P09/MU2401/EE/20121017

Time : Three Hours **Marks : 100**

Instructions to Candidates :

1) There are **two** sections.
2) Section I carries **60** marks and Section II carries **40** marks.
3) From Section I answer **any four** questions. Section II is **compulsory**.
4) Figures to the right indicate full marks.
5) Answers to the two sections should be written in **one** and the **same** answer book.

SECTION I

1. Discuss in detail, the different strategic decision making categories. **15**

2. Discuss the different pricing methods. **15**

3. Explain in detail, the process and marketing strategy choice. **15**

4. State the factors to be considered for the location of a plant. **15**

5. Explain in detail, the automation in manufacturing process. **15**

6. Discuss in detail, the theory of investment analysis. **15**

SECTION II

7. Explain the following cases :

I) Factory automation with example each. **20**

a) CIM computer integrated mfg.

b) N.C. (Numerically Controlled) machine tools

c) F.M.S. (Flemible Mfg. systems)

d) D.N.C. (Distributed Numerically Controlled) system

II) Explain Engineering automation of : **20**

a) C.A.D. (Computer Aided Design)

b) C.A.E. (Computer Aided Engineering) with a suitable example.

P09/MU2402/EE/20121018

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SECTION I

1. Why is world-class manufacturing the need of today's highly competitive market? **15**

2. Why are companies emphasizing the need for customer focus in their business plans on such a serious note? **15**

3. "The goal to set-up activity-based target cost can be achieve by ABC analysis" – Discuss. **15**

4. Explain the concept vendor managed inventory (VMI) and role of the supplier in VMI. **15**

5. What are the various characteristics of a process focussed team? Elaborate. **15**

6. "Total quality management as a tool for global competitiveness" – Discuss. **15**

SECTION II

7. Read the following case and answer the questions given below :

That's an alarming statistic but there are exceptions. Some companies in your industry are pricing effectively because they know the value of their products and services across their different customer markets.

Because they have a commitment to the basics, they know precisely what its costing them to produce, sell, distribute and service their products across customer segments. More importantly, they're using analysis, processes and tools that can be bundled and priced to increase customer value creation and generate longer term revenue streams.

Such insight underpins an optimal product portfolio. It also drives the proprietary innovation behind product and service differentiation, one of the core components of high performance in any industry. Your customers will pay more for the product and service solutions that fulfill their particular value expectations. The nature of your industry presents plenty of pricing challenges. With so many product options and configurations, it's hard to compare prices among different deal structures, frequent launches of additional options make it difficult to understand true cost and thus price appropriately. Independent distribution channels can cloud your view of the end customer.

The upshot : industrial products companies often price in a less than ideal manner - especially when they don't know enough about the true components of cost. Many companies may be leaving significant profit on the table as a result. Even if their cost data are relatively good, the margin they add may not be in alignment with the value their solution delivers to customers.

Sustained price differentiation can only be achieved by a total understanding of how to create value in the market place - customer and

product value. A more holistic, market - driven and above all value based approach to pricing may sometimes be more appropriate than cost-plus. Our high performance business research shows that companies that have taken this route have achieved pricing power, resulting in higher gross profits and revenues. What's more, they're growing faster than their peers.

Questions :

a) Explain the concept, 'Rational pricing decision.' **5**

b) Give a suitable title to the case. **5**

c) Explain in detail from above paragraph that how does cost reduction and performance improvement correlated in the context of service organization. **15**

d) What inference would you draw from above discussion? **15**

P09/MU2403/EE/20121019

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SECTION I

1. Explain the objectives and main functions of production planning and control. **15**

2. Discuss the high capacity and low capacity on the performance of an organization. **15**

3. Explain the procedure of solving linear programming problem by graphical method. **15**

4. Explain the role of design and marketing departments with respect to the product development process. **15**

5. What is line balancing? Explain the steps involved in the heuristic method of line balancing. **15**

6. Explain robotics alongwith its components, advantages and disadvantages. **15**

SECTION II

7. Read the following case and answer the questions given below :

A firm produces two products, P & Q. One unit of P requires 10 to 15 minutes to grind and assemble respectively and one unit of Q needs 20 and 15 minutes to grind and assemble respectively. The production run calls for atleast 8 hours of grinding time and atleast 9.5 hours of assembly time. if P costs Rs. 70 and Q Rs. 100 to manufacture.

