

Model Question

Eighth semester B.Tech. Degree Examination
(2008 scheme)

Branch: INDUSTRIAL ENGINEERING

08.801: Facilities Planning & Management (N)

Time: 3 Hours

Max. Marks 100

Instruction : Answer all questions in Part-A and any one full question from each Module in Part-B

PART-A

1. Explain dimensional analysis method for evaluation of plant location?
2. What is process layout?
3. Explain the working of CRAFT.
4. What is REL chart?
5. What are the functions of Warehousing?
6. Define Room Cavity Ratio (RCR) & Ceiling Cavity Ratio (CCR) with respect to lighting system design for factories.
7. Define unit load concept.
8. Name any four AGV system.
9. Illustrate the difference between group replacement & individual replacement policy.?
10. Explain the importance of humidity in facilities design.

(10×4=40 marks)

PART-B

Module – I

11. a. What are the factors to be considered for plant location?

(10 marks)

b. Consider the layout of five equal-sized departments. The material flow matrix is given in the figure below.

- i. Develop the final adjacency graph using the graph – based procedure
- ii. Develop a block layout based on the final adjacency graph obtained.

	A	B	C	D	E
A	-	0	5	25	15
B	0	-	20	30	25
C	0	25	-	40	30
D	30	5	20	-	0
E	20	30	5	10	-

(10 marks)

12. The task timings and precedence relationship are given below.

Task	Time (min)	Preceding Task
A	10	None
B	24	None
C	17	A
D	49	A
E	12	C
F	14	C
G	27	B
H	9	E
I	20	F, G
J	23	D, H, I
K	36	I
L	18	J, K

- i. Draw the precedence diagram
- ii. Group the tasks in to 5 station assembly line.
- iii. What is cycle time?
- iv. What is line efficiency?

(20 marks)

Module – II

13. a. Explain receiving and shipping principles with regards to warehouse operations. (12 marks)
- b. What are the different causes of accidents in industries. (8 marks)
14. a. Explain the procedure followed in designing lighting systems in industries. (10 marks)
- b. Briefly explain the factors to be considered for office facilities. (10 marks)

Module – III

15. a. Explain the material handling principles. (10 marks)
- b. What are the important factors to be considered for designing of AS/RS? (10 marks)
16. A unit of electrical equipment is subject to failure. The probability distribution of its age at failure is :

Age at failure (weeks)	2	3	4	5
Probability	0.2	0.4	0.3	0.1

Initially 10,000 new units are installed any unit which fails is replaced by a new unit at the end of the week in which it fails.

- i. Calculate the expected number of units to be replaced in each of weeks 1 to 7. What rate of Failures can be expected in the long run?
- ii. Among the 10,000 installed units at the start of the week 8, how many can be expected to be aged zero, week, 1 week, 2 weeks, 3 weeks or 4 weeks? Compare this with the expected frequency distribution in the long run?
- iii. Replacement of individual units on failure costs Rs. 5 each. An alternate policy is to replace all units after a fixed number of weeks (at a cost of Rs.30) and to replace any units failing before the replacement week at the individual cost of Rs.5 each. Should this preventive policy be adopted? If so, after how many week should all units be replaced?

(20 marks)

MODEL QUESTION PAPER

(Pages: 2)

Reg. No.....

Name.....

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL /MAY 2012

(2008 scheme)

08.802: INDUSTRIAL SCHEDULING (N)

Duration: Three Hours

Maximum: 100 Marks

Answer **all** questions in Part A and **any one** question from **each** module in Part B.
Any missing data shall be assumed. All assumptions must be clearly stated.

PART – A

1. Define scheduling with an example.
2. How do you generally describe a scheduling problem?
3. Illustrate the notation $1 | s_{jk} | C_{max}$, which describes a scheduling problem.
4. What do you mean by Tardiness?
5. What are the steps for McNaughton's Algorithm?
6. What do you mean by 'Linear precedence structure' with reference to flow shop scheduling?
7. What are the assumptions of Johnson's algorithm?
8. Explain the concept of semi-active schedules.
9. List any four heuristic approaches for job shop scheduling problems.
10. Enlist any four model assumptions which typify the simulation studies of dynamic job shop model.

(4 x 10 = 40 marks)

PART B

MODULE – I

11. Consider the instance of $1 || \sum T_j$ with the following processing times and due dates.

Find all optimal sequences.

