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Society of Certified Management Accountants of Sri Lanka

Professional II Stage
March 2008 Examination
Case Study (CaS)

Instructions to candidates:

The Case Study (CaS) of March 2008 Examination comprises of two scenarios, **scenario I**, **scenario II** and the **Question** paper.

Scenario I

Scenario I is provided in this booklet and has information about the company and industry, on which the question paper will be based. This booklet is **not** allowed in the examination hall.

Scenario II

Scenario II is a continuation of **Scenario I**. **Scenario I** together with **Scenario II** will be provided with the **Question paper**, at the **Examination**.

Question paper

The question paper will be of **3 hours** duration and will have **one** question based on **Scenarios I** and **II**.

The Answers are tested on knowledge gained at all areas of CMA Syllabus and work experience.

NanoLine

Scenario I Nanotechnology

One nanometre is one billionth of a metre. Nanotechnology refers broadly to a field of applied science and technology whose unifying theme is the control of matter on the atomic and molecular scale in nanometres, and the fabrication of devices within that size range. Examples of nanotechnology in modern use are the manufacture of polymers based on molecular structure, and the design of computer chip layouts based on surface science. Despite the great promise of numerous nanotechnologies such as quantum dots and nanotubes, real commercial applications have mainly used the advantages of colloidal nanoparticles in bulk form, such as suntan lotion, cosmetics, protective coatings, and stain resistant clothing.

Materials reduced to the nanoscale can show very different properties compared to what they exhibit on a macroscale, enabling unique applications. For instance, opaque substances such as Copper become transparent; inert materials such as Platinum become catalysts; stable materials such as Aluminium turn combustible; solids such as Gold turn into liquids at room temperature; insulators such as Silicon become conductors. A material such as Gold, which is chemically inert at normal scales, can serve as a potent chemical catalyst at nanoscales. Much of the fascination with nanotechnology stems from these unique quantum and surface phenomena that Matter exhibits at the nanoscale.

Nanotechnology may provide new solutions for millions of people in developing countries who lack access to basic services, such as safe water, reliable energy, health care, and education. Some of the advantages of nanotechnology include production using less labour, land, maintenance, high productivity, low cost, and modest requirements of materials and energy. Potential opportunities of nanotechnology to help address critical international development priorities include improved water purification systems, energy systems, medicine and pharmaceuticals, food production and nutrition, and information and communications technology. A novel device has been developed using nanotechnology for early diagnosis of prostate cancer. Nanotechnology will replace magnetic disk drives in iPods, laptops and servers within five to 10 years, making them more durable, lighter and faster. It is predicted that nano-workforce will reach 2 million globally by 2015.

Hundreds of consumer products incorporating nanomaterials are now in the market, including cosmetics, sunscreens, sporting goods, clothing, electronics, baby and infant products, food and food packaging. However, there is growing scientific evidence which demonstrates the potential for some nanomaterials to be toxic to humans and the environment. The behaviour of nanoparticles is a function of their size, shape and surface reactivity with the surrounding tissue. They could cause overload on *phagocytes*, cells that ingest and destroy foreign matter, thereby triggering stress reactions that lead to inflammation and weaken the body's defence against other pathogens.

There is currently no government oversight and no labelling requirements for nano-products anywhere in the world. No one knows when they will be exposed to potential nanotech risks and no one is monitoring the potential health or environmental harm.

Social risks related to nanotechnology development include the possibility of military applications of nanotechnology, such as implants and other means for soldier enhancement as well as enhanced surveillance capabilities through nano-sensors. However those applications still belong to science-fiction and may not be possible in the next decades

NanoLine

NanoLine Technologies PLC, NanoLine, was incorporated in Sri Lanka in 2006 as a venture between a team of Sri Lankan scientists and an American Conglomerate, Rock Group. Rock Group has diversified investments in pharmaceuticals, cosmetics and food and beverage industries in USA and few European countries. The Local team of scientists comprises of Chaminda Suraweera, Rohan Weeratunga and Dananjaya Ratnayake.

