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Total number of printed pages – 3

B. Tech  
HSSM 4302

**Sixth Semester (Special ) Examination – 2013**  
**PRODUCTION AND OPERATION MANAGEMENT**

**BRANCH : AEIE, CSE, IT, MECH**

**QUESTION CODE : E 306**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.  
The figures in the right-hand margin indicate marks.*

1. Answer the following questions : 2×10
- What is Delphi method of Forecasting ?
  - What is fixed order quantity system ?
  - Write the difference between product and service.
  - What are the inventory control techniques ?
  - What are the basic inputs for Material requirement planning ?
  - What is SIMO Chart ?
  - What is Kanban system ?
  - Write the various aspects in product design.
  - What is standardization ?
  - Draw the graph and explain cost tradeoff in inventory.
2. (a) Distinguish between P and Q systems of inventory. 5
- (b) Beta industry needs 5400units/year of a bought out component which will be used in its main product. The ordering cost is Rs 250 per order and carrying cost per unit year is Rs 30. Find economic order quantity, number of orders per year and time between successive orders. 5



P.T.O.

3. (a) What are the factors affecting forecasting. 3
- (b) A firm uses simple exponential smoothing with  $\beta = 0.3$  to forecast demand. The forecast for the first week of January was 500 units, where as actual demand turned out to be 450 units. Forecast them demand for the second week of January. Assume that the actual during the second week of January turned out to be 550 units. Forecast the demand up to February third week, assuming the subsequent demands as 475, 450, 470, 525, and 470 units. 7
4. (a) What are the types of layout ? Explain them with examples. 3
- (b) Consider the following machine component incidence matrix with 7 machines and 5 components, Obtain the final machine component cells using Rank order clustering algorithm. 7

		Component				
		1	2	3	4	5
Machine	1	0	1	0	1	0
	2	1	0	0	0	1
	3	0	1	1	0	0
	4	1	0	0	0	1
	5	0	0	1	1	0
	6	0	0	0	0	1
	7	0	1	1	1	0

5. (a) Consider the following 3 machines and 5 jobs flow shop problem. Check whether Johnson's rule can be extended to this problem. If so what is the optimal schedule and corresponding make span. 7

Job	Machine1	Machine2	Machine3
1	11	10	12
2	13	8	20
3	15	6	15
4	12	7	19
5	20	9	7

- (b) Briefly discuss the steps in Method study. 3

6. Consider the following problem involving activities from A to J

10

Activity	Immediate Predecessor(s)	Duration Months
A	—	1
B	A	4
C	A	2
D	A	2
E	D	3
F	D	3
G	E	2
H	F,G	1
I	C,H	3
J	B	2

- (a) Construct CPM network.
- (b) Determine the critical path.
- (c) Compute total float and free float.

7. (a) Explain Kan ban system.

5

(b) Explain Break even analysis.

5

8. Write short notes on any **four** of the following :

2.5×4

(a) FMS

(b) Product life cycle

(c) Standardization

(d) Capacity requirement Planning

(e) JIT.

