JP – 958

II Semester M.B.A. (Day) Degree Examination, June 2008
(Updated Scheme)
MANAGEMENT
2.3 : Production and Operations Management

Time: 3 Hours Max. Marks : 75

SECTION – A

1. Answer any six questions. **(6×2=12)**

   a) Cell layout

   b) Six sigma

   c) '55' House keeping

   d) Value engineering

   e) JIT

   f) Productivity

   g) Production system

   h) Logistics

   i) Product - Process Matrix

SECTION – B

Answer any three questions. **(3×8=24)**

2. a) What is QFD

   b) What are control charts ?

P.T.O.

3. a) Explain the 6 types of wastes

   b) What is Japanese Management ?

4. a) Explain the under development process.

   b) Discuss the historical development of POM.

5. Write short notes on :

   a) Pokayoke

   b) ISO standards.

6. a) Explain the concept of 6 sigma

   b) What is benchmarking.

SECTION – C

Answer **any two** questions. **(2×12=24)**

7. Write short notes on :

   a) Methods analysis

   b) Compensation

   c) Job Design

8. Consider the following assembly network relationship of a product. The number of shifts per day is one and the number working hours is 8. The company aims to produce 40 units of the product per shift. Identify the cycle time, Number of work stations.

Group the operations and balance the assembly time.

Operation	Preceding Operation	Duration Min.
1	–	8
2	1	3
3	1	2
4	1	4
5	3, 4	7
6	2, 7	4
7	2, 4, 5	5
8	4	6
9	(6, 5)	8

9. Why is maintenance ? Why is it necessary ? Discuss the different types of maintenance and their importance.

SECTION – D

Case study : **15**

10. Discuss the quality gures their contributions to quality and the quality awards with respect to some organisations you know.

PG – 598

II Semester M.B.A. (Day) Degree Examination, June 2009
(2007-08 Scheme)
MANAGEMENT
Paper – 2.3 : Production and Operation Management

Time : 3 Hours Max. Marks : 75

SECTION – A

1. Answer **any six** of the following : **(6×2=12)**
   a) Define P.O. Ms.
   b) Distinguish between Q.A. and Q.C.
   c) Define service quality.
   d) What is concurrent engineering ?
   e) What is vendor evaluation ?
   f) What is line balancing ?
   g) What are the phases of a project ?
   h) What is Muri and Muda ?
   i) What is cost control ?

SECTION – B

Answer **any three** questions : **(3×8=24)**

2. How has Japanese Mfg. philosophy influenced others ?
3. Briefly explain how CAD/CAM helps in realising design(s) for reliability, producibility and quality.
4. Explain the economics of production operations.
5. What are the control charts used in quality control ?
   Draw a control chart for the following :

Sample No.	1	2	3	4	5	6
Sample size	100	150	200	250	300	150
No. of defects	5	7	8	4	9	6

P.T.O.

6. Distinguish between product layout and process layout. Bringout their applications and relative merits and de-merits.

SECTION – C

Answer **any two** questions : **(2×12=24)**

7. Discuss in detail TQM philosophy quoting Deming's 14 point management principles.

8. JIT and TQM are powerful tools to achieve world class manufacturing status. Discuss.

9. Write short notes on :

   a) Lean Manufacturing b) Six sigma c) Line Balancing.

SECTION – D

10. Case Study **(1×15=15)**

Compulsory :

XYZ company in Bangalore produces and markets 20 types of mechanical engineering products in India. It has HQ in Bangalore and 4 branches one each in North, South, East and West of India. It has large number of distribution centers across the country. Its main manufacturing plant in Bangalore has 10 Acres of land, 5 buildings, 1200 workforce (Includes 400 engineers and Managers), Huge machinery, computer workstations with nearly 200 pcs, and 10 main frame computers. It has a big workshop with CAD/CAM tools, CNC machines, Heavy machinery. After several years of business operations, the XYZ. Co. has recognized that by adopting strategic outsourcing and lean management, excellent improvements in its business performance can be achieved. It has now embarked on the plans of lean manufacturing. Now answer the following questions.

a) Suggest the areas in which lean manufacturing can be incorporated.

b) Give a ten-point advise to XYZ Co. in implementing the Lean manufacturing.

c) What benefits lean manufacturing can give to XYZ Co. ?

