

Registration No :

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Total Number of Pages : 02

MBA
18MBA205

2nd Semester Regular Examination 2018-19
OPERATIONS MANAGEMENT

BRANCH : MBA

Max Marks : 100

Time : 3 Hours

Q.CODE : F661

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- a) What do you understand by Push/Pull production?
- b) What are the equipments required for Flexible Manufacturing Systems?
- c) Define Operations Management?
- d) What are the principles of Six-Sigma?
- e) Briefly explain Computer Integrated Manufacturing?
- f) What do you mean by KPI?
- g) What is Activity System Map?
- h) Briefly explain scope of TQM?
- i) Write some benefits of ISO 9000 Series?
- j) Where are the places Poka Yoke works well?

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) Discuss the steps of implementing Kaizen.
- b) What are the aims of Value Engineering?
- c) List and explain the steps of Business Process Reengineering.
- d) Give the frame work of supply chain network and explain its components.
- e) Explain the use of break-even analysis for plant location decision with a suitable example.
- f) What are the components of ERP cost? Explain them.
- g) Illustrate the application of QFD with a suitable example.
- h) Explain the basic principles of JIT manufacturing system.
- i) List and explain the components of Lean Manufacturing.
- j) Discuss the need for controlling quality of goods and services.
- k) Design a single sampling plan with the following parameters. Producer's risk (α) = 0.05; consumer's risk (β) = 0.10; Acceptable quality level (AQL) = 0.04 and Lot tolerance percent defectives (LTPD) = 0.10.
- l) Distinguish between DMAIC and DMADV.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3

A project consists of 8 activities. Precedence relation and activity times are given. Draw the network and complete the critical path and show the ES, EF, LS, LF and slack for each activity in a tabular form. Find out the project duration. (16)

Activity	Immediate predecessor	Activity Time(Weeks)
P	-	12
Q	-	20
R	-	28
S	R	12
T	P,Q	28
U	T,S	12
V	S	8
W	U,V	8

Q4

A job consists of four work elements and all are performed by the same operator. An analyst conducted work sampling to determine the standard time for the job. The duration of the study is one day with two shifts. Each shift has 420 minutes of effective time. The details of observations are summarized in the following table. The total number of acceptable units produced during the study period is 225 units. Determine the standard time by assuming allowance of 12 percent. (16)

Work Element Number	Frequency of Performance	Performance Rating
1	50	90%
2	90	150%
3	75	100%
4	85	115%

Q5

Demonstrate the concept of resource allocation with a suitable example. (16)

Q6

Give the frame work of MRP II and explain it. (16)

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Total Number of Pages : 03

MBA
15MNG205

2nd Semester Regular / Back Examination 2017-18

OPERATIONS MANAGEMENT

BRANCH : MBA

Time : 3 Hours

Max Marks : 100

Q.CODE : C933

Question No1 & No 2 are compulsory and answer any four from the rest.

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

Q1 Fill in the blanks :

(2 x 10)

- In India BIS published -----series of quality system standards In ISO 9000 the total number of clauses (element)are-----.
- chart provides the management with useful record of quality history. The probability of accepting a bad lot which otherwise would have been rejected is called as -----.
- The three important dimension of TQM are quality planning, ----- and -----.
- The quality of performance depends upon ----- and -----.
- lay out is to identify families of components that requires similar processing on a set of machine. ----- layout will have more material handling cost.
- is a process that follows capacity Planning..----- model can be used to map the aggregate planning problem.
- Normal time is the multiple of cycle time and ----- .Standard time is a function of -----time and allowance factor.
- Mean chart is a control chart used to control a ----- quality. P chart used to control----- quality.
- occurs when it costs less per unit to produce or operate at high levels of output.----- occurs when higher level of output cost more per unit to produce.
- A ----- is the percent of capacity held in reserve for unexpected occurrence. ----- occurs when demand variability is magnified at various upstream points in the supply chain.

