Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II EXAMINATION – SUMMER - 2017

Subject Code: 2724610 **Date: 31/05/2017**

Subject Name: Production Management Systems

Time: 02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Compare the various characteristics of job order type and continuous production systems. **07**

(b) Consider the following single machine scheduling problem: **07**

Job	A	B	C	D	E	F
Processing time (in days)	10	8	8	7	12	15
Due date (in days from now)	15	10	12	11	18	25

Determine the sequence of the job based on SPT and EDD rule. Give comparative assessment of SPT and EDD rule based on various criteria such as total completion time, average flow time, average job in system each day and average lateness.

Q.2 **(a)** A firm manufactures sunglasses of various types. Out of these types, 2500 quantity of model A is required in week 12. Bills of material for model A is as per the following details. Lead time for assembly of 2500 quantity of model A is 1 week. **07**

Item code		Description	Quantity per unit	Lead Time (in weeks)	Level code
B		Front	1	1	1
C		Temple	2	2	1
D		Hinge Assembly	2	3	1
	F	Hinge (front section)	1	1	2
	G	Hinge (temple section)	1	1	2
	H	screw	1	1	2
E		lens	2	2	1

No units of end product or its component parts are currently in stock and there are no schedule receipts for the end product or its component parts.

(i). Comment on minimum planning horizon required for model A

(ii). Complete materials requirement plan for sunglasses model A, component D and component G.

(b) Discuss relationship between materials requirement planning and capacity requirement planning with the help of flow chart. **07**

OR

(b) (i). Define the terms; dependent demand, bills of material and schedule receipt. **03**

(ii). Discuss the concept of pegging with reference to MRP. **04**

Q.3 **(a)** (i). Explain Performance rating and computation of standard time. **04**

(ii). Determine basic time and standard time based on following data available from time study on a job: **03**

Representative time T = 0.5 minutes, Rating = 125%, Allowances = 15% of standard time

(b) Discuss the concept of single card KANBAN system with the help of illustrative figures. **07**

OR

Q.3 **(a)** Use graphical method to minimize the time needed to process the following jobs on the machine shown (i.e. for each machine, find the job which should be scheduled first). Also, calculate the total time elapsed to complete both jobs. **07**

Job 1	Sequence	A	B	C	D	E
	Time (hrs.)	6	8	4	12	4
Job 2	Sequence	B	C	A	D	E
	Time (hrs.)	10	8	6	4	12

(b) "JIT is a manufacturing system whose goal is to optimize the process and procedures by continuously pursuing waste reduction." Justify the statement with the help of discussion on different types of waste reduction targeted in JIT manufacturing. **07**

Q.4 **(a)** Enlist steps of Method Study. Prepare a Two hand Processes chart for assembly of a pen. Component of pen are 1. Pen cylinder, 2. Cap and 3. Refill. 1st and 2nd components on right hand side. **07**

(b) Discuss aggregate planning and master production schedule with the help of suitable example. **07**

OR

Q.4 **(a)** Differentiate between Operation Process Chart and Flow Process Chart with suitable example. **07**

(b) Write a brief note on functions and objectives of production planning and control. **07**

Q.5 **(a)** Briefly discuss the following terms with reference to value engineering; Function, Worth, Cost, Value index, Price, Value gap, Aesthetic function **07**

(b) Briefly discuss the concept of value analysis. Explain reasons for conducting value analysis. **07**

OR

Q.5 **(a)** Define value. Discuss different types of value with example in detail. **07**

(b) Explain Principle of Motion Economy. **07**

****