Paper 9 – Operations 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 question paper has two sections.

Both the sections are to be answered subject to instructions given against each.

Section – I : (Operations Management)

1. (a) Choose the most correct alternatives: [1×10=10]

    (i) The starting point of Production cycle is:
        (A) Product design,
        (B) Production planning,
        (C) Routing,
        (D) Market research.

    (ii) The act of assessing the future ad make provisions for it is known as:
        (A) Planning,
        (B) Assessment,
        (C) Forecasting,
        (D) Scheduling.

    (iii) In Production by service, the product undergoes the changes in:
        (a) Shape and size of the surface,
        (b) Shape of the surface only,
        (c) Size of the surface only,
        (d) Chemical and Mechanical properties.

    (iv) Which of the following aims at finding the best and most efficient way of using the available resources — men, materials, money and machinery?
        (A) Method Study,
        (B) Work Study,
        (C) Time Study,
        (D) Motion Study.

    (v) Most suitable layout for continuous production is:
        (a) Process layout,
        (b) Line layout,
        (c) Group Technology,
        (d) Matrix layout.

(vi) Reliability and per unit cost of which of the following spares are less?
(a) Regular spares
(b) Insurance spares
(c) Capital spares
(d) Rotable spares

(vii) Issuing necessary orders, and taking necessary steps to ensure that the time targets set in the schedules are effectively achieved is known as:
(a) Routing,
(b) Dispatching,
(c) Scheduling,
(d) Inspection.

(viii) Preventive maintenance is useful in reducing:
(a) Inspection Cost,
(b) Shutdown Cost,
(c) Cost of pre-mature replacement,
(d) Set-up cost of machine

(ix) MRP stands for:
(a) Material Requirement Planning,
(b) Material Recording Planning,
(c) Material Requisition Procedure
(d) Material Recording Procedure.

(x) Which one of the following standards is associated with the "Quality Assurance in Design, Production, Installation and Servicing"?
(a) ISO 9001
(b) ISO 9002
(c) ISO 9003
(d) ISO 9004

(b) Match the terms in Column I with the relevant terms in Column II   [1×6=6]

Column I	Column II
(A) Inventory Control	(i) Turbo-Alternator
(B) TQM focus	(ii) Network Analysis
(C) Aviation Fuel	(iii) Examination of Human work
(D) Hydro-electricity	(iv) Customer Satisfaction
(E) Work Study	(v) Refinery
(F) Systematic Quantitative structural approach to the problem of managing a project through to successful completion	(vi) Stock Level

(c) State whether the following statements are True or False? [1×6=6]

(i) A Productivity Index is a device of expressing the ratio between outputs and the inputs of the resources numerically. ( )

(ii) The Linear Programming problem has two basic parts: the objective function and the constraint set. ( )

(iii) Increase in productivity leads to retrenchment of work force. ( )

(iv) The term "aesthetics" which appeals to the human sense does not add value to the product. ( )

(v) PERT is designed for repetitive projects, whereas CPM is suitable for non-repetitive projects. ( )

(vi) Production planning and control is essentially concerned with the control of finished goods. ( )

Answer any *three* questions form the following:

2. (a) What are the importance of a layout? [6]

(b) (i) A workshop operates on 2 shifts of 8 hours per day. It has 10 machines. It works for 5 days in a week. Machine utilization is 90% and the efficiency of the machines is 85%. Calculate the designed/rated capacity of the workshop in standard hours.

(ii) The present layout is shown in the figure. The manager of the department is intending to interchange the departments C and F in the present layout. The handling frequencies between the departments is given. All the departments are of the same size and configuration. The material handling cost per unit length travel between departments is same. What will be the effect of interchange of departments C and F in the layout?

A	C	E
B	D	F

From / To	A	B	C	D	E	F
A	–	0	90	160	50	0
B	–	–	70	0	100	130
C	–	–		20	0	0
D	–	–	–	_	180	10
E		–	–	–	–	40
F	–	–	–	–	–	–

[10]

3. (a) Linear Programming tools can be used in Management Application - Explain. [6]

(b) After observing heavy congestion of customers over a period of time in a petrol station, Mr. Petro has decided to set up a petrol pump facility on his own in a nearby site. He has compiled statistics relating to the potential customer arrival pattern and service pattern as given below. He has also decided to evaluate the operations by the using the simulation technique.