Q2 Answer the following :

(2 x 10)

- What are the different cycles in Supply Chain Management ?
- Write down any three advantages of Group Technology layout.
- What are the task that project team must perform before the project begins?
- Which layout is suitable for batch and mass Production System?
- Explain types of Cost of Quality.
- Explain advantages of ISO 9000 series.
- The time study of a work operation yield a cycle time of 10 minutes. The analyst rated the worker observed at 80%.The firm uses a 15% allowance factor. Find the standard time.
- What is the basic difference between sequencing and scheduling?
- What are the basic element of JIT?
- What do you mean by pure strategy in the context of aggregate planning? Which strategy is benefit to organisation?

Q3 a) What do you mean by Work Measurement? Explain its objectives and uses What are the different steps in making a time study? (10)

b) A work measurement study was carried out in a firm for 10 hours and following information was generated:
Units Produced=360, Idle time=15%, Performance rating=120%, Allowance time=10% (5)

What is the standard time for a task?

Q4 a) Briefly explain what are the factors affecting Plant Location and also explain centroid locational model. (10)

b) Total output=300units,
Available time=35 hours (5)

Element	A	B	C	D	E	F	G	H
Precedence	NIL	A	B	NIL	D	NIL	F	C,E,G
Time(Minutes)	2	4	5	5	3	1	2	4

(i) Calculate balance efficiency and balance delay.

(ii) Rebalance the line with cycle time of 9 minutes, Find number of workstations, output and balanced efficiency

Q5 a) What is capacity Planning ? Explain its need and objectives. Explain different factors that affect the capacity planning. (7.5)

b) What is aggregate planning? Explain its needs and procedure. What are the costs associated in aggregate planning. (7.5)

Q6 a) Control chart for mean and Range are maintained on certain dimensions of a manufactured part, measured in mm. The sub group size is 4. The values of \bar{x} and R are computed for each sub subgroup. After 20 subgroups $\sum \bar{x} = 412.83$ and $\sum R = 3.39$. Calculate the values of 3 sigma limits for the mean and range charts and estimate the values of σ' on the assumption that the process is in statistical control. [For sub group of 4, factor $d_2 = 2.059$] (5)

b) A certain product is given 100% inspection as it is manicured and the resultant data are summarized by the hour. In the following table, 16 hours of data are recorded. Calculate the control limits using 3 sigma control limit and indicate values are out of control. (5)

Hour	1	2	3	4	5	6	7	8	9
No of units inspected	48	36	50	47	48	54	50	42	32
No of defective units	5	5	0	5	0	3	0	1	5
Hours	10	11	12	13	14	15	16		
No of units inspected	40	47	47	46	46	48	39		
No of defective units	2	2	4	1	0	3	0		

c) Explain Juran Philosophy of TQM. (5)

Q7 a) A project is having the following activities and their time estimates :

(10)

Activity	Predecessors	Optimistic Time(days)	Most likely Time(days)	Pessimistic Time (days)
A	NIL	2	4	6
B	A	8	12	16
C	A	14	16	30
D	B	4	10	16
E	C, B	6	12	18
F	E	6	8	22
G	D	18	18	30
H	F, G	8	14	32

- b)** (a) Draw the network diagram and find the critical path and duration. Find also the total float, free float and independent float for each activity.
 (b) What is the probability that the project will require at least 75 days? [Z value=0.4941]

(5)

Q8 Write Short notes on any THREE :

(5 x 3)

- Push and Pull view of Supply Chain Management
- Different principles of Total Quality Management
- ISO 9000 Series
- Statistical Quality Control

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Total Number of Pages: 03

MBA
15MGN205

2nd Semester Regular/Back Examination 2016-17
OPERATIONS MANAGEMENT

Branch: MBA

Time: 3 Hours

Max Marks: 100

Q.CODE:Z860

Answer any six Questions including Question No 1 & 2 which are compulsory

Q1 Answer the following questions: (2 x 10)

- Post process supervision and in process supervision in Production Planning & Control are known as _____ & _____.
- Sequential Layout and functional layout are known as _____ layout & _____ layout.
- The example of variable chart and attribute chart used on SQC are _____ & _____.
- Flexibility is best in _____ production process and least in _____ production process.
- The two risks involved in acceptance sampling are _____ & _____.
- _____ Production process used to "make to stock" and _____ Production process used for "made to order".
- Job production is suitable for _____ layout and mass production is suitable for _____ layout.
- Rating factor is essential to find out _____ time and allowance is essential to determine _____ time in time study.
- In network diagram of project management, slack and float are used in _____ & _____ technique.
- The different cycle view of supply chain management is _____ & _____.

