Registration No : | | | | | | | | | | |

Total Number of Pages : 03 **B.Tech.**

PME6I101

6th Semester Regular Examination 2017-18
PRODUCTION & OPERATION MANAGEMENT
BRANCH : MECH
Time : 3 Hours
Max Marks : 100
Q.CODE : C158

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.

Part – A (Answer all the questions)

Q1. **Answer the following questions : *multiple type or dash fill up type :*** **(2 x 10)**

a) Which of the following is NOT minimized by using the SPT rule?
a) Average late time b) Average flow time
c) Average number of jobs in the shop d) Costs

b) Which photographic technique is used to record path of motions of the members of the body during method study?
a) Acrograph b) Cyclograph
c) Cyclogram d) Cycloscope

c) In the purchase model of inventory, if the demand and lead time is deterministic, then ROL is …….
a) Annual demand b) Demand during lead time
c) EOQ/D d) None of the above

d) Which of the following is not true for forecasting?
a) Forecasts are rarely perfect
b) The underlying casual system will remain same in the future
c) Forecast for group of items is accurate than individual item
d) Short range forecasts are less accurate than long range forecasts

e) Which among the following is a special factor that influences the plant location?
a) Cultural factor b) Infrastructure
c) Communication facilities d) Transport

f) "Space available in vertical and horizontal directions is most effectively utilized" is known as principle of
a) Cubic space utilization b) Flexibility
c) Flow d) Minimum distance

g) Which of the following chart is drawn Machine *vs*. time?
a) Man machine chart b) The load chart
c) The progress chart d) Curve chart

h) The inventory which is dependent on alternative modes of transportation is known as
a) Safety inventory b) Pipeline inventory
c) Decoupling inventory d) Seasonal inventory

i) Which one of the following is an input to aggregate planning?
a) beginning inventory b) forecast for each period
c) customer order d) all of the above

j) A fishbone diagram is also known as a
a) cause-and-effect diagram b) poka-yoke diagram
c)Kaizen diagram d) Taguchi diagram

Q2. **Answer the following questions : *Short answer type :*** **(2 x 10)**

a) What are the typical characteristics of services and do these make services difficult to manage compared to manufacturing of products?

b) What is the difference between all quantity discount and marginal quantity discount?

c) What are the advantages and disadvantages of the chase plan?

d) What are the factors affecting the location planning of international facilities?

e) Given the data 92, 93, 92, 91, 93, 94, 92 find the forecast for the eighth period using simple average. Compute the mean absolute deviation?

f) What is wok design? What are its constituents?

g) What are the components of shortage cost?

h) What is the difference between forward and backward scheduling? Which one is better?

i) Explain the concept of term Kaizen.

j) What are the inputs and outputs required by the MRP?

Part – B (Answer any four questions)

Q3. **a)** Students believe that the salary they can expect during a placement process is related to their academic performance. The CGPA (indicator of performance) and the salary obtained by six students are (7, 6), (6.8, 5.8), (7.5, 6.5), (8, 7), (8.2, 7.5) and (8.6, 8). Find the salary that a student with CGPA 8.7 can expect? **(10)**

b) Explain the use of break even analysis for plant location decision with a suitable example. **(5)**

Q4. **a)** Explain ALDEP algorithm with a suitable example. **(10)**

b) Compare and contrast time study and work sampling. **(5)**

Q5. **a)** Create the MRP plan (8 weeks) for the production of a component with the requirements shown below. **(10)**
Lot size=200 units and lead time of 1 week and safely stock=zero units. Weekly requirements: week 1=50 units, week 2=150 units, week 3=180 units, week 4=80 units, week 5=120 units, week 6=220 units and week 7=150 units. Inventory on hand = 210 units.
If the inventory on hand changes to 60 units and a scheduled receipt of 100 units is expected to arrive in week 2, redraw the MRP plan and recalculate the table.

b) In sequencing, for what situations do minimizing makespan and minimizing mean flow time become meaningful objectives? **(5)**

Q6. **a)** There are six jobs to be processed through three machines M1, M2 and M3. The processing time (in hours) required for each job is given below. **(10)**

Machine		M1	M2	M3
Job	A	11	7	18
	B	18	7	7
	C	15	9	12
	D	13	5	15
	E	9	8	10
	F	12	7	18

Determine the optimal sequence. Find total time elapsed to complete the jobs and idle time for each machine. Also draw the Gantt Chart.

b) Explain the stages a product goes through from time it is introduced until it is withdrawn from the market. **(5)**

Q7. a) A manufacturing company produces a certain gearbox component and wants to develop an aggregate plan for 4 months. The following production information is available. **(10)**

Demand forecast

Month	1	2	3	4
Demand	1200	1100	1800	1500

Capacity in units

Month	Regular Time	Over Time	Subcontract
1	1200	150	800
2	900	200	800
3	1000	350	800
4	700	350	800

Production Details: Beginning inventory of 110 units, Desired final inventory of 140 units, Inventory cost is Rs. 15/unit/month, Cost of subcontracting is Rs. 145/unit, Regular time cost is Rs. 100/unit and Overtime cost is Rs. 125/unit. Formulate the problem as a transportation model to determine the optimum production levels and means of production.

b) List and explain the types of forecasting in decision making. **(5)**

Q8. a) Derive the EBQ formula for the manufacturing model without shortage. **(10)**

b) Explain the terms reverse engineering and standardization. **(5)**

Q9. Write short notes on :

a) ISO 9000 **(5)**

b) TPM **(5)**

c) P and Q System of inventory **(5)**