Paper 9 – Operation Management & Strategic Management

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Full Marks: 100 **Time allowed: 3 hours**

The figures in the margin on the right side indicate full marks.
This paper contains five questions.
All questions are compulsory, subject to instruction provided against each questions.
All workings must form a part of your answer.
Assumptions, if any, must be clearly indicated.

Section A

I. 1. Answer all:

Given below are two lists – list 'A' containing 11 abbreviations and list 'B' containing various functional areas associated with production management. Expand and abbreviations and match them with the corresponding functional areas: [10×1=10]

List „A"	List „B"
LP	Capacity planning
PERT	Quality control
MTM	Project funding
VA	Project viability checking
SRAC	Inventory management
MRP	Product design
CBA	Cost control
CAD	Product mix determination
IFCI	Project planning
AOQ	Work measurement

2. Choose the word or phrase which would be appropriate to full up the blanks in each statement: [5×1=5]

(i) Statistical analysis is used to determine the optimum policy of_____maintenance.
(ii) General purpose machine are less prone to_____.
(iii) Ergonomics is another name for _____.
(iv) Factor Comparison is a method of_____.
(v)) Gantt chart is used for_____control.

3. Put an appropriate word in blank position: [4×1=4]

(i) The user's expectation method of_____ provides a subjective feel of the market**.**
(ii) _____ control is typically found wherever a particular bottleneck machine exist in the process of manufacturing**.**
(iii) _____systems replace human beings to read data from products and documents and interpret the data.
(iv) General purpose machines are less prone to _____**.**

II. Answer any three:

4.

(a) What are the characteristic of a good plant layout? [5]

(b) Explain the term Process Planning. [5]

(c) Requests for maintenance service made upon a centralized maintenance facility have been simulated for a typical 8 hour shift with arrival and service pattern as shown below:

Request arrival (clock) time	Repair service time
1:30	60 mins.
2:00	20 mins.
4:15	45 mins.
4:30	120 mins.
5:30	30 mins.
7:00	10 mins.

The labour cost of maintenance crew is ₹40 per hour whether working or idle. The waiting time of operators and machinery that has broken-down is costed at ₹70 per hour.

(a) Find the idle time cost of the machinery facility.

(b) Find the waiting time cost of operators and machinery (not including repair time).

(c) Find the total facility idle time and machinery waiting time cost.

Assuming that for an additional cost of ₹10 per hour the maintenance centre could add another crew and decrease the repair time by one third, would the additional cost be justified? **[7]**

5. (a) What are the various technical factors involved in the decision for replacement of machine and equipment? **[8]**

(b) The following table gives the running cost per year and release value of a certain equipment whose purchase price is `6,500. At what year is the replacement due optimally? **[9]**

Year	1	2	3	4	5	6	7	8
Running	1,400	1,500	1,700	2,000	2,400	2,800	3,300	3,900
Resale	4,000	3,000	2,200	1,700	1,300	1,000	1,000	1,000

6. (a) Manufacture of a component requires operations to be performed on three machines P, Q and R respectively, the standard times and operator efficiency being as follows:

Machine	Standard hours per component	Operator efficiency
P	0.16	80%
Q	0.23	100%
R	0.09	90%

If the factory operates 2 shift of 8 hours each and the machines are available for production throughout the shifts on six days in a week, how many of machines P, Q and R will be required to produce 4800 components per week? **[6]**

b.)A company purchases a key raw material of 3000 kg a year at the rate of ₹10 per kg. It wishes to make its purchases on an optimum basis. The inventory carrying charges of 50 paise per kg. per year is based on average inventory. The company estimates that it costs `106 to place an order. What is the economic order quantity and how often the company should order? How will the policy change, if the supplier offers 10 per cent discount for orders of 1000 kg or more? **[3]**

c.) Alternative methods X and Y using different tooling setups may be employed to manufacture a component on a particular machine tool whose operating cost (including wages of operator) is `20 per hour.

Component	Method X	Method Y
Cost of tooling	4000 pieces	3000 pieces
Production rate per hour	10 pieces	15 pieces

Justify with suitable calculation which of the two methods would you choose as being more economical for regular production.

Would your answer be the same if only 1000 pieces of the particular component are required? Give appropriate calculation to justify you answer. **[8]**

7. (a) A company has two plants A and B with fixed costs of ₹50,000 and ₹70,000 respectively.

Both the plants are designed to produce up to 10,000 units each. The variable costs of two plants at different of production are as follows:

Production (Units)	Plant A (₹)	Plant B (₹)
2,500	36,000	29,000
5,000	45,000	39,000
7,500	77,000	51,000
10,000	1,10,000	1,15,000

Find the most economic loading schedule **[5]**

(b) What does product design do? **[2]**

(c) A trader delays in a perishable commodity, the daily demand and supply of which are random variables

Records of the past 500 trading days show the following:

Supply		Demand	
Tons available	Number of days	Tons demanded	Number of days
10	40	10	50
20	50	20	110
30	190	30	200
40	150	40	100
50	70	50	40

The trader buys the commodity at ₹20 per kg and sells at ₹30 per kg. If any of the commodity remains at the end of the days it has no saleable value. The loss through unsatisfied demand is `80 per kg.

Given the following random numbers, simulate six day trading:

3 1 1 8 6 3 8 4 1 5 7 9 0 7 3 2 4 3 7 5 8 1 2 7

Use the random numbers alternatively, i.e., first paid (31) to simulate supply, second pair (18) to simulate demand. **[10]**

8. Write a short note: **[4+4+4+5=17]**

(a) Work Study;

(b) Time Study;

(c) Factors affecting business forecast;

(d) Method Study .

Section – B

Strategic Management

III. Answer all: **[6×1=6]**

9. Choosing of correct answers:

(i) Board of directors has certain basic tasks as follows:
(A) To define the corporate mission and stop irregular practice;
(B) To design the course of strategic options and appointment of top management;
(C) To set the ROI and other business performance targets;
(D) To monitor plan and keep abreast of external threats;
(E) To evaluate and monitor courses of actions.

(ii) Innovation strategy is:
(A) Defensive strategy
(B) Offensive strategy
(C) Responding to or anticipating customer and market demands
(D) Guerrilla strateg
(E) Harvesting strategy.

(iii) Successful „differential strategy" allows a company to
(A) Gain buyer loyalty to its brands;
(B) Charge too high a price premium;
(C) Have product quality that exceeds buyers needs;
(D) Depend only on intrinsic product attributes.

(iv) The strategy which concentrates around a production market is:
(A) Vertical Integration
(B) Niche
(C) Horizontal Expansion
(D) Diversification

(v) What are enduring statements of purpose that distinguish one business from other similar Firms?
(A) Policies;
(B) Mission statements;
(C) Objectives;
(D) Rules;
(E) Nature of ownership.

(vi) SAIL's famous advertising campaign of "there is a bit of steel in everyone's life" was meant to:

(A) gain buyers awareness about its versatile product range;
(B) create and image of superior performance;
(C) inform new buyers about its special products;
(D) enhance product quality perception;
(E) achieve its mission

IV. Answer any three: **[8×3=24]**

10. (a) Discuss the factors influencing Portfolio Strategy
(b) Discuss „PEST" Analysis in relation to the Business environment.
(c) Write a note on Product Life Cycle
(d) Discuss Mckinsey"s 7 -S framework.