Q.P. Code: 18595

Maximum Marks: 80 **Time: 3 Hours**

Instructions:

1) Question No. 1 is Compulsory.
2) Answer any three from remaining five Questions.
3) Assume suitable data if required.
3) Draw figure, charts, block diagram wherever required.
4) All questions carry equal marks.

Q 1 Attempt any four questions from the followings. 20

a) Compare Job Production and Mass Production System.
b) Compare P order and Q order inventory system.
c) List down functions of Production Planning and Control.
d) List down symptoms of poor Plant Layout.
e) Short note on Industrial Waste and Disposal Management.

Q 2 a. What Ergonomic factors are considered while designing workplace, facilities and equipments? 10

b. The demand for a product in each of the last five months is shown below. 10

Month	1	2	3	4	5
Demand ('00s)	13	17	19	23	24

i. Use a two month moving average to generate a forecast for demand in month 6.
ii. Apply exponential smoothing with a smoothing constant of 0.9 to generate a forecast for demand in month 6.
iii. Which of these two forecasts do you prefer and why?

Q 3 a. Explain in detail the Importance of Production and Operations Management. 10

b. Bernard Callebaut operates a chocolate shop in Kensington. The annual demand for chocolate-covered cherries is 2,500 units. The setup cost is Rs.15 per order. The holding cost per unit per year is Rs.0.25. What is the optimum number of units per order? What is the expected number of orders per year? Assuming a 250 day working year, what is the expected time between orders? What are the total annual inventory costs? If delivery of the chocolates takes 2 days, at what level of stock should a new order be placed? 10

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Q 4 a What do you mean by Just In Time Purchasing and Just In Time Manufacturing? Explain various features of Just In Time philosophy. 10

b. Consider the following problem of assembly line balancing 10

Task	A	B	C	D	E	F	G	H
Immediate predecessor	-	A	B	C	D	E	F	G
Task time (min)	0.9	0.4	0.6	0.2	0.3	0.4	0.7	1.1
Total task time (min)								4.6

Assuming that 55 minutes per hour are productive, compute the cycle time needed to obtain 50 units per hour as the output.

1. Determine the minimum number of workstations required and assign tasks based on longest task time rule.
2. Compute line utilization

Q 5 a. What do you understand by Theory of Constrains? Explain with suitable example. 10

Q 5 b. The Hunicut and Hallock Corporation makes two versions of the same basic file cabinet, the TOL (Top-of-the-line) five drawer file cabinet and the HQ (High-quality) five drawer filing cabinet. 10

The TOL and HQ use the same cabinet frame and locking mechanism. The drawer assemblies are different although both use the same drawer frame assembly. The drawer assemblies for the TOL cabinet use a sliding assembly that requires *four* bearings per side whereas the HQ sliding assembly requires *only two* bearings per side. (These bearings are identical for both cabinet types.) 100 TOL and 300 HQ file cabinets need to be assembled in week #10. No current stock exists.

1. Develop a material structure tree for the TOL and the HQ file cabinets.
2. Develop a gross material requirements plan for the TOL and HQ cabinets.

Q 6 Write Short Note on any four of the followings. 20

a) Capacity Planning.
b) Productivity Improvement Techniques.
c) Lean Manufacturing.
d) Maynard Operations Sequence Technique.
e) Green Manufacturing and Sustainable Development