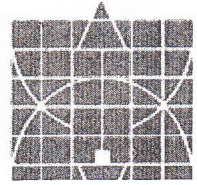# INSTITUTION OF ENGINEERS SRI LANKA

# PART III (B) EXAMINATION – September 2011

# ENGNEERING MANAGEMENT – 327

Date:    September 2011          From 9.00 am to 12.00 noon

Duration: Three (03) hours

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- This question paper has nine (09) questions. Answer **only five (05)** questions selecting not more than two questions from Section B and not more than three questions from Section A.

- All questions carry equal marks.

- Start answering a new question from a fresh page of the answer book/sheet and write the question number appropriately.

- It is extremely important that you write the question number, to which you answer, on the cover page appropriately.

- Use graph papers, wherever graphical presentations are required.

- Write answers legibly and neatly.

- Cross by a line any answers which do not require examiner's attention and/or any scrap work.

- Do not use lead pencil and/or red ink to write answers.

- Marks will be deducted if the above instructions are not adhered to.

## SECTION A

### Question 1

(a) State one of the appropriate definitions for "Leadership."

(b) What are the key factors of leadership? Explain each factor clearly.

(c) What are the attributes of an effective leader?

(d) The model below illustrates a "Leadership Grid." Explain the different managerial styles, which the grid attempts to distinguish from one another.

## Leadership Grid
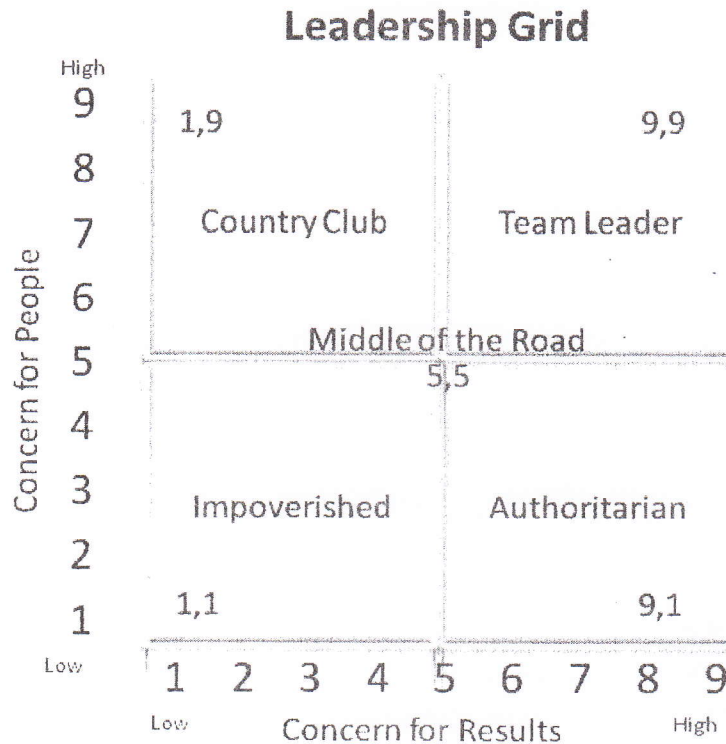


### Question 2

(a) Illustrate the managerial process with a suitable model containing the functions and inputs to and outputs from the managerial process.

(b) Explain clearly each function of the managerial process.

(c) What is meant by the Change Management Process? Outline the basic steps of Change Management Process.

(d) 'Production and Operations Management is about the transformation of production and operational inputs into "outputs" that, when distributed, meet the needs of customers.' Explain. What are the factors involved in this transformation process and areas concerning under each factor?

## Question 3

(a) Briefly state the changes that 17<sup>th</sup> Amendment brought about in the Constitution of the Democratic Socialist Republic of Sri Lanka.

(b) What is the composition of the Constitutional Council?

(c) State the powers of the Public Service Commission.

(d) What are the main functions of the Bribery Commission?

## Question 4

(a) What is meant by manpower planning and what is the purpose of the process of manpower planning?

(b) What is the manpower planning process and its main steps?

(c) Explain distinctly induction and training. How do you justify the importance of these two functions in an organization?

## Question 5

a) Marketing function operates within controllable and uncontrollable factors. What are these factors known as Controllable Variables and Uncontrollable Variables?

b) Present graphically a typical product life cycle illustrating different phases.

c) Discuss pricing objectives of an organization.

## Question 6

a) List common types of business organizations that can be formed according to the Companies Act No.7 of 2007, and discuss main features of each organization.

b) What are the requirements to be fulfilled with respect to a Memorandum according to the Section 3 of this act?

c) Explain the features of "Private Company" according to this Act.

