Khulna University of Engineering & Technology
Department of Industrial Engineering and Management
B.Sc. Engineering 4th Year 1st Term, 2016
IPE 4019
Logistics and Supply Chain Management

Full Marks: 210   Time: 3 hrs

N.B: *i) Answer any THREE questions from each section in separate scripts.*
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION–A

1. (a) What is meant by a supply chain? Briefly describe the supply chain decision phases that have significant impact on the profitability of supply chain.   15

   (b) Explain the relation between supply chain responsiveness and supply chain efficiency.   08

   (c) How does product life cycle affect on strategic fit? Explain.   12

2. (a) *"Supply chain design is an art of science"*- Justify the statement.   08

   (b) Develop a framework for making network design decisions.   12

   (c) Sandy Co has 2 facilities. They distribute sand from their two facilities to three different customer regions. Each plant has a specific maximum weekly supply of available sand and each region has an expected minimum weekly required demand. The cost incurs from distance and other factors.   15

   Formulate the above situation to meet demand at the lowest planned distribution costs and show the formulation on a hypothetical spreadsheet.

3. (a) Write down the possible strategic roles for various facilities in a global supply chain network.   10

   (b) Develop a model for facility location problem and explain all the constraints of the model.   12

   (c) What do you meant by aggregate planning? List down the name of information required for an aggregate planner.   07

   (d) Write short notes on-   06

        i)   Chase strategy

        ii)   Level strategy

4. (a) Derive the following formula for which lots are ordered and delivered jointly-   10

$$n^* = \sqrt{\frac{\sum_{i=1}^{k} D_i h C_i}{2S}}$$

   Consider the usual meaning of the symbols.

   (b) Surge Electric uses 4,000 toggle switches a year. Switches are priced as follows. It costs approximately $30 to prepare an order and carrying cost are 40 percent of purchase price per unit on an annual basis. Determine the optimal order quantity and the total annual cost.   12

Range	Unit price
1-499	$0.90
500-999	$0.85
1000 or more	$0.80

   (c) Explain how does a coordinated supply chain maximize the profits?   13

SECTION–B

5. (a) List the name of modes of transportation in supply chain. Describe the role and applicability conditions of any two of them.   12

   (b) *"TL operations have relatively low fixed costs"*- Justify the statement.   10

   (c) Why tailored transportation system is not economically feasible? Explain.   13

6. (a) How do third parties increase the supply chain surplus?   15

   (b) Which factors affect highly for supplier scoring and assessment? Describe.   15

   (c) Write short notes on buyback contracts.   05

7. (a) What are the roles of IT in a supply chain? 10

(b) Write down the characteristics of information for making supply chain decisions and for which supply chain drivers information is essential highly. 12

(c) How can IT manage risks in a supply chain? 13

8. (a) What is bullwhip effect? Describe it with necessary figures. 11

(b) Explain briefly the obstacles to achieve coordination in supply chain. 12

(c) Describe the causes and effects of rationing and shortage gaming. 12

Khulna University of Engineering & Technology
Department of Industrial Engineering and Management
B.Sc. Engineering 4thYear1stTerm, 2016
IPE 4029
Marketing Management

Full Marks: 210   Time: 3 hrs

N.B:i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION–A

1. (a) Define marketing for the 21st century. *"Marketing means playing game with the human psychology"*- Explain the statement.   11
   (b) Explain the structure of flows in the rice market.   12
   (c) Differentiate simple marketing system and modern marketing system with suitable figure.   12

2. (a) What is SBU? How can you establish it?   10
   (b) *"Market definition of a business is superior to product definition"* -Justify the argument with example.   12
   (c) Discuss the consumer buying process for refrigerator.   13

3. (a) *"The absence of dissatisfies is not enough; the satisfiers must be present to motivate a purchase"*-Justify the statement.   15
   (b) Discuss post purchase use and disposal.   10
   (c) Explain the effective segmentation criteria.   10

4. (a) *"Marketing is both an art and a science"*-Explain.   10
   (b) Discuss new marketing realities.   10
   (c) Write short notes on-   15
       i) Niche marketing
       ii) Marketing mix
       iii) Needs, Wants, Demands

SECTION–B

5. (a) Define non-durable product. Construct a product hierarchy for *'photocopy machine'*.   11
   (b) How can installation and customer training make service differentiation?   12
   (c) Discuss the importance of packaging of soap.   12

6. (a) Discuss pricing objectives viz. maximum market skimming and maximum current profit.   10
   (b) What do you mean by 30% ROI? Discuss auction-type pricing.   12
   (c) Discuss the objectives of advertisements of phone operator GrameenPhone.   13