PG – 565

II Semester M.B.A. (Day) Degree Examination, June/July 2010
(2007-08 Scheme)
Paper – 2.3 : PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours Max. Marks : 75

Instructions : *1) Calculators to be **allowed**.*
*2) Graph sheets to be **supplied**.*

SECTION – A

Answer **any six** questions. **Each** question carries **2** marks. **(2×6=12)**

1. a) What is cycle time ?
   b) What is continuous improvement ?
   c) What is DFM ?
   d) What is cellular layout ?
   e) What is backward scheduling ?
   f) What is productivity ?
   g) What is capacity planning ?
   h) What is concurrent engineering ?

SECTION – B

Answer **any three** questions. **Each** question carries **eight** marks. **(8×3=24)**

2. Solve the following LPP by the graphical method :

   Maximise $Z = 100\,x_1 + 40\,x_2$

   Subject to $5x_1 + 2x_2 \leq 100$

   $3x_1 + 2x_2 \leq 900$

   $x_1 + 2x_2 \leq 500$

   and $x_1, x_2 \geq 0$.

P.T.O.

3. Define quality. What are the dimensions of quality ? Explain the tools of quality.

4. Briefly explain the following concepts :
   a) Quality function deployment
   b) Benchmarking
   c) 5 S of housekeeping
   d) Flexible manufacturing systems.

5. a) A time study analyst wants to estimate the time required to perform a certain job. A preliminary study yielded a mean of 7.2 minutes and a standard deviation of 3.2 minutes. The desired confidence is 95 per cent. How many observations will he need (including those already taken) if the desired maximum error is
      a) ±10 per cent of the sample mean ?
      b) One-half minute ?
      (Given Z = 1.96)
   b) What is methods analysis ? Briefly explain its basic procedure.

6. a) What is waste management ? Discuss the seven wastes.
   b) From the following data calculate the mean absolute deviation, the tracking signal and the running sum of forecast error and infer the meaning of these values.

Period	Demand	Forecast
–8	105	109
–7	115	107
–6	109	109
–5	103	105
–4	111	105
–3	107	109
–2	105	108
–1	103	107

SECTION – C

Answer **any two** questions. **Each** question carries **twelve** marks. **(2×12=24)**

7. What is maintenance ? Discuss the different types of maintenance, their advantages and disadvantages. Explain the importance of having maintenance done.

8. a) Why is the location decision important ?

   b) Discuss the various factors that affect the location decision. Discuss the different techniques for deciding the location decision using the following factor ratings, determine which location alternative should be chosen on the basis of the maximum composite score.

Factor (100 points each)	Weight	P	Q	R
General convenience	0.15	70	60	50
Parking facilities	0.20	62	66	82
Display area	0.18	78	80	80
Shopper traffic	0.27	84	76	70
Operating costs	0.10	88	80	72
Neighbourhood	0.10	86	75	65
	1.00			

9. What is inventory management ? Why should it be done ? Discuss the different issues in inventory management and the inventory classification systems.

PG – 003

II Semester M.B.A. (Day) Degree Examination, July 2011
(2007-08 Scheme)
Management
Paper 2.3 : PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours Max. Marks : 75

Instruction : *Calculators are* ***allowed.***

SECTION – A

Answer **any 6** questions. **Each** question carries **2** marks. **(2×6=12)**

1. a) What is FMEA ?

   b) What is work sampling ?

   c) What is process mapping ?

   d What is DMAIC ?

   e) What is DFM ?

   f) What is reliability ?

   g) What is CAE ?

   h) What is robust design ?

   i) What is scheduling ?

P.T.O.

SECTION – B

Answer **any three** questions. **Each** question carries **8** marks. (3×8=24)

2. What is product/service design ? Explain the various phases of product development.

3. What is quality ? Explain how quality and the tools of quality can lead to overall organisational excellence.

4. As a cargo loader for Air India, you are charged with the responsibility of setting a standard time (in minutes) for uploading certain electrical components. The following study was conducted over 300 hours with 900 uploadings performed.