Question :

a) Find the optimum number of units of products P and Q by using graphical method. **20**

8. Read the following case and answer the questions given below :

'Star' company manufactur product 'A' which is composed of two parts B and C. A order has been received for forty units of product 'A' to be delivered on the sixth week from the time when order was placed. The in hand stock for 'A', 'B', 'C' are $A = 20$, $B = 10$ and $C = 15$. The lead time for A is three weeks, for B is two weeks and for C is one week.

Question :

a) What shall be the size of order and when should the order get released for each item? **20**

P09/MU2404/EE/20121020

Time : Three Hours **Marks : 100**

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SECTION I

1. What do you understand by materials management? Explain the functions of materials management. **15**

2. Explain in detail the concept of ABC analysis with a suitable diagram. **15**

3. What is MRP? Explain the objectives of MRP system. **15**

4. What is lot sizing? What are the various types of lot sizing techniques used in an MRP system? **15**

5. What do you understand by capacity requirements planning? Discuss the advantages and disadvantages of CRP. **15**

6. What do you understand by production planning and control (PPC)? Discuss the importance of production planning in production management. **15**

SECTION II

7. Read the following case and answer the questions given below :

Mr. Govind, GM Operations of Precision Parts Company convened a meeting of all Executives. He was upset that customers have complained that supplies are not coming on time. He knew that customers' demands were known much earlier and there is not reason for failure. He was also under compulsion to reduce prices to get fresh orders and wanted his people to look into all avenues of material cost and operations cost reduction.

Mr. Ram Kumar, Production Manager said that material supply was the problem. The shafts received were rejected for quality reasons. The gear wheels have not yet been supplied since supplier is facing capacity constraints.

Mr. Chandran, Purchase Manager said that they have not properly communicated our schedules to vendors because of change in production plan.

While walking through the plant Mr. Govind pointed out hugh stocks of pressed parts kept in various bins. Mr. Ram Kumar said that since the set up time is very high they have to run bigger batch of Sealing Covers. When all went to stores they could see hugh stocks of various materials stored. Mr. Chandran explained that they are all safety stocks procured anticipating supply failures.

Questions :

a) What are the objectives of the company? **10**

b) What are the two major issues that they need to address urgently? **10**

c) What immediate steps to take for ensuring regular continuous supplies? **10**

d) How to reduce WIP inventory? **5**

e) What is to be done for Safety Stock reduction? **5**

P09/MU2405/EE/20121020

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SECTION I

1. What are the major elements of logistics costs? Describe how could those be leveraged for competitive advantage. **15**

2. What do you understand by customer service? Explain the concept of value advantage. How can it be achieved through customer service? **15**

3. Describe the technique of ABC analysis in detail. What are other classifications possible for selective control of inventories? **15**

4. Describe the five modes of transportation, identifying the most significant characteristics of each. **15**

5. Describe the six important functions of packaging. What do you think is the future of the packaging industry in India? **15**

6. What are the basics of supply chain management? How do you measure the performance of supply chain? **15**

SECTION II

7. Write notes on the following :

   a) Internal supply chain **5**

   b) External supply chain **5**

   c) Strategic role of SCM **5**

   d) Integrated logistics **5**

8. a) What are the costs associated with inventory? How do these costs behave with respect to each other? **10**

   b) A manufacturer has to supply his customer 500 units of his product per year. Shortages are not allowed and the inventory carrying cost amount to Rs. 0.50 per unit a year. The set up cost is Rs. 70. Calculate EOQ for the commodity. **10**

P09/MU2406/EE/20121021

Time : Three Hours **Marks : 100**

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SECTION I

1. Define productivity. Explain how to increase individual productivity. **15**

2. What is the value break-even point? Explain the uses of break-even analysis in detail. **15**

3. What is quality? How is quality assured in a product? **15**

4. List six important features of Deming's quality philosophy. Briefly mention why do you consider them important. **15**

5. Discuss the components of quality costs. **15**

6. Write short notes on any three of the followings : **15**

a) 5 – S' principles

b) Quality circle

c) Normal distribution

d) Six-sigma

SECTION II

7. Read the following case and answer the questions given below :

Statistics in Practice-1

M/s REC, a refrigeration manufacturing company guarantees on sight service and resolution of customer complaints within 72 hours. Company had set up the process of rendering service in time after lots of internal study and benchmarking with a competitor's process. This service guarantee applies to all installation, be that domestic or industrial.

However, after implementing the process of customer service on door, company realised after sometime that the guarantee is not being maintained in many cases. As a result, company is getting more blame than credit for being prompt for customer service. The company was concerned, because customer satisfaction became a major driver for success in the business.

