

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA – SEMESTER 02– EXAMINATION – SUMMER 2017

Subject Code: 2820006

Date: 09/06/2017

Subject Name: Production and Operations Management

Time: 10.30 AM TO 01.30 PM

Total Marks: 70

Instructions:

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

Multiple Choice Questions.

6

Q.1(a) _____ is the cost to prepare a machine or process for manufacturing an order

1. A. Set up B. Initial
C. Bottleneck D. Backlog

Which of the following is an inventory system?

2. A. Two bin system B. Ishikawa
C. Coordination of operational goals D. Andon

_____ is a tool for evaluating capacity alternatives?

3. A. Gantt chart. B. P.E.R.T.
C. Decision Tree D. All of the above

_____ control aims at preventing the defects rather than detecting the defects.

4. A. Quantity B. Zero based budgets
C. Conformance D. Quality

Which of the following is not a method of evaluating facility location alternatives.

5. A. Factor -Rating B. Locational Break even analysis method
C. Qualitative factor analysis D. Ishikawa

Average successive time between completion of successive units is called_____?

6. A. Utilization B. Cycle Time
C. Process D. Pacing

Q.1 (b) Explain the following :

04

1. Independent demand.
2. Kanban.
3. Process capability ratio.
4. Acceptance Sampling.

Q.1 (c) Define Operations Management. Discuss in brief 'production as transformation process'.

04

Q.2 (a) Explain along with advantaged and disadvantages, any two facility layout in detail.

07

- (b) TIM incorporated produces copper contacts that it uses in switches and relays. TIM needs to determine the order quantity to meet the annual demand at the lowest cost. the price of copper depends on the quantity ordered. Here are price break and other data for the problem:
Annual demand 50,000 tons per year
Holding cost 20 percent per unit per year of the price of the copper
Ordering cost 30 Rs.
Price of copper
Rs 0.82 per ton up to 2499 tons
Rs. 0.81 per ton for orders between 2500 and 5000 tons
Rs. 0.80 per ton for orders greater than 5000 tons.
What quantity should be ordered?

OR

- (b) Which are the required Inputs to the Production Planning System? 07

- Q.3 (a) 1) Define and explain various costs of quality that a producer should consider while designing quality management issues. 04

- 2) Neutron Inc. is attempting to determine whether an existing machine is capable of milling an engine part that has a key specification of 4 ± 0.003 inches. After a trial run on this machine, Manufacturer has determined that the machine has a sample mean of 4.001 inches with a standard deviation of 0.002 inch. Calculate the Process capability index and whether the manufacturer should use this machine to produce this part? 03

- (b) Enlist and enumerate factors that will affect the choice of a site for a readymade garment manufacturing facility in India. 07

OR

- Q.3 (a) 6 jobs with processing times on machine A & B have to be sequenced optimally. The time taken for operations on machine A & B are given below: 07

Apply Johnson's rule, determine the optimal sequence of processing the job. Also determine the cycle time and idle times on machine & B.

Job	Machine A (Time in hours)	Machine B
J1	8	4
J2	6	7
J3	5	5
J4	7	4
J5	3	6
J6	9	8

- (b) What do you understand by the term (PPC)'Production Planning and Control? Explain objectives of PPC 07

- Q.4 (a) Discuss elements of lean production system. 07
(b) Explain principles of material handling that should be followed for effective and reliable material planning 07

OR

- Q.4 (a) Describe and explain assumptions and limitation of Critical Path Method. 07

- (b) An established company has decided to add a new product to its line. It will buy the product from a manufacturing concern, package it & sell it to a number of distributors that have been selected on a geographical basis. Market research has already indicated the volume expected and the size of sales force required. following table shows the description.

Activity	Description	Predecessors	Duration(days)
A	Organize Sales office	-	6
B	Hire salesman	A	4
C	Train salesman	B	7
D	Select ad agency	A	2
E	Plan ad agency	D	4
F	Plan ad campaign	E	10
G	Conduct ad campaign	-	2
H	Design package	G	10
I	Setup ad package	J, H	6
J	Package initial stocks	-	13
K	Order stock from manufacturer	A	9
L	Select distributors & sell	C, K	3
M	Ship stocks to distributors	I, L	5

- Draw Network diagram
- Indicate critical path
- For each non critical activity, find total & free float

Q.5 The Orange bus company manufacture buses for different purposes. 14

The Orange bus objective is to provide expert, bespoke minibus conversions for individual customers, companies and charities. The corporate ethos of 'driving quality' focuses the company to continuously look at improving the quality and effectiveness of its products and services. This is demonstrated through high staff morale, increased sales and most importantly satisfied customers. Although The Orange bus was already successfully measuring the quality of its builds and processes informally, the company wanted to put in place a more formal structure to improve operational efficiency and drive market share. The Orange bus decided that a quality certificate would provide the ideal framework to achieve this.

Successful certification may enable The Orange bus to gain national recognition as a quality company which consistently builds a high quality product. The majority of motor manufacturers insist on certification to this standard and The Orange bus has, subsequently achieved national accreditation and approval from these manufacturers due to its outstanding quality.

Auditing is performed monthly and continues to highlight opportunities for process improvements. Non-conformities and corrective actions are religiously logged, enabling The Orange bus to learn from mistakes and put in place initiatives to prevent recurrences of problems. Now that the company monitors each stage of the vehicle build, preventative action means that warranty costs have substantially reduced. The management system also helps the monitoring of customer feedback. As a result of this feedback, the company now offer a 36-month warranty which demonstrates firstly that they do listen to our customers, and, secondly

that they have confidence in the build quality of the product. The only other obstacle they faced was helping staff understand why they were implementing certification.

- a) Explain the quality tool that can be applied in the above case?
- b) How will the employees access their role in quality management?

OR

Q-5

The following table gives data on normal time, cost and crash time and cost for a project. 14

Activity	Normal time	Normal cost	Crash time	Crash cost
1-2	3	300	2	400
2-3	3	30	3	30
2-4	7	420	5	580
2-5	9	720	7	810
3-5	5	250	4	300
4-5	0	0	0	0
5-6	6	320	4	410
6-7	4	400	3	470
6-8	13	780	10	900
7-8	10	1000	9	1200

Indirect cost is Rs. 50 per week.

- 1) Draw network diagram for project & identify the critical path.
- 2) What are the normal project duration & associated cost?
- 3) Find out the total float associated with each activity.
- 4) Crash the relevant activities systematically & determine the optimal project completion time and cost.