## SECTION B

### Question 7

A cheese shop has 20 kg of a seasonal fruit mix and 60 kg of an expensive cheese, with which it will make two cheese spreads, "deluxe" and "regular" that are popular during Christmas week. Each kilogramme of deluxe spread consists of 0.2 kg of the fruit mix and 0.8 kg of the expensive cheese., while each killogramme of regular consists of 0.2 kg of the fruit mix, 0.3 kg of the expensive cheese and 0.5 kg of filler cheese which is cheap and in plentiful supply. From past pricing policies, the shop has found that the demand for each spread depends on its price as follows:

$D_1 = 190 - 25\ P_1$ and $D_2 = 250 - 50\ P_2$, where D denotes the demand in kioolgammes and P denotes the price in a given monetary unit, and the subscripts 1 and 2 refer to deluxe and regular spreads, respectively.

How many killogrammes of each spread should the cheese shop prepare, and what prices should it establish, if it wishes to maximize income and left with no inventory (almost all products are sold out) of either spread at the end of Christmas week?

Use the **graphical method** to solve the problem (graph papers are available).

Follow the steps given below to solve the problem:

a) Write the objective function subject to the given conditions and constraints.

b) Show that this is a problem is to maximize the function,

$z = (7.6 - 0.04x_1)x_1 + (5 - 0.02x_2)x_2$ where $x_1$ and $x_2$ are in killogrammes of deluxe spread and regular spread, respectively, and it is also equivalent to minimizing the function $z^* = 0.04(x_1 - 95)^2 + 0.02(x_2 - 125)^2$

c) Recognise that different loci of $z^*$, which are ellipses on the plane with $x_1$ (x-axis) and $x_2$ (y-axis), describe the different income levels.

### Question 8

a) What are the useful information a CPM would provide in a project management?

b) What is the use of a Gantt chart? Explain your answer with a typical example.

c) An industrial project has following activities with their durations given against each activity. I and M are terminal activities of the project.

| Activity | Immediate Predecessor(s) | Duration (Weeks) |
|----------|--------------------------|------------------|
| A | - | 5 |
| B | - | 5 |
| C | B | 2 |
| D | A, C | 2 |
| E | A, C | 3 |
| F | A, C | 1 |
| G | B | 2 |
| H | B | 7 |
| I | E | 13 |
| J | E, D | 6 |
| K | F, G, H | 4 |
| L | H | 5 |
| M | J, K, L | 5 |

a) Develop the network diagramme and find the critical path.

b) Compare the total float and free float.

## Question 9

a) Top management of companies in preparation and implementation of plans use accounting information. What are the Management Accounting Information the top management uses?

b) In any company there are internal users as well as external parties who use company information. Identify these internal users and external parties who use company financial information and state the type/s of financial information each internal user and external party is interested.

c) The Trial Balance given below was extracted from the books of Siripala as on 31 December 2010.

In addition, the following information are also given for consideration:

     i.     Closing stocks: Rs. 30,000,000

    ii.    Bad debts are to be written off: Rs. 200,000

   iii.   Provision for bad debts should be equal to 10% of the debtors

   iv.   Accrued expenses: Rent – Rs. 200,000

    v.   Prepaid expenses: Insurance - Rs. 300,000

   vi.   Depreciation of machinery – 5% on the cost

## Trial Balance as at 31 December 2010

|  | Dr. (Rs.'000) | Cr. (Rs.'000) |
|---|---:|---:|
| Capital |  | 50,000 |
| Machinery | 18,000 |  |
| Provision for depreciation on machinery as at 01. 01. 2010 |  | 3,800 |
| Machinery repairs | 1,600 |  |
| Salaries & Wages | 38,000 |  |
| Cash in hand | 2,000 |  |
| Land & Buildings | 74,000 |  |
| Provision for depreciation on buildings |  | 2,500 |
| Depreciation of buildings | 2,500 |  |
| Purchases & Sales | 126,000 | 252,600 |
| Bank overdraft |  | 3800 |
| Provisions for doubtful debts |  | 6,000 |
| Discount received |  | 3,000 |
| Discount allowed | 1,200 |  |
| Debtors & Creditors | 35,000 | 23,300 |
| Opening stock as of 01-01-2010 | 39,500 |  |
| Rent | 1,200 |  |
| Insurance | 1,800 |  |
| Carriage inwards | 2,000 |  |
| Advertising expenses | 1,500 |  |
| Carriage outwards | 400 |  |
| Bank Charges | 200 |  |
| Interest on loan | 100 |  |
|  | **345,000** | **345,000** |

Prepare Trading and Profit & Loss Account for the year ended as at 31-12-2010 and the balance sheet as of this date.

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