizations in India known for performing CSR functions. 15
- (c) The Black Gold Oilfield Company has recently acquired rights to a new potential source of natural oil in Bay of Bengal. The current market value of these rights is ₹ 900 crore. However if there is natural oil at the site, it is estimated to be worth ₹ 8000 crore. In this case, the company would have to pay ₹ 1000 crore in drilling costs to extract oil. The company believes there is a 0.25 probability that the proposed drilling site actually will hit the natural oil reserve. Alternately, the company can pay ₹ 300 crore to first carry out a seismic survey at the proposed drilling site. Historically if the seismic survey produces a favourable result, there is a 0.5 probability of hitting oil at the drilling site. However, if the seismic survey produces an unfavourable result, there is only a 0.14 probability of hitting oil. The probability of an unfavourable survey when no oil is present is 0.8. The probability 30

of a favourable seismic survey when oil is present at the drilling site is 0.6. What is the optimal decision strategy, using the Expected Monetary Value (EMV) criterion?