

Code :R7420301

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IV B.Tech II Semester(R07) Regular Examinations, April 2011
PRODUCTION PLANNING & CONTROL
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) What are the various types of production systems? Discuss them briefly.
 (b) Briefly discuss the functions of production planning and control.
2. (a) Explain the importance of forecasting.
 (b) Compute the adjusted exponential forecast for the first week of May for a firm with the following data. Assume the forecast for the first week of March as 600 and corresponding initial trend as zero. Let Alpha=0.1 and Beta=0.2

	Month							
	March				April			
Week	1	2	3	4	1	2	3	4
Demand	650	600	550	650	625	675	700	710

3. (a) Derive the EOQ equation for the purchase model without shortages.
 (b) Briefly explain ABC analysis with a suitable example.
4. (a) Explain the basic principles involved in "Just in Time" system.
 (b) Briefly discuss the advantages and limitations of MRP system.
5. (a) Define routing and explain the routing procedure.
 (b) Bring out the differences between route sheet and operation sheet.
6. (a) Explain the assumptions in flow shop scheduling.
 (b) What are the various standard scheduling methods? Explain any one method with a suitable example.
7. Discuss the following capacities in aggregate planning decisions:
 - (a) Regular time production capacity
 - (b) Subcontracting capacity
 - (c) Overtime capacity
 - (d) Hiring and firing capacity
8. (a) What are the different types of follow up? Explain.
 (b) What is dispatching and what are the functions of the dispatcher.

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1. (a) Explain the control stages in production system.
 (b) Explain the aims of production planning and control.
2. (a) Explain long term forecasting and short term forecasting.
 (b) The annual profit depends on its expenditures for research of Alpha organization. The information for the preceding six years is given below. Estimate the profit when the expenditure is 6 units.

Year	Expenditure for Research (X)	Annual profit (Y)
2005	2	20
2006	3	25
2007	5	34
2008	4	30
2009	11	40
2010	5	31
2011	6	?

3. (a) Enumerate the differences between P and Q systems of inventory.
 (b) The annual demand of a product is 48,000 units. The average lead time is 3 weeks. The standard deviation of demand during the average lead time is 100 units/week. The cost of ordering is Rs. 500 per order. The cost of purchase of the product per unit is Rs. 15. The cost of carrying per unit per year is 20% of the purchase price. The maximum delay in lead time is 2 weeks and the probability of this delay is 0.3. Assume a service level of 0.9. If P system is followed, find the reorder level.
4. (a) Explain the importance of "Just in Time" system.
 (b) Enumerate the differences between MRP and ERP.
5. (a) Explain the various factors affecting the routing procedures.
 (b) Discuss the loading and scheduling as an essential part of production control.
6. (a) Distinguish between single machine scheduling and flow shop scheduling.
 (b) Write the Johnson's algorithm and explain the assumptions made in it.
7. (a) Discuss the various pure strategies and mixed strategies.
 (b) Explain the concept of cycle time with a suitable example.
8. (a) Explain the importance of dispatching in the manufacturing system.
 (b) Discuss the follow up of work in process.

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1. Explain the different phases of production planning and control.
2. (a) Explain Delphi technique of forecasting.
 (b) ABC Ltd company has the following sales pattern during 2001 to 2009. Compute the sales forecast for 2010.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sales (in lakhs)	6	8	11	23	29	34	40	45	56

3. (a) Explain the reasons for stocking items in inventory.
 (b) Safe Trans Corporation estimates that it will sell 12000 units of its products for the forthcoming year. The ordering cost is Rs. 100 per order and the carrying cost per unit per year is 20% of the purchase price per unit. The purchase price per unit is Rs. 50. Find (i) EOQ (ii) number of orders per year and (iii) time between successive orders.
4. (a) Explain the concept of line of balance.
 (b) What is Kanban system? Explain the steps followed in the Kanban system.
5. (a) Enumerate the differences between routing and loading.
 (b) Discuss the objectives of production control department.
6. (a) Briefly discuss different measures of performance in single machine scheduling with independent jobs.
 (b) Consider the following single machine scheduling problem. Find the optimal sequence of jobs to minimize tardiness using branch and bound technique.

Job (j)	1	2	3	4	5
Processing time	15	8	17	9	12
Due date	20	15	30	17	25

7. (a) List and explain various pure strategies and mixed strategies.
 (b) What is expediting? Briefly discuss the importance of expediting.
8. (a) Explain the duties of dispatcher and discuss the dispatching procedure.
 (b) Discuss about the follow up of raw materials.

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1. (a) Explain the functions of production planning.
 (b) Explain the various elements of production control.
2. (a) Explain the importance of forecasting in an industry.
 (b) The details of sales turnover of a factory for the period 2004-2010 are given in the following table. Compute the estimated sales for the year 2011?

Year	2004	2005	2006	2007	2008	2009	2010
Sales (in crores)	39	48	65	78	95	91	112

3. (a) List and explain the different types of costs involved in inventory system.
 (b) The annual demand of a product is 48,000 units. The average lead time is 3 weeks. The standard deviation of demand during the average lead time is 100 units/week. The cost of ordering is Rs. 500 per order. The cost of purchase of the product per unit is Rs. 15. The cost of carrying per unit year is 20% of the purchase price. The maximum delay in lead time is 2 weeks and the probability of this delay is 0.3. Assume a service level of 0.9. If Q system is followed, find the reorder level.
4. (a) Explain the applications where line of balance can be applied.
 (b) What are the basic inputs of MRP? Explain briefly.
5. (a) Define routing and discuss different routing procedures.
 (b) Discuss the important functions of control department.
6. Explain the following:
 - (a) Active schedule
 - (b) Semi-active schedule
 - (c) Non-delay schedule
7. (a) What is aggregate planning? Explain the various aggregate planning strategies for smoothing fluctuations in demand.
 (b) What is the objective of the line balancing? Discuss the ranked positional weight method of line balancing.
8. (a) Discuss the role of computers in production planning and control.
 (b) Explain the activities of a dispatcher.
