Total No of Questions: [10]   **SEAT NO. :**

[Total No. of Pages : 3]

End Semester Examination
T.E. (Production)
Production Management (311091)
(2012 Pattern)

Time: 2& 1/2 Hours   *Max. Marks :*
70

Instructions to the candidates:
   1) Neat diagrams must be drawn wherever necessary.
   2) Figures to the right side indicate full marks.
   3) Solve Q1 or Q2, Q3 orQ4, Q5 or Q6, Q7 or Q8, Q9 or Q10,
   4) Use of electronic pocket Calculator is allowed.
   5) Assume Suitable data if necessary.

Q. 1 **a)** Describe the nature of relationship of Production Manager with Human   **[5]**
                  Resource (HR) Manager and Finance Manager.

         b) What are the challenges for Production Manager in 21st Century?   **[5]**

                                    OR

Q. 2 **a)** What are the duties and responsibilities of Production Manager in a modern   **[5]**
                  Manufacturing firm?

         b) What are the strategies used by companies to compete on Cost and Quality?   **[5]**

Q. 3 **a)** What are the economic aspects considered while developing a new product?   **[5]**

         b) What will be the consequences if a manufacturing unit does not have a proper   **[5]**
                  Production Planning and Control (PPC) system?

                                    OR

Q.4 **a)** List the Principles of Layout Planning?   **[2]**

         b) A product is to be assembled on a continuous belt conveyor. 500 units are to   **[8]**
                  be assembled per day. Production time per day is 420 minutes, and assembly
                  tasks and times are as given in table below. Draw the precedence diagram,
                  find,

              i.   Theoretical no. of workstations

              ii.   Actual no. of assembly stations

iii.   Balance delay

Task	A	B	C	D	E	F	G	H	I	J	K
Task that must Precede	-	A	B	--	D	C	C	E	E	F,G,H,I	J
Time (Sec.)	45	11	09	50	15	12	12	12	12	08	09

Q. 5 **a)** What are forecasting errors? What are the measures used to evaluate forecasting errors? **[6]**

b) The demand for a Car is given below. The forecast for August was 420 units. **[4]** Forecast the demand for the month of September taking the value of $\alpha = 0.2$.

Month	August	September	October
Demand	400	500	600

c) A company manufacturing washing machines establishes a fact that there is **[8]** relationship between sales of washing machine and population of the city. The market research carried out reveals the following information:

Population (Lac.)	6	8	16	23	28	37
No. of Washing Machines demanded ('000)	29	41	66	81	97	132

Fit linear regression equation and estimate the demand for washing machines for a city with a population of 46 Lac.

OR

Q. 6 **a)** What are the short term capacity planning techniques used by manufacturing **[4]** units?

b) What are the steps in manpower planning? **[4]**

c) Petrol prices, in Rupees per litre, for a City, for seven years from 2011–2017 **[4]** are listed below. Determine the least squares equation and estimate the Price of a litre of Petrol for 2018

Year	2017	2016	2015	2014	2013	2012	2011
Price(Rs.)	76	74	73	72	60	57	61

Q.7 **a)** Describe in brief priority-sequencing rules. **[6]**

b) 1. There are five jobs each of which is to be processed through three **[10]** machines A, B and C in the order A-C-B. Processing times in hours are as given below.

Jobs	A	B	C
1	4	8	5
2	9	10	6
3	8	6	2
4	6	7	3
5	5	11	4

Determine the optimum sequence of the five jobs and the minimum elapsed time. Also calculate the waiting time for three machines.

OR

Q.8 **a)** Write short note on Master Production Schedule. **[6]**

b) For the following table **[10]**

i. Construct a precedence diagram.

ii. Compute the four schedule times (EST, EFT, LST, and LFT) for each activity.

iii. Identify the critical path.

Sr. No.	1	2	3	4	5	6	7
Activity	G	F	E	D	C	B	A
Predecessors	--	G	G	F, E	D	D	B, C
Duration	3	4	6	5	5	2	5

Q.9 **a)** Explain in detail 'P' system and 'Q' system of Inventory control. **[8]**

b) Arijeet Industries requires 18,000 units/year which will be used in its main **[8]** product. The ordering cost is Rs. 138 per order and the carrying cost per unit per year is 22% of the purchase price per unit which is Rs.78.

Find i) Economic order quantity.

    ii) Number of orders per year.

    iii) Time between successive orders.

OR

Q.10 **a)** What is selective inventory control? Explain ABC analysis in brief. **[8]**

b) A company makes bicycles. It produces 480 bicycles a month. It buys the tyres for bicycles from a supplier at a cost of Rs. 21 per tyre. The company's inventory carrying cost is estimated to be 17% of cost and the ordering is Rs. 55 per order.

1. Calculate the EOQ
2. What is the number of orders per year?
3. Compute the average inventory.
4. Compute the total cost