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 × 2 = 30]**

     i.   Operations management is applicable:
        a.   Mostly to service sector.
        b.   Mostly to manufacturing sector.
        c.   To manufacture and service sector.
        d.   To services exclusively.

     ii.   _____ decision is a systematic process of determining a geographic site for a firm's operations:
        a.   Plant location
        b.   Plant layout
        c.   Product layout
        d.   None of these

     iii.   Which one of the following does not fall under qualitative forecasting method?
        a.   Market research.
        b.   Life cycle analogy.
        c.   Moving average method.
        d.   Delphi method

     iv.   The starting point of Production cycle is:
        a.   Product design.
        b.   Production Planning.
        c.   Routing.
        d.   Market research

     v.   Linear Programming is a technique used for determining:
        a.   Production Programme.
        b.   Plant Layout.
        c.   Product Mix.
        d.   Manufacturing sequence.

     vi.   Work study comprises following main techniques:
        a.   Method study & work measurement.
        b.   Method study & time study.
        c.   Time study & work measurement.
        d.   Method study & job evaluation.

vii. A tool to measure effective use of resources and usually expressed as the ratio of output to input ratio is known as:
   a. Production ratio
   b. Productivity
   c. Reliability
   d. Operations ratio

viii. The method used in scheduling a project is: -
   a. A schedule of breakdown of orders;
   b. Outline Master Programme;
   c. PERT & CPM
   d. Schedule for large and integrated work

ix. Preventive maintenance is useful in reducing:
   a. Inspection Cost.
   b. Shutdown Cost.
   c. Cost of pre- mature replacement.
   d. Set-up cost of machine.

x. Blue Ocean Strategy suggests companies should focus on creating what instead of competing in existing market spaces?
   a. Brand loyalty;
   b. Customer satisfaction;
   c. Market differentiation.
   d. New market spaces.

xi. How does Porter's Value Chain framework help in strategic management?
   a. By analyzing macroeconomic factors impacting the industry;
   b. By identifying areas where the company can gain a competitive advantage through cost leadership or differentiation.
   c. By focusing solely on financial performance metrics;
   d. By monitoring customer satisfaction levels.

xii. Absolute cost advantages arise from:
   a. superior production operations and processes.
   b. control of particular inputs required for production.
   c. access to cheaper funds.
   d. all of the above.

	INTERMEDIATE EXAMINATION	SET 1
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xiii. Agency theory primarily deals with the relationship between:
  a. Businesses and customers.
  b. Shareholders and stakeholders.
  c. Principals and agents.
  d. Employees and employers.

xiv. This test is a catch-all category, indicating that the structure must fit legal, stakeholder, trade union or similar constraint:
  a. The Feasibility Test.
  b. The People Test.
  c. The Parenting Advantage Test.
  d. The Specialised Cultures Test.

xv. Forecasting the weather is an example of-
  a. Narrow AI
  b. General AI/human-level;
  c. Super AI;
  d. Deep- learning.

SECTION – B

(Answer any 5 questions out of 7 questions given. Each question carries 14 marks.)

[5 x 14 = 70]

2. (a) Define the scope of operations management.

  (b) Identify some recommended tools, which may increase the productivity of an enterprise.

  [7 + 7 = 14]

3. (a) Discuss briefly the concept of "Preventive maintenance" and its advantages.

  (b) M/s. Tubes Ltd. are the manufacturers of picture tubes of T.V. The following are the details of their operation during 2024:

Average monthly market demand	2,000 tubes
Ordering cost	₹100 per order
Inventory carrying cost	20% per annum
Cost of tubes	₹500 per tube
Normal usage	100 tubes per week
Minimum usage	50 tubes per week
Maximum usage	200 tubes per week
Lead time to supply	6 – 8 weeks

Calculate the following:

(1)   Economic order quantity. If the supplier is willing to supply quarterly 1,500 units at a discount of 5%, is it worth accepting?

(2)   Maximum level of stock.

(3)   Minimum level of stock.

(4)   Re-order level of stock.   **[7 + 7 = 14]**

4.   (a)   Calculate the initial feasible solution by north west corner method.

	W₁	W₂	W₃	W₄	Supplies
F₁	10	12	14	18	210
F₂	25	19	21	30	330
F₃	18	16	11	23	430
F₄	28	34	17	15	290
Demand	270	390	320	280	

W_j = ware house, F_i = factory cell entries are unit cost in ₹

(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	0.03	101	0.15
96	0.05	102	0.10
97	0.07	103	0.07
98	0.10	104	0.05
99	0.15	105	0.03
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 101 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 - 20, 63, 46, 16, 45, 41, 44, 66, 87, 26, 78, 40, 29, 92, 21.   **[7 + 7=14]**

5.   (a)   A firm is using a machine whose purchase price is ₹15,000. The installation charges amount to ₹3,500 and the machine has a scrap value of only ₹1,500 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 (₹)	260	760	1100	1600	2200	3000	4100	4900	6100

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

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(b) Project with the following data is to be implemented. Prepare the network and find the critical path.

Activity	Predecessor	Duration (days)	Cost (`Day)
A	-	2	50
B	-	4	50
C	A	1	40
D	B	2	100
E	A, B	3	100
F	E	2	60

(i) What is the minimum duration of the project?

(ii) Draw a Gantt chart for early start schedule.

(iii) Determine the peak requirement of money and the day on which it occurs in the above schedule.

[7+7=14]

6. (a) Demonstrate the details regarding the SMART goal frame work to create organisational objectives.

(b) Explain how digital transformation of a business helps in achieving competitive advantage and also describe some common elements of digital strategy? **[7+7=14]**

7. (a) Discuss how portfolio analysis aids to develop corporate strategy in multiple business corporation. Also analyse the advantages and limitation of portfolio analysis.

(b) Analyse the Characteristics of Business Environment. **[7+7=14]**

8. (a) Explain project-based structure? Discuss its advantages and disadvantages.

(b) Analyse the concept of strategic business unit? **[7+7=14]**