Composite worker rating (in %)	Activity	No. of times observed
80	Manually check and lift electrical component onto trailer	100
100	Tow loaded trailer to aircraft with tractor	300
120	Check electrical contacts (this time will be reduced by 50% by an additional inspection during manufacturer)	400
90	Correct any malfunctioning observed	100
110	Load electrical component into plane using automatic lift	400
140	Return tractor and tailer to warehouse	300
	Personal or idle time	400

Air India personal time allowance fraction is 0.10 for an 8 hour workday.

5. Discuss how production and operations management helps in decision making. Use suitable examples of modern practices from industry in support of your answer.

6. a) Briefly list the facility location criteria.

   b) A DTP firm intends to open a new shop. The table below gives information on two potential locations :

Factor	Weight	Location 1	Location 2
Proximity to existing shop	0.10	100	60
Traffic volume	0.05	80	80
Rental costs	0.40	70	90
Size	0.10	86	92
Layout	0.20	40	70
Operating costs	0.15	80	90
	1.00		

SECTION – C

Note : Answer **any two** of the following questions. **Each** question carries **12** marks. **(2×12=24)**

7. Write short notes on :

   a) House of quality

   b) Production planning and control

   c) JIT and Kanban.

8. What are the functions of inventory ? What are the objectives of inventory control ? Discuss the classification systems of inventory.

9. a) Why are facility layout decisions important ?

   b) A quality inspector took five samples each with four observations of the length of time taken to disburse cash at a Bank. The analyst computed the mean of each sample and then computed the grand mean. All values are in minutes. Use this information to obtain 3 sigma (Z = 3) control limits for future times. From previous experience the standard deviation is said to be 0.2 minutes.

	Sample				
	1	**2**	**3**	**4**	**5**
1	8.11	8.15	8.09	8.12	8.09
2	8.10	8.12	8.09	8.10	8.14
3	8.11	8.10	8.11	8.08	8.13
4	8.08	8.11	8.15	8.10	8.12
Mean	8.10	8.12	8.11	8.10	8.12

SECTION – D

10. Case study. This Section is **compulsory**. **(1×15=15)**

New York City picks Nissan minivan as next taxi cab New York's yellow taxis have been featured in many movies and TV shows.

Japan's Nissan Motor has won a contract to provide the next generation of New York's famous yellow taxis. The deal, which is estimated to be worth $1bn (£607m) was announced by Mayor Michael Bloomberg. The design will be based on Nissan's NV200 minivan model. The van, which beat US carmaker Ford Motor and Turkish manufacturer Karsan Otomotiv for the 10-year contract , will be phased in starting in 2013.

Mayor Michael Bloomberg acknowledged the Nissan NV200's boxy form evokes suburbia, but he said the yellow paint would give it the iconic New York touch. The vehicle features an overhead window to offer views of city skyscrapers, and charging stations for mobile phones. "For the first time, we'll have a taxicab that wasn't 'off the rack', but rather custom-tailored to create the best fit for the drivers, owners and passengers of our city," Taxi and Limousine Commissioner

David Yassky said. "People are going to fall in love with this taxi once they ride in it. It is going to represent New York City well." The car will also feature satellite navigation, so passengers leaving the main Manhattan corridors will not have to contend with drivers who do not know their way around.

The Nissan was the most fuel-efficient and the cheapest of the three finalists, at about $29,000 (£17,608) per vehicle. By 2017, Nissan will be able to manufacture the cars to run solely on electricity, New York City Hall said in a statement. The bulk of the current fleet are Ford Crown Victorias, a car which only does about 12 miles per gallon, compared with 25 miles per gallon for the Nissan NV200. New York's 13,000 yellow cabs carry about 600,000 passengers a day, and are the only vehicles permitted to pick up passengers off the street. The NV200, which will be built in Nissan plants in Mexico, is the first to be designed specifically for use as a New York City taxi.

1) Highlight how improved product design of the car helped it in getting selected from among other popular brands.

2) Do you think that the value added features of the car are in tune with modern requirements ? Elaborate on how manufacturers need to take cognizance of consumers' requirements.

3) If you were a New Yorker, given the facts in the case, what would your reactions about the new taxi be ?

