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UNIVERSITY OF PETROLEUM & ENERGY STUDIES

DEHRADUN

End Term Examination – April 2017

Program/course	**:** MBA - LSCM	**Semester**	**:** IV
Subject	**:** Supply Chain Modeling, Design & Simulation	**Max. Marks**	**:** 100
Code	**:** MDSL 823	**Duration**	**: 3** Hrs.
No. of page/s	**:** 04		

Section A : Marks 01 x 20Q = 20

Question # 01: State TRUE or FALSE . . . **please place a check mark (√)**

(01)	The cyclic factor is as important as the trend and seasonality in forecasting for short and/or intermediate-term.	**True**	**False**
(02)	Moving average removes the random errors and represents the forecast for the next period	**True**	**False**
(03)	Forecasts are always, almost wrong; in-spite of this one forecasts.	**True**	**False**
(04)	An example of Dependent Demand is demand of Ceiling Fans for 2018~19, because Ceiling Fan demand depends on total demand of domestics fans	**True**	**False**
(05)	Market Potential is always less than Market Size and, Company Share is a part of Market Size.	**True**	**False**
(06)	Root of Mean Squared Errors (RMSE) is Population Standard Deviation	**True**	**False**
(07)	Linear Programming Problem is an example of determining optimum level of a set of activities which use common resources which is in abundance	**True**	**False**
(08)	Process analysis begins by first, determining its boundaries, activities, their interrelationships, suppliers, customers and the resources that it uses	**True**	**False**
(09)	All the following three techniques are meant to improve the process; the amount of improvement maximum to less, in that order is TQM, Kaizen and, BPR	**True**	**False**
(10)	Business is a hierarchy of processes, BPR is an effort to redesign the processes at the higher level and almost always needs investment in technology	**True**	**False**
(11)	In a BPR exercise, one identifies Value Added Activities, Business Value Added Activities and Non-value Added Activities and, the time associated with it.	**True**	**False**
(12)	Efficiency of a Process is calculated by dividing the time of Value Added Activities (VAA) with that of the sum of VAA, Business VAA and Non-VAA	**True**	**False**
(13)	Business-VAA are those which do not add any value but they are done meticulously because of statutory requirement	**True**	**False**
(14)	Efficiency of a Process is enhanced by eliminating the time of non-VAA, maximizing the VAA and minimizing the business-VAA	**True**	**False**
(15)	Vertical Processes are intra-departmental processes and Horizontal Processes are inter-departmental Processes	**True**	**False**

(16) Sensitivity Analysis helps answer what-if questions for changes in resource-values, profit-coefficients and/or technology-coefficients **True** **False**

(17) Shadow Price is about decision-variables and Reduced Cost is about resource-values **True** **False**

(18) Shadow Price for a constraint-function of a LP is the amount by which Z-value is improved by the unit change in RHS of the constraint-function, provided the basis of the solution is valid **True** **False**

Please CIRCLE the most appropriate answer; DO NOT place CHECK MARK (√)

(19) Allowable Increase and Decrease columns in the sensitivity Report of Solver gives

a. range of increase and decrease in the resource-value of a constraint-function
b. a above and, for which the basis of the solution is valid
c. range of increase and decrease in the profit-coefficient
d. c above and, for which the basis of the solution is valid

(20) Slack of a constraint-function represents

a. difference between RHS and LHS of a ≤ constraint
b. difference between LHS and RHS of a ≥ constraint
c. the unused resource
d. both a and c above

Section B : Answer **any two** (2) questions given below

Marks 20 x 2^Q = 40

Question # 02:

Sensitivity Report obtained by solving a Linear Programing Problem in the Solver software is given below. With reference to this, please state what the first table stands for; and, each column in it viz., Final Value, Reduced Cost, Objective Coefficient etc. **(Marks 10).** Similarly, state what the second table stands for; and, each column in it viz., Final Value, Shadow Price, Constraint R.H. Side etc. **(Marks 10).**

Microsoft Excel 16.0 Sensitivity Report
Worksheet: [New Microsoft Excel Worksheet.xlsx]Sheet1
Report Created: 3/27/2017 11:13:30 AM