Chaminda obtained his PhD in Nanotechnology from an American University and he has extensive experience in researching nano-technology. Chaminda is married to Gowri who is from a wealthy business family which has substantial investments in beverages, banking, telecommunications and medical industry in Sri Lanka. Rohan was studying in Vancouver for over 20 years. He returned to Sri Lanka last year to start a venture with his old schoolmate Chaminda. Dananjaya has a PhD in Electronics and was working in Germany for the last 10 years for a leading electronics company. He worked for one of the subsidiaries of Rock Group few years ago. Dananjaya was approached by Chaminda and Rohan when they were planning to start a nanotech company in Sri Lanka.

Rock Group has appointed Kenneth Choo to be its nominee director in NanoLine. Chaminda is the Chairman of the company and Rohan, Dananjaya and Kenneth are the other executive directors of the company.

Prof. Sarath Samaranayake from a Sri Lankan University and Prof. Daniel Yatawara, a retired scientist from a leading Multinational Company based in USA are the Non-Executive Directors of the company.

NanoLine is involved in researching bespoke projects in nanotechnology for leading electronics, food and beverage, military aircrafts and pharmaceutical companies. Currently the scope of research, outcomes, and required time lines are established by the buyers. A fixed charge for the research is negotiated with many customers. However, few customers pay only if the research is successful. If the research is not completed on time or failed to discover the expected outcome, they don't pay. Other customers contract to pay a fixed amount for the research, irrespective of success or failure and a percentage on future profits as royalty.

NanoLine employs 20 research staff including five expatriates from India and five other staff for administration.

NanoLine has an issued share capital of Rs.10 Million with a share premium of Rs.5 Million. Rock Group holds 45% and Chaminda holds 30% of the shares. The remaining 25% of the shares are held equally by Rohan and Dananjaya.

NanoLine has technical collaborations with Industrial Technology Institute, a Sri Lankan Engineering University and a Sri Lankan Medical College. Close links are maintained with academia in Sri Lanka and overseas. NanoLine brings together and manages virtual teams of scientists from universities and industries.

Vision

Chaminda has set the vision of being the best nanotech research company in Asia by 2015 through close alliance with large international partners. He wants to make Sri Lanka a hub for world class nanotech research by 2025

Current Projects

NanoLine delivered its first nanotechnology order, consisting of specialized optical filters, to a leading global digital imaging component manufacturer AYZ Inc in July 2007. AYZ is one of the major suppliers for some of the leading Japanese and European electronics companies. They are satisfied with the quality of the NanoLine's research and agreed to provide NanoLine with a new contract which is five times more than the optical filter project.

Currently they are in the final stages of a research contract to provide a unique mechanism to combine the chemicals and control the characteristics of the chemical reaction in a battery. This technology will have a long shelf life, high reliability, high power densities and will be easy to miniaturize. If this project is successful, they could get a fixed payment of USD 100,000 per annum for five years.

Major competitors

Nanotechnology is a highly competitive industry and NanoLine is faced with intense competition from Foresight PLC in India, NanoTech in China and Future Inc in Singapore.

Foresight has over 100 research staff. They have research centres in Bangalore, Chennai, Mumbai and Hyderabad. They have contracted with many leading Fortune 500 companies. Few local universities provide studies in nanotechnology and hence there is no shortage of qualified nanotechnologists in India. The pay levels to staff in India are on par with global levels and 40% higher than the salaries paid to research staff at NanoLine.

NanoTech is a joint venture between the Chinese Government and two state universities funded by the Government. There are large number of university students on placement, working for a nominal allowance. They offer very competitive pricing, which is 30% lower than that of NanoLine.

Employees

There is an acute shortage of employees qualified in nanotechnology in Sri Lanka. In view of security concerns, it is difficult to attract expatriates to Sri Lanka. Existing employees are very demanding and there is a general trend of skilled Sri Lankan employees migrating to other countries. Directors are very concerned about the sustainability of the operations in view of the shortage of skilled staff.

NanoLine pays on average Rs 150,000 per month for a research staff. The board is considering the proposal put forth by some of the employees for an Employee share option scheme. The board declined a request by the employees that a Human Resource Manager be appointed.

Nanotech University

Professor Yatawara has proposed that NanoLine start a private University affiliated to a leading American University, for degrees & post graduate studies in nanotechnology.