Q2 Answer the following questions: (2x10)

- What are the different types of production processes?
- What is the suitability of fixed production layout?
- What are the different strategies of aggregate planning?
- Differentiate between C.P.M. & P.E.R.T.
- What is the formula used to calculate the standard time?
- What are the advantages of product layout?
- What are the different symbols used in process chart?
- Define critical path.
- Differentiate between push and pull process of supply chain.
- What is hybrid layout?

- Q3 a) Discuss the different functions of Production Planning & Control. (10)
 b) A time study was made of an existing job to develop new time standard. A worker was observed for 60 minutes. During that period, 40 units are produced. The analysis rated the worker as performing at a 90% performance rate. Allowance in the firm for rest and personal time are 12 percent. (5)

- i) What is the normal time for the task?
 ii) What is the standard time for the task?

- Q4 a) Explain the meaning and significance of plant location. How will you decide the location of a mini steel plant in Orissa? (7)
 b) The Basic Block Company needs to produce 4000 boxes of blocks per 40-hours week to meet upcoming holiday demand. The process of making blocks can be broken down into six work elements. The precedence and time requirements for each element are as follows. Draw a precedence diagram for the production process. Set up a balanced assembly line and calculate the efficiency of the line. (8)

WORK ELEMENT	PRECEDENCE	PERFORMANCE TIME (MINUTES)
A	-----	0.10
B	A	0.40
C	A	0.50
D	-----	0.20
E	C, D	0.60
F	B, E	0.40

- Q5 a) Define work study. Explain the different steps involved in method study procedure. (7)
 b) In a factory, seven jobs are performed on three machines (in order of A,B,C). The time required for each job on each machine is given below. On the basis of the information, identify the optimal sequence and calculate the in and out time for each job on each machine and the total elapsed time (8)

JOBS	MACHINE-1	MACHINE-2	MACHINE-3
A	3	4	6
B	8	3	7
C	7	2	5
D	4	5	11
E	9	1	5
F	8	4	6
G	7	3	12

Q6

Your company develops a new manufacturing process to make its key product. You sample the product and find that some of them are defective, as per the data in the chart. Draw the process control chart for the new manufacturing process ($Z=3$). (15)

Sample	n	Defectives
1	100	4
2	100	1
3	100	3
4	100	3
5	100	3
6	100	4
7	100	3
8	100	11
9	100	1
10	100	2
11	100	3
12	100	2
13	100	2
14	100	10
15	100	3

Q7

Activity	Description	Predecessors	Duration
A	Preliminary design	---	6
B	Evaluation of design	A	1
C	Contract negotiation	---	8
D	Preparation of fabrication plant	C	5
E	Final design	B, C	9
F	Fabrication of Product	D, E	12
G	Shipment of Product to owner	F	3

Determine the total time to complete the project and Draw the critical path

Q8

Write short notes (Any Three)

- Process layout
- Principles of motion economy
- Acceptance Sampling
- Supply chain Management
- Time study procedure

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Total Number of Pages: 03

15 MNG -205

Second Semester Regular/ Back Examination – 2015-16
OPERATION MANAGEMENT

BRANCH(S): MBA

Time: 3 Hours

Max marks: 70

Q.CODE:W 431

Q.1 Fill in the blanks:-

[10 X 2 Marks]

- a) Critical activities are all of the that make up the path.
- b) The term PERT stands for..... evaluation and technique.
- c) Slack is the maximum amount of time the activity can be..... in its completion before it becomes a critical
- d) Deming a Statistics professor at NewYork University in the 1940s went to after World War II to assist Japanese in improving and productivity.
- e) Acceptance Sampling is performed on goods that already exist to determine what percentage of products confirm to and it is executed through a sampling.....
- f) An important tool in Statistical process control is chart, and it is a time-ordered plot of representative statistics obtained from an ongoing process.
- g) A mean control chart sometimes referred to as chart and is based on a distribution.
- h) Total Quality Management may be defined as "managing the entire organisation so that it excels on all dimensions of and that are important to the customer.
- i) ISO 9000 pertains to management. It concerns what an organisation does to ensure that its products and services confirm to its requirements.
- j) ISO 14000 concerns what an organisation does to minimize harmful effects to the caused by its

