

W'07 : 3 FN : IC 402 (1411)

ENGINEERING MANAGEMENT

Time : Three hours

Maximum Marks : 100

*Answer FIVE questions, taking ANY TWO from Group A ,
ANY TWO from Group B and ALL from Group C .*

*All parts of a question (a, b, etc.) should
be answered at one place.*

*Answer should be brief and to-the-point and be supplemented
with neat sketches. Unnecessary long answers may
result in loss of marks.*

*Any missing or wrong data may be assumed suitably giving
proper justification.*

Figures on the right-hand side margin indicate full marks .

Group A

1. (a) Describe the approach to the 'scientific management principle' of Taylor and discuss its limitations. 6 + 2
- (b) Briefly discuss what you understand by 'scalar and functional processes.' How are the chains of commands, obligations and reporting flow in these processes? 4 + 2
- (c) Why does modern theory consider the organisation as a system consisting of interconnected parts? Briefly discuss the components of the parts and their implications in modern organisation. 3 + 3

2. (a) What is the purpose of planning? How is the planning process to be organised for achieving the purpose? List three key activities in the planning process. 2 + 4 + 1
- (b) Define SWOT analysis and discuss its importance in the setting of objectives and planning of strategies in an organisation. 3 + 7
- (c) Critically discuss the statement, 'Delegation is neither decentralization nor are their purposes the same'. 3
3. (a) Describe the purpose of staffing. Discuss the factors to be incorporated in the staffing system. 2 + 4
- (b) Elucidate the merits and limitations of trait-based and objective-based appraisal systems. 6
- (c) Would linear programming be of help in a site selection problem? Explain. 8
4. (a) Items purchased from a vendor cost Rs. 20 each, and the forecast for next year's demand is 1000 units. If it costs Rs. 5 every time an order is placed for more units and the storage cost is Rs. 4 per unit per year, what quantity should be ordered each time?
- (i) What is the total ordering cost for a year?
- (ii) What is the total storage cost for a year? 2 + 2 + 2
- (b) What kind of policy or procedure would you recommend to improve the inventory operation in a departmental store? 5

- (c) Discuss the importance of the master production schedule (MPS) in an MRP system. 5
- (d) What is the role of safety stock in an MRP system? 4

Group B

5. (a) Explain briefly the concept of financial management. State the important characteristics of financial management. 6 + 4
- (b) Distinguish between the gross and net working capital concepts. Explain the classification of working capital. 5
- (c) Discuss briefly the factors to be considered in deciding the dividend policy. 5
6. (a) What is a 'production function' in the context of managerial economics? How many types of production function are there? Indicate how, with the help of production function, the optimum combination of factor inputs can be obtained for a given level of total investment. 2 + 2 + 4
- (b) What is the basic difference between short-run and long-run analysis in the context of theory of cost? 2
- (c) The total cost $C(x)$ of a firm is

$$C(x) = 0.005x^3 - 0.02x^2 - 30x + 5000$$

where x is the output. Determine:

- (i) average cost (AC)
- (ii) slope of AC
- (iii) marginal cost (MC)
- (iv) slope of MC
- (v) value of x for which $MVC = AVC$

where VC represents the variable cost. Also, exhibit the necessary diagrams. 10

7. (a) Discuss the aspects and importance of managing the 4Ps of marketing with reference to environmental issues. 10
- (b) Identify the trends and challenges relating to quality in the present context of global competitiveness. 6
- (c) (i) Distinguish between p and c charts. 2
- (ii) Distinguish between producer's risk and consumer's risk in a sampling plan. 2
8. (a) 'Enterprise resource planning (ERP) is a business solution.' Justify the statement. 4
- (b) A project has been defined to contain the following list of activities, along with their required times for completion:

| Activity | Time (days) | Immediate Predecessors |
|----------|-------------|------------------------|
| A | 1 | — |
| B | 4 | A |
| C | 3 | A |
| D | 7 | A |
| E | 6 | B |
| F | 2 | C, D |
| G | 7 | E, F |
| H | 9 | D |
| I | 4 | G, H |

- (i) Draw the critical path diagram;
 - (ii) Show the early start and early finish times;
 - (iii) Show the critical path; and
 - (iv) What would happen if activity F was revised to take four days instead of two? $2 + 2 + 2 + 4$
- (c) A firm is considering two alternative investments. The first investment costs Rs. 30000 and the second investment Rs. 50000. The expected yearly cash income streams are shown in the following table:

| Year | Cash Inflow, Rs. | |
|------|------------------|---------------|
| | Alternative A | Alternative B |
| 1 | 10 000 | 15 000 |
| 2 | 10 000 | 15 000 |
| 3 | 10 000 | 15 000 |
| 4 | 10 000 | 15 000 |
| 5 | 10 000 | 15 000 |

To choose between alternatives *A* and *B*, find which alternative has the highest net present value. Assume an 8 per cent cost of capital.

6

Group C

9. Write the *correct* answer for the following: 2 × 10

(i) In a PERT network, expected time estimate (t_e) is calculated as

$$t_e = \frac{a + 4m + b}{6}$$

based on the assumption of

- (a) normal distribution of time estimates
- (b) exponential distribution of time estimates
- (c) beta distribution of time estimates
- (d) gama distribution of time estimates.

(ii) Regardless of approach used, the key element necessary in determining the level of safety stock which should be carried is the

- (a) demand for items being inventoried
- (b) length of lead time
- (c) lead time demand for items
- (d) cost of stockout per unit of time.

(iii) Taylor's philosophy of scientific management pays attention to

- (a) convert inputs to desired outputs

(b) plan appropriate manpower

(c) time management

(d) develop a scientific method for each element of work so as to replace rule of thumb.

(iv) Functional organisation was developed by

- (a) Frank Gilbreth
- (b) F. W. Taylor
- (c) ASME
- (d) Gantt.

(v) The time elapsed between the placing of an order and its arrival is

- (a) cycle time
- (b) lead time
- (c) work station process time
- (d) None of the above.

(vi) Function of finance includes

- (a) investment decision
- (b) wage and incentive distribution
- (c) sales distribution
- (d) costing the products.

(vii) Economic order quantity is influenced too much by

- (a) lead time

(b) inventory carrying cost

(c) variable demand rate

(d) production rate.

(viii) Manufacturing a number of identical parts or products in lots either to meet a specific order or to meet continuous demand is known as

(a) job production

(b) batch production

(c) continuous production

(d) flow production.

(ix) The elasticity of total cost of the function, $C = 2x^2 + 4x + 3$, is

(a) $(4x^2 + 4x) / (2x^2 + 4x + 3)$

(b) $(2x^2 + 4x + 3) / (4x^2 + 4x)$

(c) $(4x^2 + 4x)(2x^2 + 4x + 3)$

(d) None of the above.

(x) At break-even point,

(a) total cost > total revenue

(b) total cost < total revenue

(c) total cost = total revenue

(d) None of the above.