(20 marks)

Jobs	1	2	3	4
p_j	7	6	8	4
d_j	8	9	10	14

OR

12. Give an example of a measure of performance that is not regular. Construct a single-machine problem in which this measure of performance is optimized by a schedule that is not a permutation schedule. (20 marks)

MODULE – II

13. Consider $F2 \mid \text{block} \mid C_{\max}$ with zero intermediate storage and four jobs. Find the optimal sequence.

Jobs	1	2	3	4
p_{1j}	2	5	5	11
d_{2j}	10	6	6	4

(20 marks)

OR

14. Explain the dimensions of the integer programming formulation for the minimization of M in the following types of problems?
- (i) 4 jobs, 3 machines.
 - (ii) 20 jobs, 10 machines. (20 marks)

MODULE – III

15. Explain in detail the application of branch and bound approaches to find a solution in job shop problem. (20 marks)

OR

16. Write short notes on the following:
- (i) Dynamic job shop models
 - (ii) Stochastic single machine models. (20 marks)

-----UNIVERSITY MODEL QUESTION PAPER-----

(two pages)

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION (2008 SCHEME)

BRANCH: INDUSTRIAL ENGINEERING

08.803: SUPPLY CHAIN MANAGEMENT (N)

PART - A

Answer *all* questions.

Each question carries *four* marks

- 1) Discuss about supply chain performance measures.
- 2) What is supply chain profitability? Explain briefly.
- 3) List out and explain major supply chain drivers.
- 4) Explain about responsiveness in supply chains.
- 5) How we can do aggregate planning in convergent chains.
- 6) Discuss the major factors affecting network design.
- 7) How safety inventory can estimate in supply chains?
- 8) What is the significance of reverse bullwhip effect?
- 9) Explain any two fill rate measures used in retail chains.
- 10) Distinguish between 3PL and 4PL with live examples.

PART -B

Answer one full question from each module.

Each full question carries twenty marks.

Module -I

- 11a) Explain the major factors increasing supply chain efficiency.
- b) Discuss about strategic fitting of performance in supply chains.

OR

- 12a) Discuss the contexts of convergent and divergent supply chains exist.
- b) List out and explain the factors improving supply chain responsiveness.

Module -II

- 13a) Discuss the common aggregate planning strategies used in various stages of supply chains.
- b) Find the optimum facility location with the following data.

(.....2)

-2-

Markets	X_n	Y_n	D_n	F_n
A	150	230	23	5
B	230	210	12	6
C	112	123	11	4
D	(-)12	121	09	4
E	111	12	08	3
F	113	113	18	4

OR

- 14a) Discuss about any two supply chain models used for facility location.
 b) Explain any two decision support models used in outbound SCM.

Module -III

- 15a) Find the optimal order frequency and size for the following three product joint order case. Take the fixed part of ordering cost as Rs. 500/-.

Product	(m)demand	unit cost	(v)order cost	carrying cost
P1	10000	3000	1000	10 %
P2	15000	3500	1500	12 %
P3	20000	4000	2000	11 %

- b) Find the optimum schedule and route for the following distribution problem using savings matrix method. (vehicle capacity 100 units and No. of vehicles 3)

	X	Y	demand
DC	0	0	44
C1	9	8	36
C2	6	7	45
C3	(-)3	6	39
C4	7	7	37
C5	7	9	41
C6	6	(-)3	36

OR

- 16a) List out and briefly explains product fill rate, order fill rate and cycle service level with examples.
 b) The weekly demand of a product at a retailer is normally distributed with a mean of 2,50,000 and SD of 15,000. The distributor takes two weeks to fill an order placed by the retailer. Evaluate the safety inventory and average inventory carried out by the retailer for having 95% product fill rate.

MODEL QUESTION PAPER

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION

08.804 MANUFACTURING SYSTEMS(N)

Time:3 Hrs

Max.marks:100

Instructions:Each question in part A carries 4 marks.Answer all questions from part A .Each question in part B carries 20 marks.Answer any one question from each module in part B.

PART A

- 1.Classify various manufacturing systems.
- 2.Give the basic principles of cell formation.
- 3.What is mean by production flow analysis?
- 4.Briefly describe turnover oriented plant architecture.
- 5.What is mean by CONWIP?
- 6.What are the various implementation issues related to JIT?
- 7.Enumerate various flexibilities offered by FMS?
- 8.What is drum-rope-buffer approach?
- 9.Enlist various principles of synchronous manufacturing.
- 10.What is capacity constraint resource?

