



MNE3033

October/November 2009

TECHNOLOGY AND INNOVATION (BUSINESS MANAGEMENT 303)

Duration 2 Hours

70 Marks

EXAMINERS

FIRST

SECOND

EXTERNAL

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PROF R PELLISSIER

DR A BOTHA

Use of a non-programmable pocket calculator is permissible

This paper consists of four pages

This examination paper remains the property of the University of South Africa and may not be removed from the examination room
The paper may be answered in English or Afrikaans

Make sure that the following information appears on the cover of your answer book

- Your **student number**
- The **module code (MNE3033)**
- The **numbers** of the questions you have answered

Answer the questions in the answer book provided to you. Please indicate the section and number of the question clearly when answering

SECTION A

The completion of this section is **COMPULSORY**. The section counts 30 marks
Make sure that you answer all five sub questions in question 1.

QUESTION 1

[30]

Innovation is all around us and impacts everybody's life on a day to day basis. Although there are many inventions only a few of these become successful innovations due to the market factors. Failure of an innovation is more due to management and marketing factors than it is about technology factors.

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|-----|--|------|
| 1.1 | Define <u>innovation</u> formally. | (3) |
| 1.2 | How are creativity/invention and innovation linked? | (2) |
| 1.3 | Discuss the three <u>forms of innovation</u> in terms of their use. Provide an example of each. | (12) |
| 1.4 | Differentiate between <u>component</u> and <u>systems knowledge</u> innovation? How are these related to innovation? | (9) |
| 1.5 | Why are only a small number of innovations 'radical'? | (4) |

[TURN OVER]

SECTION B

Answer any TWO of the following three questions. Use the DELL case in all three questions. Please write the numbers of the questions you have answered on the cover of your answer book.

Technology Innovation Enters New Era

DELL COMPUTERS (Please use in questions 2,3 4)

The imagination of customers and millions of interactions with them every day are at the heart of groundbreaking new Dell products and services introduced today.

It used to be that people had to keep up with technology, but now it is about technology keeping up with their imagination,' said Michael Dell, Chairman of Dell Inc. 'Our customers are becoming their own publishers, they choose how they want to be entertained and informed and it is their direct feedback that will drive Dell's innovation.

Mr. Dell unveiled a new high-end gaming desktop, two flat-panel monitors, a product bundle designed to 'gear up' any home and a new service available later this year.

Innovation not only includes the development of new products, but also new services and how technology is integrated into our lives, Mr. Dell said during a keynote at the Consumer Electronics Show.

The Fiber Future

Mr. Dell described how the next "killer app" will be what a customer does with technology instead of a piece of new technology. Two enablers, he said, are an increase in penetration of fiber-speed networks to the home and technology hardware and software that work more seamlessly together.

Fiber penetration is in its infancy, but there are pockets of great progress, he said. Consumers currently have the ability to move 100 megabits of information per second in some countries, including Denmark, Japan and France. And Singapore has a stated goal of offering consumers 1 gigabit per second by 2015.

"The Internet has more digital content available than ever before - video, music, online gaming. DSL and cable broadband are on the rise, but a great digital experience requires something far faster - fiber," Mr. Dell said. "I applaud the telecommunications companies that are driving fiber to the home, and I encourage the entire telecom industry to step up and make such fiber available much more broadly."

New Products

At the heart of the new products introduced today is the XPS™ 710 H2C for PC enthusiasts and high-end gamers.

The system, a first, incorporates a two-stage cooling process. First, a liquid-to-air heat exchanger works like a car's radiator and fan system to remove heat from the processor. Then, ceramic-based thermoelectric cooling modules like those used in space shuttles remove additional heat. Sensors help prevent the formation of frost or condensation by helping to keep the processor slightly above ambient room temperature.

The XPS 710 H2C starts at \$5,499 and is available worldwide.

The company also unveiled two new flat-panel monitors. Favored by gamers, photographers and digital-media experts, the company's first 27-inch widescreen monitor has a 30-percent broader color spectrum than traditional monitors. The second, a 22-inch widescreen model, is rich in features and ideal for watching videos and playing games.