Q.2 Short answer type question:-

[10 X 2 Marks]

a) A time study analyst wants to estimate the time required to perform a certain job. A preliminary study yielded a mean of 6.4 minutes and a standard deviation of 2.1 minutes. The desired confidence is 95 percent. How many observations will he need if the desired maximum errors is ± 10 percent of the sample mean? (Where $z=1.96$ at 95 % confidence level)

b) What do you mean by standard time?

c) If sum of nine observations is 10.35 minutes and performance rating is 1.13, find out normal time?

d) If sum of nine observations is 10.35 minutes, performance rating of 1.13 using an allowance of 20 percent of job time. Determine the appropriate standard time for the operation.

e) Find out UCL and LCL of mean control chart with following information.

$$\bar{x} = 12.11, z=3, n=4 \text{ observations per sample, and } \sigma=0.02.$$

f) What do you understand by Consumer's Risk?

g) What are the important steps in creating an effective Supply Chain?

h) Compute slack time for the following schedule.

$$ES=8.00, EF=14.00, LS=10.00 \text{ and } LF=16.00$$

i) Define Logistics in brief?

j) Briefly explain Job Shop production process.

Long answer type questions (Answer any four):-

[4 X 15 Marks]

Q.3 What is key difference between Systematic layout Planning (SLP) and CRAFT?

Q.4 A time study was made of existing job to develop new time standards. A worker was observed for 45 minutes. During that period, 30 units were produced. The analyst rated the worker as performing at a 90 percent performance rate. Allowances in the firm for rest and personal time are 12 percent.

a. What is the normal time for the task?

b. What is the Standard Time for the task?

Q.5 What are the basic concepts and principles of Total Quality Management (TQM)?

Q.6 A project consists of nine jobs from A to I, with the following precedence relations and time estimates:-

Job	Predecessor	Time(Days)
A	-	15
B	-	10
C	A,B	10
D	A,B	10
E	B	5
F	D,E	5
G	C,F	20
H	D,E	10
I	G,H	15

- Draw the project network.
- Determine the earliest and latest starting and completion times of jobs.
- Identify the critical path.
- Determine the total float of jobs.
- Determine the total float of the jobs.

Q.7 Explain the process of aggregate planning. What are the different costs incurred in aggregate planning.

Q.8 Write Short Notes on:-

- Economic Order Quantity
- ISO Standards.

Registration No. :

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Total number of printed pages – 3

MBA
MGT 204

Second Semester Regular Examination – 2015

OPERATIONS MANAGEMENT

BRANCH : MBAR

QUESTION CODE : J 369

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10
 - (a) What is the difference between manufacturing and service operation ?
 - (b) Explain the suitability of fixed position layout.
 - (c) What are the different strategies of aggregate planning ?
 - (d) Define critical path.
 - (e) What are the inputs of MRP ?
 - (f) What are the different costs involved in quality control ?
 - (g) What is standard time ?
 - (h) What are the different cycles of supply chain management ?
 - (i) Differentiate between producer risk and consumer risk.
 - (j) What is ISO 9000 ?
2.
 - (a) Explain the importance of Production, Planning and Control (PPC). 5
 - (b) Discuss the steps involved in new product development. 5
3.
 - (a) Explain the meaning and significance of plant location. How will you decide the location of a mini steel plant in Orissa ? 5
 - (b) What are the different types of plant layout ? Differentiate between process and product layout. 5
4.
 - (a) Differentiate between P and Q system of inventory. 3

P.T.O.

- (b) SRISH Tubes is the manufacturer of picture tubes for TV. The following data are details of their operations during 2013-14. Ordering cost-100/- per order, Inventory carrying cost 20% p.a., normal usage-100 tubes per week, Minimum usage-50 tubes, Maximum usage-200 tubes per week, Lead time to supply-6-8 weeks

Calculate :

7

- (i) EOQ if the supplier is willing to supply 1500 units at a discount of 5% of worth accepting.
- (ii) Reorder level
- (iii) Maximum level of stock.
- (iv) Minimum level of stock.