So, a statistical process control (SPC) study was taken upto determine if the process of rendering service is capable to deliver the guarantee. If not, what should be done to improve the capability? The study was conducted for 25 weeks simultaneously at five service centers of the company. Weekly number of service calls received and call attended to (i.e. balance being the service calls not meeting the time target) were noted and compiled as below :

1) Week No. :	1	2	3	4	5	6	7	8	9	10	11	12	13
2) Total Service Calls :	508	623	475	578	570	498	610	702	488	543	556	408	547
3) Service not meeting time :	49	55	64	76	52	58	87	88	52	48	65	46	78
1) Week No. :	14	15	16	17	18	19	20	21	22	23	24	25	
2) Total Service Calls :	645	567	876	580	555	408	570	610	677	520	605	650	
3) Service not meeting time :	68	52	98	76	50	58	45	76	54	65	69	62	

The service delivery system of the company was established and run as a service process. Service process included inputs like manpower, skill and training, tool kits, call center to note and inform the service center, service center to organize visit, resolve the complaints, get okayed by customers, and close the call.

Questions :

a) What type of control chart is applicable in this case? **10**

b) Calculate the central line (CL), UCL, LCL and draw the control charts. **10**

c) Is the process capable? Discuss. **10**

d) Recommend future course of actions for improvement. **10**

P09/MU2407/EE/20121021

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SECTION I

1. What do you understand by the methodology of operation research? Explain the limitations of operation research. **15**

2. Explain the procedure of solving a linear programming problem by graphical method. **15**

3. Define the queuing system. What are the benefits of the queuing theory? **15**

4. Define economic order quantity. Solve the following problem. **15**

A biscuit manufacturing company sells biscuits packets. The holding cost for one packet of biscuit is Rs. 3 and the shortage cost is 7 per packet. If the daily orders for the biscuit form a distribution given by the function $F(x) = 0.05 - 0.0005x$, $0 < x \leq 100$. Determine the optimum level of production per day.

5. What is portfolio management? Discuss the various types of portfolios that are organization deals in. **15**

6. What is quadratic programming? Explain Wolfe's method of solving a quadratic problem. **15**

SECTION II

7. Define network. Solve the following problem. Table shows the jobs of network alongwith their time estimates. **20**

Table of jobs of a network

Job	1–2	1–6	2–3	2–4	3–5	4–5	6–7	5–8	7–8
a (days)	1	2	2	2	7	5	5	3	8
b (days)	7	5	14	5	10	5	8	3	17
c (days)	13	14	26	8	19	17	29	9	32

Draw the project network and find the probability that the project is completed in 40 days.

8. What do you understand by an optimal solution? Solve the following problem. **20**

A firm produces two products, P & Q. One unit of P requires 20 minutes and 25 minutes each, to grind and assemble respectively. The production run calls for at least 8 hours of grinding time and at least 9.5 hours of assembling time. If product P costs Rs. 70 and product Q costs Rs. 100 to manufacture, then find the optimum number of units of products P and Q, by using the graphical method.

P09/MU2408/EE/20121022

Time : Three Hours **Marks : 100**

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SECTION I

1. Describe the different types of project selection models. **15**

2. Briefly describe the major problems faced by a manager while handling a new project. Write the factors influencing the need for project management. **15**

3. What are the cost oriented location analysis techniques, that can be used for identifing the plant site? **15**

4. What is capacity requirement planning? Give CRP process with its advantages and disadvantages. **15**

5. Identify the areas of management function where work measurement can be useful to management. **15**

6. What is waiting time analysis? Give various types of waiting line situations in economic activities. Briefly describe the benefits of waiting line analysis. **15**

SECTION II

7. Solve the following problem. **20**

Table of jobs of a network

Job	1–2	1–6	2–3	2–4	3–5	4–5	6–7	5–8	7–8
a (days)	1	2	2	2	7	5	5	3	8
b (days)	7	5	14	5	10	5	8	3	17
c (days)	13	14	26	8	19	17	29	9	32

Draw the project network and find the probability that the project is completed in 40 days.

8. The following table shows the transportation table. Find the initial feasible solution by using NWCR method. **20**

Origin/Destination	D_1	D_2	D_3	Supply
O_1	2	5	6	5
O_2	3	2	1	8
O_3	6	5	7	7
O_4	1	5	4	14
Demand	5	12	17	34