

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER 01– • EXAMINATION – SUMMER 2018

Subject Code:2820006

Date:23/05/2018

Subject Name: Production and Operation Management

Time:10:30 AM To 01:30

Total Marks: 70

Instructions:

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

Q. Question Text and Option 6

No.

Q.1

Objective Questions

(a)

Continuous Production process is used for _____ of products.

1. A. Few Variety B. Many Variety
C. No Variety D. Infinitive Variety

Example of Batch Production is _____.

2. A. Construction B. Bakeries
C. Automobile D. Paints

Determine the best site for the warehouse using the centre of gravity technique.

	A	B	C
X	150	300	400
Y	250	100	500
W	140	110	170

3. A. $X=290.5$ & $Y=311.9$ B. $X=300.9$ & $Y=315.5$
C. $X=275.7$ & $Y=290.6$ D. $X=305.7$ & $Y=320.2$

Which one is the correct job sequence for the given data.

Job	S	T	U	V	W
M1	16	3	21	31	6
M2	7	9	5	17	13

4. A. T-W-V-S-U B. U-V-S-W-T
C. S-U-V-W-T D. T-U-V-S-W

In $EOQ = \sqrt{2AO/c}$, what is “c” ?

5. A. Cost per Unit Per Day B. Cost per Unit Per Week
C. Cost per Unit Per Month D. Cost per Unit Per Year

Whether Johnson’s rule can be applied for the given data?

6. A. Can be applied B. Cannot be applied
C. Data is insufficient D. None of the above

Q.1 (b) Short / Definition Questions 04

1. Job Shop
2. Robust Design
3. Revenue
4. Cost of shortage

Q.1 (c) Draw the network diagram of the project for the following data. 04

Activity	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Duration	2	5	3	1	4	3	7	5	1	2	2	5	4	2
Predecessor	-	-	A	A	B	B	C	D	E	F	GHIJ	GHIJ	K	L

- Q.2 (a)** XYZ Pvt. Ltd. Is planning to start a new factory for manufacturing steel utensils. It is considering three location namely Bokaro, Jaipur and Bhilai. The fixed cost at the three location have been estimated at Rs. 8.15 million, Rs. 7.377 million and Rs. 7.903 million respectively. The variable cost for the three location have been estimated at Rs. 500 per unit, Rs. 580 per unit and Rs. 490 per unit respectively. The factory will have an annual production capacity of 10,000 steel utensils and in the initial year it will operate at 75% efficiency. Find the best location option, which has lowest total cost of production. **07**
- (b)** Explain continuous production process with merits and demerits of it. **07**

OR

- (b)** If you want to find out location for the Chemical Manufacturing Business then which factors you will consider? **07**
- Q.3 (a)** Write note on Material handling equipment. **07**
- (b)** 'Shortages are undesirable, but some organizations create shortages intentionally'- do you agree with this statement? Why? Derive an expression for total cost in the inventory model for intentional shortage. **07**

OR

- Q.3 (a)** Why is the ABC classification of items done? How is the ABC distribution curve drawn? **07**
- (b)** If you will implement Level Output Rate Plan for your product's production then what will you have advantages and disadvantages of it? **07**
- Q.4 (a)** What is Six Sigma? How is it implemented? **07**
- (b)** ABC furniture is a manufacturer of executive tables for corporate institutions. In order to control the quality of its table, the QC Manager selects 15 tables at random and inspects for the number of scratches on each one of them. The results given in the following table. Prepare a stable c chart based on this data. **07**

Sample No.	1	2	3	4	5	6	7	8
No. of defects	13	9	19	7	8	10	12	0
Sample No.	9	10	11	12	13	14	15	---
No. of defects	2	5	7	11	9	13	1	

OR

- Q.4 (a)** What are the various types of certification in ISO 9000? What are the major clauses of ISO 9001? **07**
- (b)** Following table gives details about the various activities of a project. **07**

Activity	Node	a	m	b
A	1-2	10	11	12
B	2-3	6	10	14
C	2-4	5	8	11
D	2-5	1	5	9
E	3-6	3	7	5
F	4-6	4	9	14
G	5-7	1	2	3
H	6-7	3	7	11

I	7-8	9	12	15
J	7-9	3	5	7

Find: (a) the critical path of the project and its expected duration.
(b) the probability that the project will be completed in 50 days.

Q.5 For a special component outsourced to a vendor and used in textile machinery manufactured by XYZ Machines Tools works at Coimbatore, we have the following situations: **14**

Yearly demand 300000 units
Purchase quantity 100000 units
Safety Stock 50000 units

The ordering cost, independent of purchase quantity, is Rs. 1500 for each purchase. The purchase price of the components is Rs. 75 per unit. Annual holding cost is 20% of the value of the components (inventory interest rate is 20%). Assuming 230 working days per year, calculate:

1. The number of purchase during the year
2. Average inventory level including the safety stock
3. Average days of supply in inventory
4. Reorder point if the lead time is 15 working days
5. Total inventory costs per year and total inventory costs per working days with purchase quantity of 100000 units.
6. EOQ
7. Total inventory costs per year and total inventory costs per working days with EOQ and with a safety stock decreased to 5000 units.

OR

Q.5 ABC Ltd. Is a personal Computer assembling company based at Hyderabad. Its marketing department has given the demand forecast shown in the table for its PCs throughout the country in the coming six months from January to June. Every worker assembles two computers a day. The overtime cost is Rs. 3 per day per unit in excess of the maximum capacity of the factory i.e. 200 units. **14**

Month	Jan	Feb	March	April	May	June
Demand forecast (units)	1000	3000	1000	5000	7000	2000
No. of working days	24	25	20	22	20	24

Assume cost of change in output rate is:

1-100 2000
101-200 5000
201-300 8000

The company wants to find the total cost involved in the following plans:
(a) Level Output Rate Plan (b) Chase Plan