5. (a) Explain the steps involved in stop watch time study procedure. 5
- (b) Consider the following 3 machines and 7 jobs flow shop problem. It is processed on the three machines in the sequence of M1, M2, and M3. Calculate flow time and ideal time 5

Jobs	M1	M3	M2
A	1	3	7
B	3	10	3
C	7	9	8
D	9	11	2
E	4	9	8
F	5	14	6
G	2	12	1

6. A construction company has listed down various activities that are involved in constructing a building. Draw a project network for the above project. Find the critical path and expected project completion time. 4+4+2

Activity	Predecessors	a	m	b
A	—	4	4	10
B	—	1	2	9
C	—	2	5	14
D	A	1	4	7
E	A	1	2	3
F	A	1	5	9
G	B,C	1	2	9
H	C	4	4	4
I	D	2	2	8
J	E,G	6	7	8

- (a) Calculate the expected time and variance for each activity.
- (b) Draw the critical path diagram. Show the early start, early finish time and late start, late finish times.
- (c) Show the critical path.

7. (a) What is TQM ? Discuss different principles associated with it. 3

- (b) The following table gives the average daily production figures for 20 months each of 25 working days. Given that the population standard deviation of daily production is 35 units. Draw a control chart for the mean. 7

210	205	210	212	211	209	219	204	212	209
212	215	208	214	210	204	211	211	203	211

8. Write short notes on any **four** of the following : 2.5×4

- (a) Hybrid layout
- (b) Acceptance Sampling
- (c) Service Package
- (d) Push and Pull view of Supply chain
- (e) Statistical Quality Control (SQC).

Registration No. :

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Total number of printed pages – 4

MBA
MGT 204

Second Semester Regular Examination – 2014

OPERATIONS MANAGEMENT

BRANCH : MBA

QUESTION CODE : F 486

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10
 - (a) What are the different types of production system ?
 - (b) What is SIMO chart ?
 - (c) What the different components of service package ?
 - (d) What is FMS ?
 - (e) What are the different symbols used in flow process chart ?
 - (f) What is MRP (Material Requirement Planning) ?
 - (g) Difference between P and Q type of inventory.
 - (h) What is push and pull view of supply chain management ?
 - (i) What are the advantages of process layout ?
 - (j) Differentiate between CPM and PERT.
2. Discuss the different characteristics of service operations management with suitable example. 10

P.T.O.

3. (a) Discuss the role of production planning and control in operations management. 5
- (b) In a foundry there are seven shops whose coordinates are summarized in the following table. 5

Sl. No.	Existing Facility	Coordinates of centroid
1	Sand plant	10,20
2	Moulding shop	30,40
3	Pattern shop	10,120
4	Melting shop	10,60
5	Fetling shop	30,100
6	Gouging shop	30,140
7	Annealing shop	20,190

The company is interested in locating a new costly firefighting equipment in the foundry. Determine the minimax location for the new equipment.

4. Consider the following problem involving activities from A to J.

Job	Immediate Predecessor(s)	Duration
a	—	1
b	a	4
c	a	5
d	b	1.5
e	b	3
f	c	3.5
g	c	1.5
h	d	1
i	e, g	2.5
j	f, h	4

- (a) Construct the CPM network
- (b) Determine the critical path.
- (c) Compute total floats, free floats and independent float for non-critical activities. 10

5. (a) Define logistics and supply chain management. Explain the different cycle views of supply chain. 5
- (b) Annual demand for an item is 4800 units. Ordering cost is Rs 500 per order. Inventory carrying cost is 24% of the purchase price per unit, per year. The price breaks are shown as.

Quantity	Price
$0 < Q_1 < 1200$	10
$1200 < Q_2 < 2000$	9
$2000 > Q_3$	8

Find the optimal order size. If the order cost is changed to Rs 300.00 per order, find the optimal order size. 5

6. (a) Discuss the method study procedure and explain the importance of man-machine chart. 5
- (b) In a factory, seven jobs are performed on three machines (in order of A, B, C). The time required for each job on each machine is given below. On the basis of the information, identify the optimal sequence and calculate the in and out time for each job on each machine and the total elapsed time. 5