(10X4=40 marks)

PART B

MODULE I

- 11.a)Describe various laws in manufacturing. (10 marks)
b)Discuss various issues in Cell design. (10 marks)
- 12.a)Discuss performance measurement and control of CMS. (10 marks)
b)Describe product oriented plant architecture. (10 marks)

MODULE II

- 13.a) Explain in detail Japanese approach to productivity. (10 marks)
- b) Describe various types of Kanban. (10 marks)
- 14.a) Explain MRP Vs Kanban and EOQ Vs Kanban. (10 marks)
- b) Describe the requirements of JIT. (10 marks)

MODULE III

- 15.a) Explain in detail FMS architecture. (10 marks)
- b) Discuss various development and implementation issues of FMS. (10 marks)
- 16.a) Describe the evolution of Synchronous Manufacturing. (10 marks)
- b) Explain constraint based planning in SM. (10 marks)
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Model question paper

Eighth Semester B.Tech. Degree examination April/May 2012

Elective-IV

08-805.4 MANAGERIAL ECONOMICS (N)

(2008 Scheme)

Time: 3hrs

Maximum: 100 Marks

Part-A

Answer all questions

- 1 Describe different stages of economic evolution?
- 2 What is elasticity? How can it measured
- 3 What are giffen goods? Explain their price demand behavior.
- 4 Why forecasting is important for business decision making?
- 5 Explain the concept of production function with the help of two inputs and one output.
- 6 What do you understand by the term output elasticity?
- 7 Differentiate between implicit cost and opportunity cost?
- 8 What are the factors affecting pricing decision?
- 9 What is kinked demand curve? Explain.
- 10 What you mean by price discrimination? (10x4=40 marks)

Part-B

Answer any one full question from each module

Module I

- 11 a .Identify the areas of decision making where managerial economics prescribes specific solution for business problems.
- b. The demand and cost function of a firm are given by $Q=8-P$ and $C=Q^2-4Q+12$.
Find out the out put and price at which profit will be maximum?

- 12 a. Explain the theory of profit maximization. State assumptions of the model and derive the necessary condition for profit maximization?
- b. What is the law of diminishing marginal utility? Explain the law with a practical example.

Module-II

- 13 a. Define return to scale? What are the significances of increasing, decreasing and constant returns to scale?
- b. What are isoquants? Describe the characteristics of isoquants.
- 14 a. Explain different methods of estimating cost-output relationships?
- b. What is mean by production? Define production function and describe underlying assumptions.

Module-III

- 15 a. what are sources of monopoly? Under what condition monopoly justified.
- b. What are the characteristics of perfect competition? Distinguish between pure and perfect competition.
- 16 a. Explain pricing decisions under the conditions of perfect competition? Can a firm make profits in both the short-run and long-run?
- b. How do indirect taxes effects private businesses? Explain with examples from India.

(3x20=60 marks)

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION (2008 SCHEME)

BRANCH: INDUSTRIAL ENGINEERING

ELECTIVE: V (Model question paper)

08.806.1: FLEXIBLE MANUFACTURING SYSTEMS (N)

Answer *all* questions from part A

Answer any *one* full question from each module from part B.

Total time: 3 hrs.

Total marks: 100

PART – A

1. Explain the functions of FMS host computer.
2. Discuss various approaches to modeling FMS.
3. Explain various controls used in NC machines.
4. Distinguish between CNC and DNC?
5. Explain the methods for guiding AGVS.
6. Explain about work volume of a robot.
7. Explain different types of AS/RS.
8. Explain FMS work station with sketch.
9. Discuss economics of FMS.
10. Briefly explain artificial intelligence.

(10x4=40)

PART- B

Module –I

11. Discuss various types of FMS with sketches.

OR

- 12.a Explain about work handling equipment.

- b. Discuss in detail about FMS concept.

Module -II

13. Explain in details about Petri-net modeling techniques.

OR

14. Explain in detail about the advantages of palletisation and containerization.

Module -III

15. Explain in detail about cellular manufacturing.

OR

16. Differentiate between G code and M Code.

(3x20=60)
