BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: ME **SEMESTER : I**
BRANCH: PROD. **SESSION : MO/17**

SUBJECT: MPE1009 PLANNING AND CONTROL OF PRODUCTION SYSTEMS

TIME: 3. Hours **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1 Explain the salient features and characteristics of the different types of production system. [12]

Q.2 What is a qualitative forecasting model, and when is it appropriate? [12]
Avaron exports is a major garment export house based at Delhi. The sales figures(in thousand units) of a particular garment during the past 10 weeks are given in table

week	1	2	3	4	5	6	7	8	9	10
Actual demand (in thousands)	21	24	18	22	27	23	21	25	27	18

(i) Calculate the three week moving average forecast for the given ten weeks.
(ii) Find the simple exponential smoothing forecast for the data. Assume that the initial forecast for first week is 22000. The smoothing constant selected is, $\alpha = 0.1$.
(iii) Calculate MAD and discuss the result.

Q.3 What functions of the firm impact an MRP system? [12]
Each unit of end product X requires two units of sub component Z. the lead time for X is one week, the standard order quantity is 40 units, and current availability is 35 units. Gross requirements for the next six weeks are 25, 30,20,15,15 and 20 units respectively. For item Z, lead time is two weeks, standard order quantity is 80 units, and current availability is 90 units. A scheduled receipt for 80 Z is due in week 1. Develop complete MRP records for X and Z.

Q.4 What is a location analysis? What is centre of gravity method? How do you find the centre of gravity? Explain with the help of a suitable example. [12]

Q.5 What are the pure planning strategies in aggregate production planning? Why are these practically used in combinaton with each other? [12]
Peter corporation has estimated its aggregate demand for the coming year as follows:

Month	Productive days	Demand (in units)	Month	Productive days	Demand (in units)
JAN	22	8000	JULY	22	26000
FEB	19	12000	AUG	11	16000
MARCH	21	18000	SEP	21	18000
APRIL	22	20000	OCT	22	14000
MAY	21	28000	NOV	18	9000
JUNE	21	25000	DEC	21	7000

Currently there are 100 employees whose normal productivity is 12 units/day/employee. Daily capacity can be increased upto 30 percent by working overtime at an additional cost of Rs 2/unit. Regular time salaries average Rs 30/day/employee. Cost of storing units in inventory are Rs 2/unit/month. Inventory shortages cost Rs 10/unit short. Cost of hiring and training are Rs 300/employee and layoff costs are Rs 200/employee. Additional capacity is available by subcontracting to a local manufacturer at a cost of Rs 8/unit. Currently Peter has 5000 units in inventory. Develop a good plan for next year aggregate output.

Q.6(a) Explain Risk analysis with the help of a suitable example by using decision tree. [6]
Q.6(b) Discuss the functions of PPC in process industries with the help of a suitable example. [6]

Q.7 Explain the following in brief ; [12]
(i) ERP (ii) Production Control (iii) Inventory planning

:::::27-11-2017 E:::::