

**OPERATIONS MANAGEMENT AND STRATEGIC MANAGEMENT****Time Allowed: 3 Hours****Full Marks: 100**

The figures in the margin on the right side indicate full marks.

SECTION – A (Compulsory)**1. Choose the correct option:****[15 x 2 = 30]**

- (i) Which of the following best describes operations management?
- a) Planning, organizing and supervising the production of goods and services
 - b) Marketing the products to customers
 - c) Financial management of the organization
 - d) Human resource management
- (ii) Just – in – time (JIT) is a philosophy that emphasizes _____.
- a) Holding large amounts of inventory
 - b) Reducing waste and improving quality
 - c) Increasing the lead time
 - d) Enhancing marketing efforts
- (iii) Which of the following is a technique used in operations management to assess performance?
- a) SWOT analysis
 - b) PERT/CPM
 - c) Market segmentation
 - d) Financial ratio analysis
- (iv) Which layout is most suitable for a factory producing a single product in large volumes?
- a) Process layout
 - b) Product layout
 - c) Fixed-position layout
 - d) Cellular layout
- (v) Total Quality Management (TQM) focuses on:
- a) Continuous improvement
 - b) Reducing production costs
 - c) Increasing the number of products
 - d) Expanding market share
- (vi) Which of the following is a principle of lean manufacturing?
- a) Maximizing inventory levels
 - b) Reducing wastes
 - c) Increasing lead times
 - d) Focusing on mass production

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- (vii) In operations management, the term 'lead time' refers to
- Total time taken to complete a production process
 - The time between the initiation and completion of a production process
 - Time taken to market a product
 - Time taken to recruit new employees
- (viii) A steel plant has a design capacity of 70000 tons of steel per day. Effective capacity of 56000 tons of steel per day and an actual output of 47000 tons of steel per day. What is the efficiency of the plant?
- 84%
 - 73%
 - 67%
 - 80%
- (ix) Weekly demand = 100 units, Review cycle = 5 weeks
Safety stock = 25 units. Calculate the inventory turn for the item?
- 275
 - 24.8
 - 23.8
 - 30.24
- (x) Porter's five forces model is used to analyze:
- Internal organizational strengths and weakness
 - Competitive forces within an industry
 - Market segmentation
 - Product life cycles
- (xi) In strategic management, what is the purpose of a mission statement?
- To outline the specific actions, the organization will take
 - To describe the company's reason for existence and core purpose
 - To provide detailed financial goals
 - To list the products and services offered by the company
- (xii) Which type of strategy focuses on gaining a competitive advantage by being the lowest cost producer?
- Differentiation strategy
 - Cost leadership strategy
 - Focus strategy
 - Diversification strategy
- (xiii) Which of the following is a strategic tool used to prioritize a company's products or services to allocate resources effectively?
- SWOT analysis
 - BCG matrix
 - PEST analysis
 - Porter's five forces

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- (xiv) Which type of strategy focuses on serving a specific market niche or segment?
- Cost leadership strategy
 - Differentiation strategy
 - Focus strategy
 - Diversification strategy
- (xv) Which of the following is not a component of strategic management?
- strategy formulation
 - strategy implementation
 - strategy evaluation
 - strategy decentralization

SECTION – B

(Answer any five questions out of seven questions given. Each question carries 14 marks.)

[5 x 14 = 70]

2. (a) Describe the objectives and functions served by Material Requirement Planning (MRP). [7]
(b) Explain the process of product design and the factors affecting it. [7]
3. (a) Demonstrate the importance of routine maintenance in industrial settings. Discuss the key components of an effective routine maintenance program and how they contribute to operational reliability and cost-efficiency. [7]

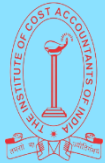
- (b) An investigation into the use of cars in 5 towns has resulted in the following data: Population in town

Population in town (in lakhs)	(X)	5	7	9	12	15
No. of cars	(Y)	9500	7,600	8,700	10,000	12,300

Illustrate a linear regression of Y on X and estimate the number of scooters to be found in a town with a population of 29 lakhs. [7]

4. (a) The following table contains information regarding jobs that are to be scheduled through one machine.

Job	Processing time (days)	Due date (days hence)
A	11	16
B	10	15
C	2	12
D	4	20
E	12	30
F	6	10
G	3	5



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Align these jobs by (i) FCFS, (ii) SPT, (iii) LS, (iv) CR (v) LCFS and (vi) LPT and also calculate the average time delay.

- (b) An automobile production line turns out about 100 cars a day, but deviations occur owing to many causes. The production is more accurately described by the probability distribution given below:

Production/Day	Prob.	Production/Day	Prob.
95	0.08	101	0.04
96	0.06	102	0.09
97	0.07	103	0.17
98	0.05	104	0.05
99	0.15	105	0.04
100	0.20		
		Total	1.00

Finished cars are transported across the bay, at the end of each day, by ferry. If the ferry has space for only 100 cars, calculate the average number of cars waiting to be shipped, and the average number of empty space on the boat. Use following Random Numbers to simulate the data provided above – 14, 56, 45, 98, 32, 47, 63, 12, 20, 18, 77, 65, 30, 08, 90. [7]

5. (a) A firm is using a machine whose purchase price is ₹37,000. The installation charges is ₹ 5,200 and the machine has a scrap value of only ₹5,500 because the firm has a monopoly of this type of work. The maintenance cost in various years is given in the following table:

Year	1	2	3	4	5	6	7	8	9
Maintenance Cost ₹	970	1,060	1,400	2,100	2,900	3,700	4,100	4,700	7,500

Calculate after how many years the machine should be replaced on economic considerations, assuming that the machine replacement can be done only at the year end.

- (b) Prepare a network diagram from the data given below and find: [7]

- (i) Total duration of the project
- (ii) Critical Path
- (iii) EST, EFT, LST, LFT
- (iv) Total float of each activity

Activity	A	B	C	D	E	F	G	H	I	J
Duration	15	15	3	5	8	12	1	14	3	14
Predecessor or Activity	-	-	B	A,C	A	B	D	D	F,G	E,H,I



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6. (a) Explain the objectives of strategic management. [7]
- (b) Describe the emerging trends in digital and social marketing strategies with examples. [7]
7. (a) The PESTEL framework categorises environmental influences into six main types: political, economic, social, technological, environmental and legal. Politics highlights the role of governments. Discuss. [7]
- (b) Discuss the Porter's Five Forces Framework. [7]
8. (a) Discuss the formulation of strategy with respect to the functional areas namely production, supply chain and marketing. [7]
- (b) Discuss the types of general control systems. [7]