JOBS	MACHINE-1	MACHINE-2	MACHINE-3
A	3	4	6
B	8	3	7
C	7	2	5
D	4	5	11
E	9	1	5
F	8	4	6
G	7	3	12

7. (a) Define quality control. Explain the importance of different control charts. 5
- (b) Five samples were taken randomly from manufactured lot of an item and three measurements were taken on each sample. The readings are shown in the table given below. Calculate the control on \bar{X} and R charts and draw the charts. 5

Sample No	Three measurements per sample		
	I	II	III
1	0.488	0.489	0.505
2	0.494	0.495	0.499
3	0.498	0.515	0.487
4	0.492	0.509	0.514
5	0.490	0.508	0.499

8. Write short notes on any **two** of the following :

5×2

- (a) ABC analysis
- (b) Priority Dispatching Rules
- (c) TQM
- (d) Time Study procedure
- (e) Relationship Diagram in plant layout.

JOBS	MACHINE-1	MACHINE-2	MACHINE-3
A	3	4	8
B	8	3	7
C	7	2	2
D	4	8	7
E	9	1	2
F	8	4	8
G	7	3	12

Registration No. :

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Total number of printed pages – 3

MBA
MBA 204

Second Semester Examination – 2013

PRODUCTION AND OPERATION MANAGEMENT

QUESTION CODE : A 463

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 and 2 which are compulsory and any **four** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2 × 10
 - (a) Define standard time
 - (b) What is the importance of vertical integration ?
 - (c) What are the different allowances used in time study ?
 - (d) What are the limitations of product layout ?
 - (e) What are the different symbols used in flow process chart ?
 - (f) What is the difference between EOQ and EBQ ?
 - (g) What are the different estimation times involved in PERT ?
 - (h) What is P and Q systems of inventory ?
 - (i) What are the errors involved in acceptance sampling ?
 - (j) What is the difference between designed capacity and effective capacity ?
2. (a) What is TQM ? Briefly discuss the principles associated with TQM. 3

P.T.O.

- (b) A machine is working to specification of 12.58 ± 0.05 mm. The study of 50 consecutive pieces shows the following measurements put into 10 groups of 5 each. 7

1	2	3	4	5	6	7	8	9	10
12.62	12.63	12.62	12.61	12.59	12.57	12.57	12.59	12.63	12.70
12.6	12.56	12.56	12.66	12.58	12.63	12.56	12.59	12.60	12.71
12.62	12.60	12.57	12.62	12.57	12.59	12.61	12.60	12.62	12.63
12.61	12.59	12.58	12.61	12.59	12.59	12.59	12.59	12.63	12.56
12.65	12.63	12.63	12.60	12.56	12.59	12.59	12.62	12.66	12.58

Determine the process capability and 3 sigma limit for \bar{X} chart.

3. (a) Discuss the different steps involved in new product development. 3
 (b) A manufacturing purchases item in lots of 1000 units which is a requirement for one quarter. The cost per unit is Rs. 200, the order cost is Rs 100 per order, the quarterly inventory carrying cost rate is 5%. Then calculate
 (i) EOQ
 (ii) Total annual cost.
 (iii) Saving due to EOQ purchase 7
4. Define production and operation management (POM). Discuss the different functions of Production, Planning, and Control (PPC). 10
5. Write short note on any **two** of the following : 5×2
 (a) Hybrid layout
 (b) ABC Analysis
 (c) Stopwatch Time study procedure
 (d) Priority dispatching rules of scheduling.
6. (a) Explain the different basic strategies involved in the capacity planning. 3
 (b) In a factory, seven jobs are performed on three machines (in order of A,B,C). The time required for each job on each machine is given below. On the basis of the information, identify the optimal sequence and calculate the in and out time for each job on each machine and the total elapsed time. 7

JOB	MACHINE-1	MACHINE-2	MACHINE-3
A	3	4	6
B	8	3	7
C	7	2	5
D	4	5	11
E	9	1	5
F	8	4	6
G	7	3	12

7. (a) Differentiate between breakdown and preventive maintenance. 3
 (b) Frequency of breakdown is as follows : 7

Number of Breakdowns	0	1	2	3
Frequency of occurrence	20	30	50	10

If the average cost of a breakdown is Rs. 2000 and the cost of preventive maintenance is Rs. 2500 per month, should we use preventive maintenance ?

