

2008

M B A

2nd Semester Examination

PRODUCTION AND OPERATIONS MANAGEMENT

PAPER—205

Full Marks : 100

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Write the answers to Questions of each Half in separate books.

(First Half)

(Marks : 50)

1. Answer any *four* questions : 5×4
- (a) Discuss the importance of product as an interface between marketing and production function.
 - (b) Production / Operations management function is an amalgams of analysis, supply and transformation facilities. — Comment.

(Turn Over)

- (c) Write a note on process or functional layout.
- (d) Suppose there are six jobs which all have to pass through two machines in the same order, that is, first through Machine I and then through Machine II. Processing times are given as follows :

Job	A	B	C	D	E	F
Machine I	1	6	5	5	3	6
Machine II	2	4	6	4	2	7

Sequence the job using Johnson's Algorithm.

- (e) Discuss in short the Process of Bill of Material (BOM).
- (f) What do you mean by work element, service time, cycle time, balance delay and balancing loss in relation to line balancing problem?

2. Answer any two questions :

10×2

- (a) Discuss the major inputs in the scheduling function in a production plant.
- (b) Draw up the relations between route, schedule, job schedule and production schedule in relation to a plant.
- (c) Consider the following information and state which location would you choose :

An enterprise is contemplating the establishment of a production facility for producing Wood units of output. The nearest market for its output is Kolkata.

The relative figures associated with two alternative factory locations are as follows :

Location A

Cost item	Fixed component (Rs.)	Variable component (Rs.)
Transportation cost	50,000	25/unit
Cost of power	—	30/unit
Tax payable on estimated production	10,000	49/unit
Labour charges	3,00,000	85/unit

Location B

Cost item	Fixed component (Rs.)	Variable component (Rs.)
Transportation cost	3,00,000	14/unit
Cost of power	—	24/unit
Tax payable on estimated production	2,25,000	20/unit
Labour charges	6,00,000	40/unit

In addition to these, quantitative estimate of weightage given to 'Proximity to Kolkata' stands at 6 for Location A and 9 for Location B. Again, quantitative estimate of weightage given to 'Industrial relation climate' stands at 10 for location A and 7 for Location B. The weightage given to transport, power, tax, proximity to Kolkata and industrial relation climate are 1, 1, 1, 1, 3, & 2 respectively.

(Use dimensional analysis)

[Internal Assessment : 10 Marks]

(Second Half)**(Marks : 50)**

- 3. Answer any four questions : 5×4**
- (a) What is ISO 9000 ? Briefly state the benefits of ISO 9000 QMS implementation.
- (b) "The assessment of risk is carried out through Job Safety Analysis (JSA)". In this context, indicate the basic steps involved in JSA approach. Also indicate the benefits of JSA approach.
- (c) Discuss the concept of Economic Order Quantity (EOQ).
- (d) A work measurement study was carried out in a firm for 10 hours and the following information was obtained :
- | | |
|--------------------|------|
| Units produced | 350 |
| Idle time | 15% |
| Performance rating | 120% |
| Allowance | 10% |
- Calculate the standard time for the task.
- (e) Explain briefly the concept of productivity on total factor basis and partial factor basis.

- (f) A manufacturer required 10,00,000 components for use during the next year which is assumed to consist of 250 working days. The cost of storing one component for 1 year is Rs. 4 and the cost of placing an order is Rs. 32.

There must be always a safety stock equal to 2 working days usage and the lead time from the supplier which has been granted will be 5 working days throughout the year.

Assuming that usage takes place steadily throughout the working days, delivery takes place at the end of the day and order is packed at the end of working day, you are required to calculate :

- (a) EOQ.
- (b) Re-order point.

4. Answer any two questions : 10×2

- (a) Explain briefly the inventory system with respect to :
 - (i) Lot size Re-order Point Policy.
 - (ii) Fixed Order Internal Scheduling Policy.
- (b) Define work sampling. Explain the steps involved in work sampling.

- (c) The following data showed the values of sample means (\bar{x}) and range (R) for 10 samples of size 6 each. Calculate the values for Central line (CL) and the control limits (i.e. UCL and LCL) for mean chart and range chart and comment on the state of control for both the charts as stated above :

Sample No. :	1	2	3	4	5	6	7	8	9	10
Mean (\bar{x}) :	43	49	37	44	45	37	51	46	43	47
Range (R) :	5	6	5	7	7	4	8	6	4	6

[Conversion factors for $n = 6$ are $A_2 = 0.483$, $D_3 = 0$, $D_4 = 2.004$]

[Internal Assessment : 10 Marks]
