

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
MASTER OF TECHNOLOGY IN INDUSTRIAL ENGINEERING – LEVEL 07
FINAL EXAMINATION – 2005/2006
MEX 7118 – TECHNOLOGY MANAGEMENT

DATE : 21 April 2006
TIME : 0930 hrs – 1230 hrs
DURATION : Three (03) hours

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This paper consists of six (06) questions. Answer Question No.1 and Three (03) others.

1. Read the following case study and answer the questions given below (State your assumptions, if any):

Vickers, a major division of US firm Trinova, is a premier supplier of hydraulics components such as valves, pumps, actuators, and filtration devices to aerospace, marine, defence, automotive, earthmoving, and industrial markets.

Vickers saw the potential for a transformation of its traditional business with the application of electronics disciplines in combination with its traditional technologies. The goal was “to ensure that change in technology does not displace Vickers from its customers”. This, to be sure, was initially a defensive move: Vickers recognized that unless it acquired new skills, it could not protect existing markets or capitalize on new growth opportunities. Managers at Vickers attempted to conceptualise the likely evolution of (a) technologies relevant to the power and motion control business, (b) functionalities that would satisfy emerging customer needs, and (c) new competencies needed to creatively manage the marriage of technology and customer needs.

Despite pressure for short-term earnings, top management looked to a 10 to 15 year time horizon in developing a map of customer needs, changing technologies, and the core competencies that would be necessary to bridge the gap between the two. Its slogan was “Into the 21st Century”. Vickers is currently in fluid-power components. It aims to build competencies in electric-power components and electronic controls. A systems integration capability that would unite hardware, software, and service was also targeted for development.

The management assumes that products and systems cannot be defined with certainty for the future but that pre-empting competitors in the development of new markets requires an early start to building capabilities. The strategy developed by Vickers provides the basis for making here-and-now decisions about product priorities, acquisitions, alliances, and recruitment.

Since 1986, Vickers has made more than 10 clearly targeted acquisitions, each one focused on a specific component or technology gap identified. They are also focused on internal development of new competencies.

- a) Explain the key capabilities Vickers should develop in order to achieve its strategic objectives. (20 marks)
 - b) Critically analyse the strategies of Vickers, making specific references to the technology life cycle. (20 marks)
2. Explain, with examples, how changes in a technology can affect the structure of an industry using Porter's five forces model. (20 marks)
 3. "Technological components and technological capabilities are two sides of the technological competency coin". Discuss, based on classifications of technological components and capabilities, known to you. (20 marks)
 4. Explain, with examples from a local industry known to you, the effectiveness of **three** main types of market-oriented mechanisms of technology transfer in transferring new technology to that particular industry. (20 marks)
 5. "Innovation requires more than research and development". Discuss the relevance of the above statement to a developing country, making specific references to the innovation triangle. (20 marks)
 6. Discuss the role of forecasting in technology planning and briefly explain the different approaches used for technological forecasting. (20 marks)

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