7. (a) What is sales promotion? Discuss the sales promotion of a restaurant.   12
   (b) Explain the works of public relation department.   12
   (c) What is advertising? How can you measure the effectiveness of a media for advertising purpose?   11

8. (a) Mention the importance of market entry timing of an android application.   08
   (b) What is IP? Discuss its importance for a country.   07
   (c) What is marketing ethics? How can it contribute to the inflation in the month of Ramadan?   10
   (d) Discuss the reasons of direct investment.   10

Khulna University of Engineering & Technology
Department of Industrial Engineering and Management
B.Sc. Engineering 4th Year 1st Term Examination, 2016

IPE 4109

Management Information System Analysis and Design

Full Marks: 210   Time: 3hrs

N.B: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION–A

1. (a) Define data and information. What is the difference between management information system and information system? — 12

   (b) What are the qualities of information? Why do we need a computer based information system? — 15

   (c) If an information system is to be designed for a mobile phone operator, what would be the tactical information? — 08

2. (a) What are the inputs and outputs of the system design phase? — 12

   (b) How should an analyst's preparation before an interview? — 10

   (c) Define data dictionary. Draw a logical data flow diagram for Store process. — 13

3. (a) Distinguish among technical, operational and economic feasibility. — 10

   (b) What is payback period? Describe cost-benefit analysis. — 13

   (c) What are the symbols used in DFDs? Explain with example. — 12

4. (a) What is context diagram? How can the physical DFD be differentiated from logical DFD? — 10

   (b) An organization maintains an employee file in which each record has the following data: — 18
   (Employee No. , employee name, employee gross pay)
   It has been decided to increase the pay as per the following formula:
   i) For pay of Rs. 1000 or less increase 15%
   ii) For pay of more than Rs. 1000 but up to Rs. 2500 increase 10%
   iii) For pay over Rs. 2500 increase 5%
   Write the above processing using i) Structured English ii) A decision table.

   (c) What are the ways of selecting structured decision analysis techniques? — 07

SECTION–B

5. (a) What is a Relationship? In what way it is different from an entity? — 07

   (b) Draw an E-R diagram showing the cardinality for the following: — 12
   i) A car is owned by a person. The person can own many cars.
   ii) A part is used in many products and a product uses many parts.
   iii) A teacher advises many students. A student has only one advisor.

   (c) Why should relations be normalized? Explain. — 10

   (d) What is the difference between 2NF and 3NF? — 06

6. (a) What are the requirements of a good coding scheme? — 07

   (b) Write an algorithm for generating the modulus-11 code. — 10

   (c) List the important points to keep in mind while designing the format of a report. — 12

   (d) What is meant by business graphics? — 06

7. (a) Define database of an organization. What problems may arise with file-based system? — 13

   (b) What are the basic requirements of a successful database system? — 05

   (c) What requirements should be met to ensure security in information system? — 05

   (d) What types of output will be used for the following? Explain with reasons. — 12
   i) Strategic management ii) Tactical management iii) Operational management

8. (a) Briefly describe the different types of control techniques used in information system. — 15

   (b) What is meant by EDI? Draw a flow diagram to show the steps to be followed from EDI. — 10

   (c) Write short note on i) E-commerce ii) LAN. — 10

Khulna University of Engineering & Technology
Department of Industrial Engineering and Management
B.Sc. Engineering 4th Year 1st Term, 2016
IPE 4125
Machine Tools

Full Marks: 210   Time: 3 hrs

N.B: i) Answer any THREE questions from each section in separate scripts.
ii) Figures in the right margin indicate full marks.
iii) Assume reasonable data if missing any.

SECTION–A

1. (a) Define a machine tool. What are the basic features of a machine tool?   10
   (b) What is a slide way? Make neat sketches of three different forms of slide and slide ways. Briefly explain them.   15
   (c) Let, $N_{min} = 50\ rpm, N_{max} = 450$ rpm and $n = 6$, calculate the spindle speeds for logarithmic series.   10

2. (a) What are the basic elements of a machine tool drive? Differentiate between stepped and stepless drive.   12
   (b) What is PIV drive? Describe speed gear boxes on the basis of general layout.   13
   (c) A solid steel gear having 24 teeth is to transmit a maximum torque of 20 Kg-m. Determine the module and width of gear.   10

3. (a) What is speed structure diagram? Draw speed spectrum in geometric and arithmetic progression and also differentiate them.   12
   (b) Describe different types of direction control valve as used in the hydraulic system.   13
   (c) Differentiate ray diagram and saw diagram. Shows that speed loss remain constant in geometric progression.   10