PG – 115

II Semester M.B.A. (Day) Degree Examination, June/July 2012
(2007-08 Scheme)
MANAGEMENT
Paper – 2.3 : Production and Operation Management

Time : 3 Hours Max. Marks : 75

***Instruction** : 1) Use graph sheets **wherever** necessary.*
*2) Calculators are **allowed**.*

SECTION – A

Answer **any six** questions. **Each** question carries **two** marks. **(2×6=12)**

1. a) What is work study ?
   b) What is product design ?
   c) What is ERP ?
   d) What is line of balance ?
   e) What are SPMs ?
   f) What are work instructions ?
   g) What is CIM ?
   h) What is EOQ ?

SECTION – B

Answer **any three** questions. **Each** question carries **eight** marks. **(3×8=24)**

2. The fixed and variable costs for four potential plant locations are given below.

Location	Fixed Cost Per Year (In Rs)	Variable Cost Per Unit (In Rs.)
A	2,50,000	11
B	1,00,000	30
C	1,50,000	20
D	2,00,000	35

   a) Plot the total cost lines for these on a single graph.
   b) Identify the range of output for which each alternative is superior. (i.e., has the lowest total cost)
   c) If expected output at the selected location is to be 8,000 units per year, which location would provide the lowest total cost ?

3. What are the characteristics of facility layout decisions ? Explain the different basic layout forms.

4. What is TPM ? Is it a lean initiative ? Discuss the different types of maintenance in a factory system and their benefits.

P.T.O.

5. How is inventory managed in a factory ? What are the two fundamental inventory decisions ? What is the role of inventory in services ?

6. What is a supply chain ? What are the different types of supply chains ? How is mass customization related to supply chains ?

SECTION – C

Answer **any two** questions. Each question carries **twelve** marks. **(2×12=24)**

7. Discuss the concepts of method study and work measurement as components of work study.

8. What is manufacturing planning and control ? Discuss push and pull systems and Kanban as part of the JIT concept in production.

9. What is POKAYOKE and Zero Defect Quality ? Discuss the seven steps to POKAYOKE attainment. Explain the nine types of wastes in POKAYOKE achievement.

SECTION – D

Compulsory case study. **(1×15=15)**

10. A time study analyst gave a performance rating of 1.01 for an assembly operation. The time study of this operation yielded the following observed times for one element of the job. Using an allowance of 18 per cent of job time, determine the appropriate standard time for this operation.

Observation (i)	Time in minutes
1	1.01
2	1.04
3	1.00
4	1.01
5	1.02
6	1.05
7	1.02
8	1.03
9	1.07
Total	9.25

PG – 100

II Semester M.B.A. (Day) Degree Examination, June/July 2013
(Scheme : 2007-08)
MANAGEMENT
Paper – 2.3 : Production and Operations Management

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer **any six** sub-questions. **Each** sub-question carries **two** marks : **(6×2=12)**

1. a) What is a C chart ?
   b) What do you mean by MRP II ?
   c) What is a GANTT chart ?
   d) Define DFA.
   e) What is a work break down schedule ?
   f) What is robust design ?
   g) Why is the centre of gravity method used ?
   h) What is vertical loading ?

SECTION – B

Answer **any three** questions. **Each** question carries **eight** marks : **(3×8=24)**

2. a) Explain the steps involved in developing new products.
   b) A time study of an assembly operation yielded the following observed times for one element of the job, for which the analyst gave a performance rating of 1.12. Using an allowance of 20 percent of job time, determine the appropriate standard time for this operation :

Observation	Time in minutes
1	1.15
2	1.12
3	1.13
4	1.16
5	1.14
6	1.11
7	1.13
8	1.15
Total	**9.09**

P.T.O.

3. What is work study ? Explain its components.

4. a) What are the seven tools of quality ? Illustrate them.

   b) Twenty samples of n = 8 have been taken from a cleaning operation. The average sample range for the twenty samples was 0.014 minutes, and the average mean was 3 minutes. Determine 3 segma control limits for this process. Given $A_z = 0.37$ for n = 8.

