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

1. **Multiple Choice Questions:**   [15 x 2 = 30]

    (i)   The lead-time is the time:
        a. To place holders for materials.
        b. Time of receiving materials.
        c. Time between receipt of material and using materials.
        d. Time between placing the order and receiving the materials.

    (ii) Most suitable layout for Continuous production is:
        a. Line layout.
        b. Process Layout.
        c. Group technology.
        d. Matrix layout.

    (iii) A department store has one storekeeper. The average number of customers handled by the storekeeper is 30 per hour. If the customer arrives at the store at mean rate of 25 per hour, what will be the average number of customers in the system:
        a. 2 customers.
        b. 3 customers.
        c. 5 customers.
        d. None of the above.

    (iv) Cost reduction can be achieved through:
        a. Work sampling.
        b. Value analysis.
        c. Quality assurance.
        d. Supply chain management.

    (v)   Which one of the following standards is associated with the "Quality Assurance" in Final Inspection Test"?
        a. ISO 9001.
        b. ISO 9002.
        c. ISO 9003.
        d. ISO 9004.

    (vi) K Ltd. is the manufacturer of bearings? The inventory holding cost per bearing per month is 20 paise. If its economic batch quantity (EBQ) is 4000 units (bearings) then the minimum inventory holding cost at optimum run size will be:
        a. ₹ 4320
        b. ₹ 4510
        c. ₹ 4800
        d. None of the above

(vii)   Mckinsey's 7-s framework consists of:
- a. Structure, Strategy, Software, Skills, Styles, Staff and Supervision.
- b. Structure, Strategy, Systems, Skills, Styles, Syndication and Shared values.
- c. Structure, Strategy, Systems, Skills, Steering power, Styles and Shared values.
- d. Structure, Strategy, Staff, Skills, Systems, Shared values, Style.

(viii)   Production control concerned with:
- a. Passive assessment of plant performance
- b. Strict control on labours
- c. Good materials management
- d. Good product design.

(ix)   Business Process Re-engineering is:
- a. eliminating loss-making process.
- b. redesigning operational processes.
- c. redesigning the product and services.
- d. recruiting the process engineers.

(x)   Digital transformation drives change in:
- a. customer experience.
- b. operational processes.
- c. business models.
- d. all of the above.

(xi)   Forecasting the weather is an example of:
- a. Narrow AI.
- b. General AI/human-level.
- c. Super AI.
- d. Deep- learning.

(xii)   (Total station time/cycle time × Number of work stations) × 100 is known as:
- a. Line efficiency.
- b. Line smoothness.
- c. Balance delay of line.
- d. Station efficiency.

(xiii)   'Z' chart is a chart used in:
- a. Programme control.
- b. Job control.
- c. Cost control.
- d. Quality control.

(xiv)   Organisation culture is:
- a. appreciation for the arts in the organisation.
- b. ability of the organization to act in a responsible manner to its employees.
- c. combination of (A) and (B) above.
- d. deeper level of basic assumptions and beliefs that are shared by the members of the firm.

(xv)   Blue Ocean Strategy is concerned with:

      a.   moving into new market with new products.

      b.   creating a new market places where there is no competition.

      c.   developments of products and markets in order to ensure survival.

      d.   making the product unique in terms of attributes.

SECTION – B

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

2.   **(a)**   Explain some recent trends in production and operation management.

     (b)   Summarize the factors which are affecting to design a Product in Modern Production system.

                                                                [7 + 7 = 14]

3.   **(a)**   Develop an analytical approach to evaluate the work done by preventive maintenance.

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

Population in town (in lakhs)	(X)	4	6	7	10	13
No. of scooters	(Y)	4,400	6,600	5,700	8,000	10,300

       Fit a linear regression of Y on X and estimate the number of scooters to be found in a town with a population of 16 lakhs**.**   **[7 + 7 = 14]**

4.   **(a)**   The following jobs have to be shipped a week from now (week has 5 working days).

Job	A	B	C	D	E	F
Number of days of work remaining	2	4	7	6	5	3

       Sequence the jobs according to priority established by

       (a)   least slack rule

       (b)   critical ratio rule.

     (b)   As a tool service centre the arrival rate is two per hour and the service potential is three per hour. Simple queue conditions exist.

       The hourly wage paid to the attendant at the service centre is ₹1.50 per hour and the   hourly cost of a machinist away from his work is ₹ 4.

       Calculate:

       1)   The average number of machinists being served or waiting to be served at any   given time.

       2)   The average time a machinist spends waiting for service.

       3)   The total cost of operating the system for an eight – hour day.

       4)   The cost of the system if there were two attendants working together as a team, each paid ₹1.50 per hour and each able to service on average 2 per hour.   **[7+7=14]**

5. **(a)** A large computer installation contains 2,000 components of identical nature which are subject to failure as per probability distribution that follows:

Month End:	1	2	3	4	5
% Failure to date:	10	25	50	80	100

Components which fail have to be replaced for efficient functioning of the system. If they are replaced as and when failures occur, the cost of replacement per unit is ₹ 3. Alternatively, if all components are replaced in one lot at periodical intervals and individually replace only such failures as occur between group replacement, the cost of component replaced is ₹ 1.
(1) Assess which policy of replacement would be economical.
(2) If group replacement is economical at current costs, then assess at what cost of individual replacement would group replacement be uneconomical.
(3) How high can the cost per unit in-group replacement be to make a preference for individual replacement policy?

(b) Draw the network for the following activities and find critical path and total duration of project.

Activity	Duration (months)	Activity	Duration (months)
1-2	2.5	4-5	2.0
2-3	2.5	5-6	3.0
2-4	1.5	6-7	1.5
3-4	1.0	5-7	1.5
3-5	1.0		

[7+7=14]

6. **(a)** Explain the meaning of Strategy. How do you classify Strategy in a typical business firm?

(b) Describe the merits and demerits of Cloud Computing? **[3+4+7=14]**

7. **(a)** Summarize the factors that determine the rivalry among established firms according to Porter's Five Forces Framework.

(b) Discuss with reason the political factors which influence the decisions and behaviour of firms?

[7+7=14]

8. **(a)** "Strategic Control helps managers obtain superior efficiency, quality, innovation and responsiveness to customers"- discuss.

(b) Analyze the advantages and disadvantages of Project – based structures. **[7+7=14]**