Arrivals		Service	
Inter-arrival time (minutes)	Probability	Service time (minutes)	Probability
2	0-22	4	0-28
4	0-30	4	0-40
6	0-24	8	0-22
8	0-24	10	0-10

[10]

Assume:

(i)   The clock starts at 8 : 0 hours.

(ii) Only one pump is set up.

(iii) The following 12 Random Numbers are to be used to depict the customer arrival pattern:

78, 26, 94, 08, 46, 63, 18, 35, 59, 12, 97 and 82

(iv) The following 12 Random Numbers are to be used to depict the service pattern:

44, 21, 73, 96, 63, 35, 57, 31, 84, 24, 05 and 37

You are required to find out the

(i)   probability of the pump being idle, and

(ii) average time spent by a customer waiting in queue.

4. (a) A captain of a cricket team has to allot five middle batting positions to five batsmen. The average runs scored by each batsman at these positions are as follows:

		Batting Position				
		III	IV	V	VI	VII
	A	40	40	35	25	50
	B	42	30	16	25	27
Batsmen	C	50	48	40	60	50
	D	20	19	20	18	25
	E	58	60	59	55	53

Make the assignment so that the expected total average runs scored by these batsmen are maximum. [8]

(b) An airline is planning to open a satellite ticket desk in a new shopping plaza, staffed by one ticket agent. It is estimated that requests for tickets and information will average 15 per hour, and requests will have a Poisson distribution. Service time is assumed to be exponentially distributed. Previous experience with similar satellite operations suggests that mean service time should average about three minutes per request.

Determine each of the following:

a. System utilization.

b. Percentage of time the server (agent) will be idle.

c. The expected number of customers waiting to be served.

d. The average time customers will spend in the system.

The probability of zero customers in the system and the probability of four customers in the system. [8]

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

Activity	Duration (months)
1-2	3
2-3	4
2-4	2
3-4	3
4-5	4
5-6	3
5-7	5
6-8	2
7-8	4
8-9	5

[3+2+3=8]

(b) PQR company has kept records of breakdowns of its machines for 300 days work year as shown below:

No. of breakdown	Frequency in days
0	40
1	150
2	70
3	30
4	10
	300

The firm estimates that each breakdown costs ₹ 650 and is considering adopting a preventive maintenance program which would cost ₹ 200 per day and limit the number of breakdown to an average of one per day. What is the expected annual savings from preventive maintenance program? [8]

Section – II: (Strategic Management)

6. Choose the correct answer from the given alternatives: [1×6=6]

(i) For an entrepreneur

   (i) mission is before the vision

   (ii) vision is before the mission

   (iii) both are developed simultaneously

   (iv) profitability is most crucial

(ii) Marketing Research Studies are undertaken:

   (A) to understand product-price relationships.

   (B) to measure brand loyalty of a class of consumers.

   (C) to predict market potential of a product on a future date.

   (D) All of the above.

(iii) For an actor in Bollywood, his outstanding performance would be a /an

    (A) Asset

    (B) Strategic Asset

    (C) Core competency

    (D) Capability.

(iv) Intensity of competition is _____ in low return industries

    (A) low.

    (B) non-existent.

    (C) high.

    (D) not important dependent on industry nature.

(v) A company's actual strategy is

    (A) mostly hidden to outside view and is known only to top-level managers.

    (B) partly proactive and partly reactive to changing circumstances.

    (C) typically planned well in advance and usually deviates little from the planned set of actions and business approaches because of the risks of making on-the-spot changes.

    (D) mostly a function of the strategies being used by rival companies (particularly those companies that are industry leaders).

(vi) 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

Answer any *two* question form the following:

7. (a) Enlist the advantage of strategic Management

   (b) In SWOT analysis, list the threats that may occur in business. What step is necessary if a threat does arise?　　　　　　　　　　　　　　　　　　　　　　　　　　[6+6]

8. (a) Discuss the approaches in Strategic Planning.

   (b) Discuss about "Types of Strategic Control System".　　　　　　　　　　　　[6+6]

9. Write short notes on any three of the following four questions: [4×3=12]

   (a) Related Diversification;

   (b) Mc Kinsey's 7 –s Frame work;

   (c) Importance of Strategic Management

   (d) Theory X and Theory Y.