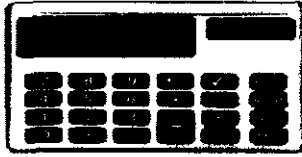


UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA  university
of south africa

MNE3703

October/November 2013

TECHNOLOGY AND INNOVATION

Duration 2 Hours

70 Marks

EXAMINERS :

FIRST

SECOND

EXTERNAL

MS MB VAN EEDEN

DR D VISSER

PROF M PRETORIUS

Use of a non-programmable pocket calculator is permissible.

Closed book examination.

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue.

The paper consists of 4 pages

You may answer this examination paper in either English or Afrikaans.

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

- Your **student number**
- The **module code (MNE3703)**
- The **sections and the numbers** of the questions you have answered

Section A is a **compulsory** section which you have to answer.

In **Section B** you must answer any **two (2)** of the three (3) questions.

Answer the questions in the answer book provided to you.

Please indicate the section and number of the question clearly when answering.

[TURN OVER]

SECTION A

The completion of this section is compulsory.
Answer all the questions of 30 marks in this section.

QUESTION 1 (COMPULSORY)

Read the case study and then answer the questions that follow.

CASE STUDY: LOTUS

Colin Chapman was one of the most innovative car designers of the post-war era. Among a string of innovations he produced a series of lightweight sports cars in the 1950s and the first monocoque construction Formula One racing car, the Lotus 2 5.

Chapman founded the Lotus in 1952 with £25 borrowed from his fiancé Hazel Williams. At this time he was employed by the British Aluminium Company, working for Lotus in the evenings and the weekends. The company's first premises were former stables leased at a very modest rent from Chapman's father who owned the pub next door. Chapman was helped in his new venture by a group of volunteers. Most, like Mike Costin, who later founded the engine manufacturer Cosworth, worked for nothing but the promise that they would occasionally get to drive the cars built by the company. Lacking much in the way of equipment, Chapman subcontracted the manufacture of the aluminium body of his first sports cars to Williams and Pritchard, a small engineering firm based in North London. It was apparently not unusual for Williams and Pritchard to have to chase to Chapman to get the invoices paid, sometimes taking back work they had completed until the money appeared.

During the early years, the fledgling Lotus company benefited from relationships with a variety of institutions. The 750 Motor Club was particularly important. Chapman was a member and regularly participated in races organised by it. Many of the acquaintances that Chapman made through the club were customers for early Lotus sports cars. However, not all Chapman's 750 Motor Club customers paid cash, for Lotus was prepared to barter its products in exchange for services, as when Patrick Stephens, who handled Lotus's advertising, took components for his car payment. Another important institution in the early years was the aircraft manufacturer De Havilland based near to Lotus in Hatfield. Several De Havilland employees, such as Mike Costin worked for Lotus in the evenings and at weekends, and it was through them that Lotus gained unofficial access to the plane-maker's wind tunnel for prototype testing.

By 1955, with expanded premises and a healthy order book, Lotus was sufficiently well established for Colin Chapman to give up his job with British Aluminium. By 1959 continued expansion meant a move to new premises as the company began production of the Lotus Elite sports car, an innovative design that made extension use of glass fibre. By this time Lotus was a recognised car manufacturer, albeit on a small scale and two years later Chapman began to work on his most significant innovation, the Lotus 25 Formula One car (Source: Smith, 2010: 206-207).

[TURN OVER]

- 1.1 The case study is about technical entrepreneurship and a technical entrepreneur (Colin Chapman). Discuss the drivers of technical entrepreneurship. (8)
- 1.2 What was the importance of the founder, family and friends when Colin developed and commercialised his technological innovation? Provide appropriate quotes from the case study in your answer. (4)
- 1.3 Give five (5) bootstrapping methods that Colin Chapman used to save costs during the development and funding of his innovation. Provide appropriate quotes from the case study for each method given in your answer. (10)
- 1.4 Explain four (4) cash flow problems which Colin experienced during the development of his technological innovation. (4)
- 1.5 Colin followed one of two routes mostly used by technical entrepreneurs to create a new venture. Describe each of these two (2) routes. (4)

[30]

SECTION B

You may choose to answer any **two (2)** of the following three (3) questions of 20 marks each in this section.

QUESTION 2

- 2.1 Give four (4) reasons why a firm would take an external route to innovation. (4)
- 2.2 Discuss how an existing technology paradigm can impact industries and competitors. (8)
- 2.3 Describe four (4) characteristics that are valued and promoted by the culture of organisations with a strong record of innovation (8)

[20]

[TURN OVER]

QUESTION 3

- 3.1 Discuss “value creation” as a concept of innovation theory. (6)
- 3.2 Provide six (6) implications (or functions) of the long wave cycle on innovation and technological change. (6)
- 3.3 Describe the potential benefits of a first-mover strategy to the “first-mover” (8)
- [20]**

QUESTION 4

- 4.1 Explain how the innovation technology strategy and decisions employed by managers of an organisation is affected by “sunk costs”. (8)
- 4.2 Discuss the network model as an innovation strategy (6)
- 4.3 Describe how “dominant designs” arise in the market. (6)
- [20]**

TOTAL MARKS: **[70]**