

INSTITUTION OF ENGINEERS OF SRI LANKA

PART III (B) EXAMINATION – December 2012

327 – Management for Engineers

Date:

Duration: Three hours

From 0900 hrs to 1200 hrs

Read following instructions before answering the question paper.

1. This question paper has two parts, Part A and Part B. Answer **only five** questions selecting only **two questions** from **Part B** and the rest from Part A.
 2. All question carry equal marks and the each part of a question carries marks proportionately.
 3. Write answers to questions in Part A and Part B on **separate** answer books, and mark "A" or "B" relevantly on answer books. Submit answer books separately.
 4. Start answering each question on a fresh page of the answer book with writing the question No.
 5. It is necessary you **write** the **question No.** to which the answers are submitted in the cage on the cover page of each answer book.
 6. Draw a line to cancel any answers or work that you do not wish to draw the attention of the examiner.
 7. Hand writing should be clear and legible.
 8. Marks will be deducted if the above instructions are not adhered to.
 9. Question 9 requires statistical table (Standard Normal Distribution) and Question 10 requires a graph paper to solve the given problem.
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PART A

Question 1

The most effective leaders follow different styles of leadership. As one management author explains the leadership consists of six dimensions and they are visionary, coaching, affiliative, democratic, pace setting and commanding. The most effective leaders can move among these styles, adopting the one that meets the needs of the moment. They can all become part of the leader's repertoire.

- a) Explain briefly the meaning of each style.
- b) Discuss any limitations if each style is practiced above a limit.

Question 2

- a) Explain authority, responsibility and accountability.
- b) How is authority different from responsibility?
- c) Are authority, responsibility and accountability interrelated? Explain the answer by demonstrating your personal experience at your work place.

Question 3

- a) Why is Human Resource Management (HRM) function important to an organization?
- b) What is the scope of HRM?
- c) State six important activities of HRM?
- d) Explain briefly the process of job analysis, job description and job specification.

Question 4

- a). Discuss the scope of Financial Management.
- b). What are the objectives of Financial Management?
- c). What are the objectives of Cost Accounting?
- d). Cost accounting is an important subject not only for accountants and other managers, but also significantly for the engineers. Do you agree? Explain your answer.

Question 5

- a). Compare and contrast selling concept with marketing concept.
- b). What are the key elements of a modern marketing system?
- c). What are the key concepts of customer relationship management?
- d). If you own a business, are putting together a business plan, or are considering starting a business, why do you think that essentially the 5 P's of marketing forms the basis of your marketing plan. You may select a hypothetical product and discuss how you apply 5 P concept in your marketing plan.

Question 6

- a). What are the distinct roles of the Ministry of Local Government and Provincial Councils, Local Governments and Provincial Councils to ensure efficient and effective Provincial and Local Administrative system responsive to the aspirations of the people and facilitate the achievement of Sustainable and equitable development in Sri Lanka?
- b). What are the constituents of Local Government System and what are their responsibilities?
- c). In Sri Lanka, nine Provincial Councils were established by the Thirteenth Amendment to the Constitution, which came into effect on 14 November 1987 along with the Provincial Councils Act No. 42 of 1987. What does Thirteenth Amendment provide for?
- d). What are the objectives of creating Provincial Councils?

PART B

Question 7

- a). Basic accounting rules group all finance related things into five (5) fundamental types of “accounts.” List these five fundamental types of accounts. Give two examples for each type of account.
- b). Write the above five accounts in a single accounting equation, which explains the concept of “Principle of Balance?”
- c). Percy started a business on 1 January by paying £20,000 into a business bank account. He then spent £500 on a second-hand van by a cheque, £1,000 on purchases of stock for cash, and took £500 cash for his own use and bought goods on credit costing £400.

What are the two effects of each of these transactions in ledger accounts and what is effect on the accounting equation after the transaction.

Question 8

- a). What is the difference between Absorption Costing and Marginal Costing? Use a suitable cost calculation format to present your answer.
- b). In what situations is absorption costing more appropriate than marginal costing?
- c). Are there any situations where marginal costing is more appropriate?
- d). A company’s cost card is shown below.

	£
Materials	10
Labour	15
Fixed overheads	<u>8</u>
	33
Variable selling costs	<u>7</u>
	40
Selling price	<u>50</u>
	10

Last year 4,000 units were produced, of which 3,750 were sold. Actual fixed overheads were £28,000. There was no opening stock.

Calculate the profits under marginal costing and absorption costing, and reconcile them.

Question 9

A project network consists of activities identified as A, B, C,, K. The relationship of each activity with the other, and the estimated times as optimistic (t_o), pessimistic, (t_p) and most likely (t_l) of each activity are given in the following table.

Activity	Predecessor	Times (weeks)		
		Optimistic (t_o)	Most Likely (t_l)	Pessimistic (t_p)
A	-	6	7	8
B	-	1	2	9
C	-	1	4	7
D	A	1	2	3
E	A, B	1	2	9
F	C	1	5	9
G	C	2	2	8
H	E, F	4	4	4
I	E, F	4	4	10
J	D, H	2	5	14
K	G, I	2	2	8

- Construct the project network (use PERT).
- Find the expected duration and variance for each activity.
- What is the critical path?
- Find the expected project completion time.
- What is the probability that the project will complete within 25 weeks?

Question 10

- a) A generalized linear programming problem developed in to a mathematical model along with the model parameters is given below

$$\text{Maximize or Minimize } z = \sum_{j=1}^n c_j x_j$$

subject to

$$\sum_{j=1}^n a_{ij} x_j \begin{cases} \leq \\ = \\ \geq \end{cases} b_i, \text{ for } i = 1 \dots m$$

$$0 \leq x_j \leq u_j \text{ for } j = 1 \dots n$$

The constraints, including non-negativity and simple upper bounds, define the feasible region of a problem.

Translate the above mathematical model into a linear programming model.

- b) A manufacturer makes wooden desks (X) and tables (Y). Each desk requires time 2.5 hours to assemble, 3 hours for buffing, and 1 hour to crate. Each table requires time 1 hour to assemble, 3 hours for buffing, and 2 hours to crate. The firm has the capacity to spend up to 20 hours for assembling, 30 hours for buffing, and 16 hours for crating per week. Profit is \$3 per desk and \$4 per table.

Using graphical method (on a normal graph paper) to solve this problem, answer the following questions.

- i) Maximize the profit.
- ii) What are the quantities of desks and ~~chairs~~ ^{Tables} to be produced to satisfy above maximum profit?

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