5. What is inventory management ? What are the issues involved in it ?

6. Describe the nature of seven wastes and five S housekeeping.

SECTION – C

Answer **any two** questions. **Each** question carries **twelve** marks : **(2×12=24)**

7. a) What are the factors that should be considered in facility location ?

   b) Using the following factor ratings, determine which location alternative should be chosen on the basis of maximum composite score, A or B, or C :

Factor (100 points each)	Weight	A	B	C
Convenient	0.15	85	75	65
Parking facilities	0.20	70	72	90
Display area	0.18	85	88	90
Shopper traffic	0.27	92	86	82
Operating costs	0.10	94	83	73
Neighbourhood	0.10	95	86	76
	1.00			

8. What is meant by faulty layout ? What are its characteristics ?

9. What is meant by maintenance ? Why is it necessary ?

SECTION – D

This section is **compulsory** : 15

10. Using the information given in the table below, do each of the following :

a) Draw a precedence diagram.

b) Assuming an 8 hour workday, compute the cycle time needed to obtain an output of 480 units per day.

c) Determine the minimum number of workstations required.

d) Assign tasks to workstations using this rule. Assign tasks according to greatest number of following tasks. In case of a tie, use the tiebreaker of assigning the task with the longest processing time :

Task	Immediate follower	Task time in minutes
a	b	0.4
b	e	0.3
c	d	0.8
d	f	0.6
e	f	0.2
f	g	1.1
g	h	0.5
h	end	0.3
		Total 4.2

Draw the work stations according to the assigned tasks.

PG – 777

II Semester M.B.A. Degree Examination, July/August 2014
(2007-08 Scheme)
Management
Paper – 2.3 : PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours Max. Marks : 75

Instruction : *D_5 and A_2 tables are* ***allowed.***

SECTION – A

Answer **any six** questions. **Each** carries **2** marks. **(6×2=12)**

1. a) What is multifactor productivity ?
   b) Define quality according to American society for quality.
   c) What is vendor development ?
   d) List down the '5s' of house keeping.
   e) What are the important inputs for MRP ?
   f) What are the important inventory costs ?
   g) Define 'Value'.
   h) What is Operations Management ?

SECTION – B

Answer **any three** questions. **Each** carries **8** marks. **(3×8=24)**

2. Explain in detail the procedure for methods study.
3. What are the seven tools of quality ?
4. Write short notes on :
   a) OEE
   b) QFD.

P.T.O.

5. What are facility layouts ? Illustrate and explain the advantages and disadvantages of each type of layout.

6. The data processing department of a company has five data entry clerks. Each day their supervisor verifies the accuracy of a random sample of 200 records. A record containing one or more errors is considered defective and must be redone. The results of the last 20 samples are shown below. None of them are out of control.

Sample	Number of defective records
1	7
2	5
3	19
4	10
5	11
6	8
7	12
8	9
9	6
10	13
11	18
12	10
13	16
14	4
15	11
16	8
17	12
18	4
19	6
20	11
Total	**200**

a) Based on these historical data, set up a p-chart using $z = 3$.

b) Samples for the next four days showed the following

Sample	Number of defective records
21	17
22	15
23	22
24	21

What is the Supervisor's assessment of the data – entry process likely to be ?

SECTION – C

Answer **any two** questions. **Each** question carries **twelve** marks. **(2×12=24)**

7. a) What is TPM ? How does TPM score over other maintenance methods ? Why is maintenance necessary ?

   b) Write briefly on the following concepts :
   a) Seven wastes b) POKA YOKE.

8. A firm is considering three alternative locations for setting up its new factory. Each of these locations provides some advantages and some limitations. Therefore, it is necessary that some method of assessing the attractiveness of each site be arrived at. Based on the survey of its top management, the company has identified seven factors that will determine the appropriatives of a site for setting up the new factory. These factors and the score out of 100 for each of them are shown in the table below :

Sl. No.	Factors for Consideration	(Score out of 100)
1.	Nearness to port	80
2.	Existence of supplier infrastructure	70
3.	Availability of skilled labour	90
4.	Government policies and local taxes	50
5.	Projected cost of operations	60
6.	Quality of road infrastructure	70
7.	Availability of educational infrastructure	40

The company collected data on each site and arrived at site rates against a score of 100 against each factor.

Factor No.	Site 1	Site 2	Site 3	Basis
1	70 Km	130 Km	95 Km	Actual data
2	60	80	85	Score out of 100
3	50	70	85	Score out of 100
4	70	45	60	Score out of 100
5	Rs. 20,000,000	Rs. 18,000,000	Rs. 17,000,000	Actual data
6	80	90	70	Score out of 100
7	60	80	80	Score out of 100

Identify the most appropriate site for locating the new factory on the basis of the above information.