8. Consider the following initial layout with unit cost matrix. Use the CRAFT pair wise interchange technique to obtain the desirable layout. 10

	4	6	8
6	A	B	C

Initial Layout

To → From ↓	A	B	C
A	—	1	8
B	2	—	1
C	6	2	—
Flow Matrix			

Registration No. :

1 1 0 6 2 5 8 0 1 8

Total number of printed pages – 4

MBA
MBA 204

Second Semester Examination – 2012

PRODUCTION AND OPERATION MANAGEMENT

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 & 2 which are compulsory and any **four** from the rest.
The figures in the right-hand margin indicate marks.

1. Answer the following questions :

2 × 10

(a) What are the different basic functions involved in production, planning and control cycle ?

(b) What are the different types of production processes ? Which production process is more flexible than others ?

(c) Which is type of layout is suitable for mass production ?

(d) What are the limitations of process layout ?

(e) What is the importance of FMS (Flexible Manufacturing System) ?

(f) What are the different strategies of aggregate planning ?

(g) What is MRP ? What are the different inputs of MRP ?

(h) What is quality of design ?

(i) What is project management ? Explain the different phases of project management.

(j) What is the difference between CPM and PERT ?

P.T.O.

2. A project has the following list of activities along with their time of completion, precedence relationship, normal and crash activity time and normal and crash costs associated with it. 10

Activity	Preceding Activity	Required time (weeks) NORMAL	Required time (weeks) CRASH	Costs (Rs.) NORMAL	Costs (Rs.) CRASH
A	—	3	2	18000	19000
B	—	8	6	600	1000
C	B	6	4	10000	12000
D	B	5	2	4000	10000
E	A	13	10	3000	9000
F	A	4	4	15000	15000
G	F	2	1	1200	1400
H	C, E, G	6	4	3500	4500
I	F	2	1	7000	8000

- (a) Draw the project network path and find the critical path.
- (b) If a deadline of 17 weeks to be imposed for completion of the project, which activities are to be crashed and what would be the additional cost ?

3. What are the different strategies of production and operation management (POM)? Discuss the similarities between manufacturing and service. Explain the different functions of POM. 2+3+5

4. (a) Explain the meaning and significance of plant location .How will you decide the location of a mini steel plant in Orissa ? 3
- (b) The Basic Block Company needs to produce 4000 boxes of blocks per 40-hours week to meet upcoming holiday demand. The process of making blocks can be broken down into six work elements. The precedence and time requirements for each element are as follows. Draw a precedence

diagram for the production process. Set up a balanced assembly line and calculate the efficiency of the line. 7

WORK ELEMENT PERFORMANCE TIME (MINUTES)	PRECEDENCE
A 0.10	-----
B 0.40	A
C 0.50	A
D 0.20	-----
E 0.60	C, D
F 0.40	B, E

5. Define 'work study'. What are the objectives of work study ? Explain the different steps involved in method study procedure. 10

6. Write short notes on any **two** : 5×2

- (a) Fixed position layout
- (b) Principles of motion economy
- (c) Acceptance Sampling
- (d) JIT

7. Your company develops a new manufacturing process to make its key product. You sample the product and find that some of them are defective, as per the data in the chart. Draw the process control chart for the new manufacturing process ($Z = 3$). 10

Sample	n	Defectives
1	100	4
2	100	1
3	100	3
4	100	3
5	100	3
6	100	4
7	100	3
8	100	11
9	100	1
10	100	2
11	100	3
12	100	2
13	100	2
14	100	10
15	100	3

8. A firm has planned to manufacture fire extinguisher whose product structure consists of one unit of cylinder, one unit of valve assembly, and two units of handle bars. The master production schedule (MPS) and details of bills of material (BOM) tables are given below. Do the MRP calculations for handle bars to satisfy the MPS.

10

Master Production Schedule

Week	1	2	3	4	5	6	7	8
Demands	100	—	150	140	200	140	—	300

Details of Bill of Materials

Parts required	Order of quantity	No of units	Lead time (in week)	Stock on hand
✓ Fire extinguisher	300	1	1	150 ✓
✓ Cylinder	450	1	2	350 ✓
Valve assembly	400	1	1	325
Handle bars	700	2	1	650

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