

Time: 3 Hours

Marks: 80

- N. B.: 1. Question 1 is Compulsory
 2. Attempt any three questions out of the remaining five.
 3. All questions carry equal marks.
 4. Assume suitable data, if required and state it clearly.

1. Attempt any FOUR
- Write a short notes on Service Capacity. [5]
 - Explain the steps of Capacity planning. [5]
 - Explain Forwards scheduling and backward scheduling. [5]
 - Write notes on MRP. [5]
 - Explain the objectives of Line balancing. [5]
 - Write notes on JIT [5]
- 2 a. Use largest Candidate rule to work out a solution on a precedence diagram. Assume cycle time is 1 min. find out a. theoretical number of stations. b. Efficiency and balance delay. [10]

No.	ElementDescription	Time(min.)	Mustbe Precedenceby
1	Placeframeonworkholderandclamp	0.2	---
2	Assembleplug,grommettopowercord	0.4	---
3	Assemblebracketstoframe	0.7	1
4	Wirepowercordtomotor	0.1	1,2
5	Wirepowercordtoswitch	0.3	2
6	Assemblemechanismplatetobrace	0.11	3
7	Assemblebladetobrace	0.32	3
8	Assemblemotortobrace	0.6	3,4
9	Alignbladeandattachtomotor	0.27	6,7,8
10	Assembleswitchtomotorbracket	0.38	5,8
11	Attachcover,inspect,andtest	0.5	9,10
12	Placeintotepanforpacking	0.12	11

- b. Explain the concept of wastes in JIT Manufacturing. How these wastes are eliminated in JIT Manufacturing? [10]
3. a. Explain different factors influencing Plant Layout. [10]
- b. Jobs each of which must be processed on the machine M1, M2, M6. The processing times in hrs are given (i) Find the optimal sequence. (ii) Minimum total elapsed time. (iii) Idle times associated with machines.

Jobs	Processing times					
	M_1	M_2	M_3	M_4	M_5	M_6
A	18	8	7	2	10	25
B	17	6	9	6	8	19
C	11	5	8	5	7	15
D	20	4	3	4	8	12

4. a. The Following activities are involved in a XYZ project are given below along with relevant information. Construct the network and find the critical path also find the floats for each activity. [10]
 b. What is aggregate planning? Explain aggregate planning strategies in detail. [10]
5. a. Following data refers to the past sales of one product [10]

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990
Sales in ₹ (× 10000)	39	54	62	73	85	100	95	105	120

Use least square method and estimate sales forecasting of year 1992.

- b. Bring out the difference between PERT and CPM. [10]
6. a. Explain Pillars of Lean Manufacturing in detail. [10]
 b. Explain Production and operations function in detail [10]