4. (a) Write short notes on: 12
        i)   Norton gear box   ii)   Sequence valve
        iii)   Vane type motor   iv)   Direction control valve
   (b) Explain why four-way valves can not be operated in single acting cylinder.   06
   (c) Differentiate between metering in circuit and out circuit. Why closed circuit is not preferable?   11
   (d) Define different types of hydraulic cylinder.   06

SECTION–B

5. (a) Explain different types of cutting motion in machine tools.   11
   (b) What is an automatic machine? State the factors which affect the classification of automatic machines?   09
   (c) Prove that compliance (C) of a centre lathe is given by $C = \frac{1}{S_2} + \frac{1}{S_1}(\frac{L-x}{L})^2 + \frac{1}{S_3}(\frac{x}{L})^2$.   15

   Where S_1, S_2, S_3 are the rigidity of headstock, saddle and tailstock respectively and L= Length of work piece; x= Distance of cutting tooltip from head stock end.

6. (a) Define different types of work holding and supporting devices used in lathe machine.   15
   (b) Write down the difference between plain and rolling bearings.   10
   (c) Differentiate between-   10
        i)   Absolute system and Incremental system
        ii)   Fixed zero point and Floating zero point

7. (a) What is NC of machine tools? Briefly explain open loop and closed loop system of NC.   13
   (b) Define indexing. Explain with example the procedure of angular indexing.   10
   (c) Explain the quick return mechanism of a shaper with neat sketches.   12

8. (a) What do you meant by automation and industrial robots? Briefly explain how robot works?   12
   (b) What is transfer machine? Describe the economics of automatic machines.   11
   (c) Differentiate between-   12
        i)   Counter boring and Counter sinking
        ii)   Drilling and Reaming
        iii)   Shaper and Planer

Khulna University of Engineering & Technology
Department of Industrial Engineering and Management
B.Sc. Engineering 4th Year 1st Term Examination, 2016
IPE4129
Industrial Management and Entrepreneurship Development

Full Marks: 210   Time: 03 hrs

N.B:i) Answer any THREE questions from each section in separate scripts.
   ii) Figures in the right margin indicate full marks.
   iii) Assume reasonable data if missing any.

SECTION–A

1. (a) Define management. Write down the differences between the role of an industrial engineer and a manager. — 12
   (b) Why top management must have conceptual skill? Explain with a suitable example. — 11
   (c) What is meant by scalar chain of command? Describe a situation where Gangplank is more effective than conventional scalar commanding system. — 12

2. (a) Define the bureaucracy theory school. "A successful organization should react as an organic and open system". To what extent, you are agreeing with this opinion. Explain. — 13
   (b) Write down the differences between "line and staff organization" and "functional structure based on functional authority". — 10
   (c) According to the management expert Graicunas, number of superior-subordinate relationships depends on the number of subordinates. Justify this theory with a numerical analysis. — 12

3. (a) Why the role of top management should be defined in decentralization? If it is not well defined, then what will be the implications? Explain. — 13
   (b) Define leadership. Discuss about the areas where democratic leadership should be selected over authoritarian leadership. — 10
   (c) Define job evaluation. Explain point method of job evaluation and also mention the areas where it can be implemented. — 12

4. (a) Write short note on: — 12
      i) Hawthorne Experiment
      ii) Grapewine
      iii) Pay inserts
      iv) Bipartite committee
   (b) Suppose, a textile company is needed to recruit an industrial engineer. So, prepare an application form for this recruitment process. — 15
   (c) Define Emerson's efficiency plan. Write down the comparative advantages of this plan over other plans. — 08

SECTION–B

5. (a) What is meant by strategic management? How does strategic management help to cope with its other competitors? — 12
   (b) What is employee separation? What are the differences between discharge and retrenchment? — 12
   (c) What are the differences between business strategy and military strategy? — 05
   (d) How does counseling help to improve employee performance? — 06

6. (a) How does R & D helps strategic management? — 10
   (b) Why is out placement necessary after employee separation? — 08
   (c) What is collective bargaining? Write down the importance of collective bargaining to employee. — 10
   (d) "Collective bargaining is a problem resolution strategy". Explain the statement. — 07

7. (a) Define business. Briefly explain about different types of partnership business. 12

(b) What is Limited Liability Company (LLC)? What are the disadvantages of franchise business? 08

(c) What are the alternate approaches to start a business? 05

(d) What is SWAT analysis? Explain with practical example. 10

8. (a) Define entrepreneurship. Describe the innovation theory of entrepreneurship. 15

(b) What is technology transfer? How does a new technology help an organization to make more innovative? 10

(c) What is organizational conflict? Briefly explain about different types of organization conflict. 10