

MBA 2nd Semester Examination, Dec 2019 (DDE)

[Session: Jan 2019- Dec 2020]

Subject- Production and Operations Management

Paper – MBD-204

Time-3 Hours

Full Marks: 80

*The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words
as far as practicable***Group-A****Answer any six questions**

5×6=30

1. Discuss the functions of operating system.
2. Write a short note on Dimensional Analysis technique on location of facilities.
3. Citing suitable examples, distinguish between process layout and product layout.
4. Elucidate the different types of process charts.
5. Calculate the standard production per shift of 8 hours duration with the following data:
Observed time per unit = 5 minutes, Rating factor = 120%, Total allowances = $33\frac{1}{3}\%$ of normal time.
6. What do you mean by aggregate capacity planning? List out its steps.
7. Explain the concept of six sigma quality. What is meant by design of experiments (DOE)?
8. What is a control chart? What are the steps in constructing a control chart?

Group-B**Answer any five questions**

10×5=50

9. (a) Define the following terms, citing one example for each:
 - (i) Continuous process
 - (ii) Intermittent process
 - (iii) Jobbing production.
- (b) What are meant by 'appropriateness' and 'feasibility' of operating system structure?
10. Bharti Fibre Products Ltd. is planning to set up a new plant. The following table shows alternative locations and respective costs (in Rs.):

Costs	Locations				
	1	2	3	4	5
Transport, Rs. Per unit of production	1.00	1.50	1.35	1.65	1.70
Power, Rs. per unit of production	1.25	0.65	1.05	1.20	0.75
Investment in land*	50 lakhs	35 lakhs	40 lakhs	20 lakhs	30 lakhs
Building construction*	130 lakhs	110 lakhs	120 lakhs	90 lakhs	100 lakhs
Equipment (capital cost, Rs. per unit production volume)	2.50	2.80	2.00	3.00	1.50
Location taxes, etc.	10 lakhs	8 lakhs	12 lakhs	9 lakhs	20 lakhs
Averages wages (Rs. per unit of production)	0.90	1.00	1.40	0.90	0.80

*to be costed at 15% per annum.

Please Turn Over

If the volume of production is considered to be 5,00,000 units, what is the preferred location?
If the locations are rated for some factors as given below, would the earlier decision change?

Location	Factors			
	Industrial Relations Climate	Availability of Skilled Manpower	Quality of Life	Geographical Climate
1	Excellent	OK	Good	OK
2	Good	Good	OK	OK
3	OK	Excellent	Good	Excellent
4	OK	OK	Excellent	Excellent
5	Excellent	Good	Excellent	Excellent

All factors are equally important. How are these factors quantified? Can Brown and Gibson method be used for this location problem? Explain.

11. Given the following information of an organisation, with the help of Sequence Analysis technique prepare
- the load movement summary table, and
 - the actual layout of the departments in the organisation.

Fig. 1. Operation Sequences:

Customer Department	A	B	C	D	E	Area Required (m ²)
1	4	2	2	2	3	450
2	--	4	4	5	4	300
3	--	--	--	--	2	150
4	7	5	5	--	7	300
5	--	6	6	6	--	400
6	--	8	9	7	--	250
7	9	--	--	9	10	300
8	--	9	--	--	--	150
9	10	10	10	10	--	300
10	--	--	--	--	--	600

Fig. 2. Load (per period time)

A	B	C	D	E
50	100	200	150	50

12. (a) What is meant by process improvement formula? Explain its role in method study.
(b) An 8 hours work measurement study in a plant reveals the following:

Units produced = 320 nos.

Idle time = 15%

Performance rating = 120%

Allowances = 12% of normal time

Determine the standard time per unit produced. Contingency allowance of 3% and an incentive of 20% are applicable for the job.

Please Turn Over

13. (a) Explain the concepts of PMTS and synthetic timing.
 (b) An industrial engineer, deputed to conduct a time study for a job, has, after observation, divided the job into 5 elements. He had noted the timings for four cycles of the job as below:

Time in minutes					
Element	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Performance rating
1	1.246	1.328	1.298	1.306	90
2	0.972	0.895	0.798	0.919	100
3	0.914	1.875	1.964	1.972	100
4	2.121	2.198	2.146	2.421	110
5	1.253	1.175	1.421	2.218	100

Compute the basic time for the job and the standard time if a relaxation allowance of 12%, a contingency allowance of 3% and an incentive of 20% are applicable for the job.

14. (a) State the objectives of educating the internal customers of an organisation.
 (b) Define Total Quality Management (TQM). Briefly describe the five pillars of TQM.
15. Describe the different analytical tools for Six Sigma.