



**INDIAN INSTITUTE OF MATERIALS MANAGEMENT**  
**Post Graduate Diploma in Materials Management**  
**Graduate Diploma in Materials Management**

**Dec 2011**

**PAPER No. 8**  
**Operation Management**

**Date : 13.12.2011**

**Max. Marks :100**

**Time : 10.00 a.m. to 1.00 p.m.**

**Duration : 3 Hrs.**

**Instructions :**

1. From Part A – answer all questions ( compulsory). Each sub questions carries 1 mark. **Total : 32 Marks**
2. From Part B – Answer any 3 questions out of 5 questions. Each sub-question carries 16 marks. **Total : 48 Marks**
3. Part C is a case study (compulsory) with questions. Read the case study carefully and answer the questions  
**Total: 20 Marks**
4. Please read the instructions given in the answer sheet

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**Part – A (attempt all questions)**

1. Select the correct option:
  - a. Which of the following is incorrect about products and services?
    - i. Products are tangible, services are intangible.
    - ii. Products cannot be inventoried, services can be inventoried.
    - iii. Products require greater fixed cost, services require less fixed cost.
    - iv. All of the above.
  - b. Production involves value addition through:
    - i. Changing the shape and size of raw materials.
    - ii. Changing the place of availability of the product.
    - iii. Changing the time of availability of the product.
    - iv. Any of the above.
  - c. Which of the following statements is true regarding product layout?
    - i. It is used to create customised products.
    - ii. It increases the cost of inventory.
    - iii. Stoppage of work may result in the event of breakdown of a machinery.
    - iv. None of the above.
  - d. If an operator works with 100% efficiency then actual time will be equal to:
    - i. Normal time.
    - ii. Standard time.
    - iii. Both of the above.
    - iv. None of the above.

- e. Which of the following is not a strategy for managing service demand?
  - i. Segmenting customers.
  - ii. Reservation system.
  - iii. Differential pricing.
  - iv. Customer participation.
- f. Usage of overtime and idle time is used as a strategy for:
  - i. Production planning.
  - ii. Production control.
  - iii. Aggregate planning.
  - iv. None of the above.
- g. Fish-bone diagram is also known as:
  - i. Check sheets.
  - ii. Histograms.
  - iii. Scatter diagrams.
  - iv. Cause and effect diagrams.
- h. Under VED classification, 'V' stands for
  - i. Vital.
  - ii. Value.
  - iii. Virtual.
  - iv. None of the above.

2. Match the following:

Column "A"	Column "B"
a. Services	i. Juran
b. Production	ii. High fixed cost
c. Availability of labour	iii. Perishable
d. Subcontracting	iv. Value addition
e. FSN classification	v. Combination of product and process layout
f. Pareto chart	vi. Aggregate planning strategy
g. Cellular layout	vii. Factor affecting Plant location decision
h. Product layout	viii. Inventory control technique

3. Fill in the blanks:

- a. \_\_\_\_\_ cannot be inventoried, products can be inventoried.
- b. \_\_\_\_\_ was developed by Dr. Karou Ishikawa.
- c. Job analysis comprises \_\_\_\_\_ and \_\_\_\_\_.
- d. Shigeo Shingo is associated with the concept of \_\_\_\_\_.
- e. Availability of raw materials is one of the factors considered while taking \_\_\_\_\_ decision.
- f. \_\_\_\_\_ is a statistical quality control technique used in deciding to accept or reject a shipment of input or output.
- g. Cause and effect diagrams were developed by \_\_\_\_\_.

- h. Assembly line is suitable for a narrow range of \_\_\_\_\_ products in high volumes.
4. Give the full forms:

a.	FSN	b.	CPM	c.	TPM	d.	EOQ
e.	SCM	f.	DMAIC	g.	DPMO	h.	PPM

**Part – B (answer any 3)**

5. Discuss the evolution of the discipline of production management. Differentiate between production management and operations management.
6. Define group technology layout. How is it superior to both product as well as process layout.
7. Draw the network diagram. Find critical path and project duration:

Activity	Duration
1-2	3
1-3	5
1-4	4
2-5	2
3-5	3
4-6	9
5-7	8
3-6	7
6-7	9

8. a. What are control charts? How do they help in controlling quality?
- b. Explain the various qualitative factors to be considered while taking a plant location decision.
9. Write short notes on **ANY FOUR** of the following:
- Work study
  - Job analysis
  - Plant layout for services
  - Total Quality Management
  - Preventive maintenance

**Part – C (compulsory)**

10. Explain the Johnson's algorithm for a sequencing problem.

- a. Can the algorithm always provide the solution? Explain the exceptions, if any.
- b. Apply the algorithm to find the optimum sequence in the following case:

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>M1</b>	5	7	6	9	5
<b>M2</b>	3	1	4	5	3
<b>M3</b>	3	7	5	6	7

- c. Find the minimum time in which the above five jobs can be completed on the three machines.
- d. Does the above problem have more than one possible solutions? If yes, explain its implications.

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