The Government Minister in charge of Science and Technology has agreed to provide

financial assistance to open the University. The proposal needs an investment of Rs.250 Million and the Government has agreed to provide an interest free loan of Rs.150 Million through a state bank with a grace period of 2 years. It will take at least 1 year to complete construction.

Lecturers in nanotechnology charge USD 500 per lecture hour in overseas universities and a student needs at least 700 lecture hours per annum. Accommodation costs Rs.125,000 per expatriate and cost around Rs.200,000 monthly for administration. Industry norm is to maintain a ratio of 30 students to a lecturer and there should be at least 5 subjects covered per semester. A semester consists of 3 months. The Government has agreed to give 10 acres of land with a 99 year lease at a nominal lease rental of Rs.50,000 per annum for the project in the proposed IT zone in Malabe.

F&L

F&L is a leading cosmetics manufacturing company in Asia Pacific with a turnover of USD 10 Billion. NanoLine signed a contract with F&L to conduct research for them. The contract time period of one year expired in November 2007 and NanoLine couldn't complete the project on time. F&L has threatened to cancel the contract if the project is not completed within the next three months. NanoLine has already spent 200 man days on this project and it will not be paid if the project is not completed within the next three months. Based on Chaminda's estimates they need another 100 man days to complete the project. If more labour is assigned to this project, it will affect the completion of other projects and there is a risk of losing two large clients.

New component

NanoLine started research in September 2006 for a leading electronics company in USA for a component used in the automobile industry. However NanoLine has found that a new company in UK has already discovered a solution for the same research area and they may patent it within the next three months. This is, vital research to develop a component which could reduce the consumption of fuel by 30%. If NanoLine is successful in the project, it could get income of USD 1 Million per annum for the next 10 years.

Expansion

During the last board meeting held in October 2007, Rohan suggested that NanoLine should immediately start their overseas research centres in China and India, for long term survival and sustainable growth.

Research

Dananjaya is of the view that in addition to the bespoke projects, NanoLine should start their own research projects. When the projects are nearing completion, the company could search for customers to sell their innovations. Rock Group is very uncomfortable with such research as they perceive it to be high risk.

Marketing

Chaminda proposed, recruiting a new marketing director from a European country, who could be based in Europe and canvass new contracts for them. This would cost USD 50,000 per month for NanoLine. Kenneth is concerned about the increasing fixed costs, when the company is incurring a loss. Chaminda strongly defended his view saying 'If you don't invest in marketing it will be difficult to get new contracts and it is the volume growth which can turnaround the company and not cost saving'. The Board is confused on what they should do.

Subsidy

Professor Samaranayake has approached an official, who has agreed to provide a subsidy of Rs.10 million per annum for NanoLine's research through the Government's budget allocation for Research and Development. An official expects 10% of the subsidy to be paid as an ex gratia payment to him. He is a powerful official and has the right contacts to get this subsidy. Further as the negotiations have gone a long way, even if NanoLine refuses to go ahead with the subsidy, he may attack the company, by influencing the Government to bring in the nanotechnology under an existing government regulatory body on biotechnology and also stop the government support for the University project

1 USD = 110 SL Rupees

Appendix 1

**NanoLine Technologies PLC
Balance Sheet
As at September 30**

	2007		2006	
	Rs million	Rs million	Rs million	Rs million
Non-current assets (net)		4.5		5
Current assets				
Trade receivables		10		1
Total assets		14.5		6
Equity and liabilities				
Equity				
*Paid share capital	10		10	
Share premium reserve	5		5	
Retained profits	(73)	(58)	(41)	(26)
Non-current liabilities				
Current liabilities				
Bank overdraft	70.5		31	
Trade payables and accruals		2		1
		<u>72.5</u>		<u>32</u>
Total equity and liabilities		<u>14.5</u>		<u>6</u>

*Note: Paid 1 Million shares of Rs 10 each

Appendix 2

NanoLine Technologies PLC Income Statement For the Year Ended September 30

	2007 Rs million	2006 Rs million
Revenue	30	5
Total operating costs	(50)	(40)
Operating loss	<u>(20)</u>	<u>(35)</u>
Finance costs	(12)	(6)
Net Loss for the period	<u><u>(32)</u></u>	<u><u>(41)</u></u>