Variable Cells

Cell	Name	Final Value	Reduced Cost	Objective Coefficient	Allowable Increase	Allowable Decrease
G7	Changing Cells X1	20	0	3	1	1
H7	Changing Cells X2	60	0	2	1	0.5

Constraints

Cell	Name	Final Value	Shadow Price	Constraint R.H. Side	Allowable Increase	Allowable Decrease
I4	F-Constraint	100	1	100	20	20
I5	C-Constraint	80	1	80	20	20

I6	D-Constraint	20	0	40	1E+30	20

Question # 03:

A large company is having trouble processing requisition forms for supplies and materials. Just getting through the initial approval process seems to take forever. Then, the order must be placed and, the supplies and material must be received and delivered to the correct location. These delays usually cause only minor inconveniences. However, a lack of supplies and materials sometimes stop an entire operation. After one such instance, a senior manager has had enough. He wants to know then reason for the excessive delays. The manager also wants to know where and who to blame for the problem.

A process analysis is done at the manager's request. The requisition process was broken down into three sub-processes - (01) Requisition Form completion and authorization, (02) Ordering and, (03) Receiving and Delivery. The process analysis reveals that the first sub-process consists of the steps shown in Table below. Please answer the questions given alongside.

Steps		Time (minutes)
01	Requisition Form initiated	10
02	Form mailed to procurement	720
03	Form sits in IN basket	75
04	Requisition Form completed	18
05	Form sits in OUT basket	75
06	Form mailed for authorization	720
07	Form sits in IN Basket	45
08	Form reviewed and authorized	12
09	Form sits in OUT Basket	90
10	Form mailed to ordering	720

Questions to be answered

(a) Make a process diagram and state the customer(s) **(Marks 05)**

(b) Classify the activities in this process and, calculate process as-is efficiency **(Marks 05)**

(c) What, you think can be done to improve process and, resulting to-be process efficiency? **(Marks 05)**

(d) Comment on the Manager's attitude **(Marks 05)**

Question # 04:

What is a Business Process? Discuss various types of Business Processes – Individual, Vertical and Horizontal Processes **(Marks 10).** Why should a Process be re-engineered? What are the symptoms and diseases of broken processes? **(Marks 10)**

Section : C — Marks 40

Question # 05:

Ramesh has been recently elevated to a new position as Manager of the Logistics & Supply Chain department in his company; this comes with a special responsibility for strategic planning for logistics & supply chain of the company. Twice in a year viz., in January and in June he needs to revisit and formulate logistics & supply chain plans and send copies of it to firm's key managers. In fact, this is one of the more important functions. The key managers then

have to respond to him within 2 weeks about a wide range of strategic issues before the plan can be finalized. The importance and visibility of this document mean that any kind of problems with the process will reflect badly on him personally and on his department.

In early January, copies of the document were delivered from the documentation center. Staff in Ramesh's department then sorted the documents, put them in envelops addressed to the designated key managers, and left them to be picked up by internal mailing services. The address to each manager eligible to receive a copy was easily available from a distribution list kept by the department secretary. No mailing problem as reported to Ramesh.

By mid-January, only four key managers had responded. It is quite disappointing and, naturally Ramesh is embarrassed to report to his boss that he will not be able to finalize the plan before the scheduled deadline. He then immediately began to make phone calls to the 24 managers who had not responded and he was most surprised by their responses:

- Three had not yet received the document.
- Two had just received the document at their new location.
- Seven complained about missing pages.
- Four reported pages out of sequence.
- Five said they could not respond in only 1 week.
- Three had left the organization.

The following day, Ramesh received a message from his boss to be present in his office the next morning with an analysis of the problem and an action plan for how to avoid this type of debacle in future.

Clearly, this process was not well managed. Please help Ramesh to improve the process using the basic principles of process management in terms of **Process Ownership**, **Boundaries**, **Interfaces** (Customers and Suppliers), **Actors**, **Activities**, **Resources**, **Control Points**, **Feedback** and **Control (Marks 5^{M}x08)**