9. What is meant by product design ? Explain all issues that ensure efficient and cost effective products ?

SECTION – D

(Compulsory) **(1×15=15)**

10. Zen Copier, manufacturing copier machines require a total assembly time of 66 minutes. Table given below shows the tasks, assembly time and sequence needed.

Tasks	Time (Mins)	Precedence (Sequence)
A	10	–
B	11	A
C	5	B
D	4	B
E	12	A
F	3	C, D
G	7	F
H	11	E
I	3	G, H

The firm has 480 productive minutes of work per day and the production schedule required 40 copiers to be produced from the assembly line per day.

Find :

a) Cycle time.

b) Number of work-stations.

c) Efficiency of the assembly line.

d) What is the employee idleness ?

e) Draw the precedence diagram and the task assignment table and give your comments.

PG – 998

II Semester M.B.A. Degree Examination, June/July 2015
(2007-2008 Scheme)
2.3 : PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours Max. Marks : 75

SECTION – A

1. Answer **any six** questions. **Each** question carries **two** marks. **(6×2=12)**
   a) What is QFD ?
   b) Under what conditions is group technology layout appropriate ?
   c) What is closed loop MRP ?
   d) What is OEE ?
   e) List any two problems faced in using MRP system.
   f) What is ISO 9000 ?
   g) Define housekeeping.
   h) What is six sigma ?

SECTION – B

Answer **any three** questions. **Each** question carries **eight** marks. **(3×8=24)**

2. Discuss the factors influencing plant location criteria.
3. What is purchasing ? Bring out the importance of purchasing. What are the factors considered for evaluating vendor ?
4. Define the term maintenance. Outline the various types of maintenance.
5. What is quality control ? Explain the tools of quality control.
6. What is just-in-time ? Discuss the importance of JIT in manufacturing firms.

P.T.O.

SECTION – C

Answer **any two** questions. **Each** question carries 12 marks. **(2×12=24)**

7. Compute the production cost per piece from the following data.
   i) Direct material per piece = Rs. 2
   ii) Wage rate of Rs. 2,000 per month consisting of 25 working days and 8 hours per day.
   iii) Overheads expressed as a percentage of direct labour costs = 200%.
   iv) The time for manufacturing of 4 pieces of the item was observed during time study. The manufacturing of the item consists of 4 elements a, b, c and d. The data collected during the time study are shown below :

Element	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Element rating on scale (1 - 100)
a	1.2	1.3	1.3	1.4	85
b	0.7	0.6	0.65	0.75	120
c	1.4	1.3	1.3	1.2	90
d	0.5	0.5	0.6	0.4	70

   The personnel, fatigue and delay allowance may be taken as 25%.

8. Discuss the advantages and disadvantages of automation. State the approaches used to decide among automation alternatives.

9. What is material requirements planning ? List out the potential benefits from MRP. Discuss the problems faced in using MRP system.

SECTION – D

Case study (**compulsory**) :

10. Read the following case and answer the questions given below : **(1×15=15)**

Supriya Patil is Maruthi pharmaceutical's sales manager. Thirty-four salespersons report to Patil and sell pharmaceuticals to retail chains and stores throughout 5 states. During the past five years, Patil has put together a team of salespersons

that is second to none in its ability to co-operate. These salespersons appear to be happy with their jobs in all respects, including pay, supervision, attitude towards the company, and morale. Patil feels that she has done everything in her power to make each salesperson in her group happy with his or her particular job.

In recent months, Maruthi's sales have declined 10 percent when compared to comparable periods in the past. Patil has racked her brain to come up with some reason, such as decline in the overall economy or competitor activity, to explain the sales decline. After much investigation, however, Patil has concluded that there has been a drop-off in productivity among the salespersons because of lack of motivation.

Questions :

a) Use management theory to explain how employees who are happy with their jobs could be unproductive.

b) What was Patil doing wrong ?

c) What should Patil do to correct this situation ? Give the specific steps that she should follow in improving the productivity of the sales staff.