Both are available immediately worldwide, and priced at \$1,399 and \$329, respectively.

Mr. Dell also introduced a Home Media Suite, a product bundle that will gear up any room of a home. It includes a new digital television tuner that when combined with other products delivers a full, seamless digital-entertainment experience, including receiving and recording premium high-definition digital cable and

streaming it wirelessly to other parts of the home

The bundle includes an XPS 410 desktop, Windows Vista when available, digital TV tuner, 27-inch flat panel monitor, speakers, Dell All in One 966 printer, and an 802.11 dual band router and power line bridge. It will be delivered with all cables and adapters required for a typical home installation. Dell also will offer optional in-home service to set up the equipment.

The bundle will be available in the United States after the introduction of Microsoft's Vista operating system later this month.

Future Services

Mr. Dell described a new service that will be available later this year in the United States - an online data-migration and backup capability. It will enable customers to securely transfer documents, programs, drivers, settings, and other data via a broadband connection to a secure data-storage portal.

Customers will then be able to have it preinstalled by Dell during the manufacturing process, alleviating the need to do it themselves after delivery.

"Consumers have repeatedly told us they'd like this type of assistance and we're answering the call," he added. "Dell is uniquely positioned to offer these personalized services because of our direct model - nobody else can do this the way we can."

Imaginative Customers

Joining Mr. Dell onstage was Naomi Halas, a scientist from Houston's Rice University, who developed the first completely non-toxic treatment for cancer.

Dr. Halas discovered that small particles, or 'nanoshells,' naturally accumulated in tumors when injected in the veins of cancerous mice. Using a laser, the small particles could be heated to a point where the tumors would be destroyed without damaging the surrounding cells.

Dr. Halas and her team use Dell technology for design and simulation of the particles, to monitor and record experiments and synthesize data.

Mr. Dell also described a family's home in Austin, Texas, that Dell geared up with six personalized notebooks and one desktop computer, software, wireless routers and other technology. ABC's Extreme Makeover Home Edition chose the house to completely renovate after the family was near foreclosure. The show will air in February.

"What's really exciting for me and the entire Dell team is what customers are doing with our technology," Mr. Dell said. "We are highly motivated to keep up with their ideas."

QUESTION 2 (based on the DELL case above)

[20]

Smith talks about the concept of a technology strategy. A technology strategy comprises the definition, development and use of technological competencies that constitute their competitive advantage.

- 2.1 Generally, strategy entails one of three generic strategies. List and discuss these. P. 159 (3)
- 2.2 Identify the DELL strategy in terms of one of these (in 2.1) and justify your choice. (4)
- 2.3 List and discuss the determinants of a technology strategy. (4)
- 2.4 The technology strategy is of the utmost importance to organisations and their ability to compete effectively. Discuss the DELL technology strategy based on your answer in 2.3. (9)

QUESTION 3 (based on the DELL case above)

[20]

The term 'technical entrepreneur' is described in our text book.

- 2.1 Define a technical entrepreneur formally. (3)

- 2 2 Briefly describe the typical industries/businesses where the term is prevalent (1)
- 2 3 Generally, we distinguish between four types of technical entrepreneurs Briefly list and describe these (8)
- 2 4 Link Michael Dell to one of the four types identified in 2 3 and justify your choice (8)
- 3 1 Briefly outline what the technology strategy is concerned with (2)
- 3 2 List and discuss the main areas that Smith (2006) maintains should be included in a technology strategy (8)
- 3 3 Burgelman et al (2001) discuss four determinants of a technology strategy Write a short report on these determinants and how each is to be applied (10)

QUESTION 4 (based on the DELL case above)**[20]**

There are five models of the innovation process described by Rothwell (1994) He maintains these form part of a continuum

- 4 1 Write down the five different models on the continuum and provide a brief description of each (10)
- 4 2 Which one provides the best explanation of innovation? Justify your choice (2)
- 4 3 Which model is applicable to DELL and why? (8)

TOTAL MARKS**[70]**