MANUFACTURING ENGINEERING TRIPOS PART II

Thursday 27 April 2006

9 to 12

PAPER 2

Answer not more than four questions.

All questions carry the same number of marks.

The approximate percentage of marks allocated to each part of a question is indicated in the right margin.

STATIONERY REQUIREMENTS

20 Page Answer Book

Rough Work Pad

SPECIAL REQUIREMENTS

Engineering Data Book

CUED approved calculator allowed

ATTACHMENTS

This Paper contains ONE attachment that relates to Question 6

You may not start to read the questions printed on the subsequent pages of this question paper until instructed that you may do so by the Invigilator

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1 Why do established companies seek to acquire new companies? What consequences for human resource management in the newly acquired unit follow from acquisition? What potential benefits and disadvantages may ensue? How can managers reduce the latter? Support your answer with case examples. [100%]

What do you understand by the concept of creativity? Is there evidence that shop floor teams can come up with creative solutions? In what sense can constraints actually enable creative responses? Explain how teams can be organized to enhance the creative potential of their members and the group as a whole.

[100%]

- 3 Most large manufacturing companies have a number of manufacturing sites spread over a range of countries, i.e. an international manufacturing network.
- (a) Why do companies assign different roles to factories within such networks? What issues of factory focus might need to be considered? Answers should refer to the views of different authors on the roles of factories in multi-factory networks. [70%].
- (b) Explain why companies may develop a network structure that is not optimal and the factors that might prevent transition to an optimal design. [30%]

- 4 (a) Explain what is meant by a 'product' from a marketing perspective. [15%]
- (b) A manufacturer of high capital value production equipment that has traditionally been recognised for its quality and technical leadership is considering moving into the after-sales market. Discuss the implications of such a move in terms of:
 - (i) new skills required;
 - (ii) New Product Introduction (NPI);
 - (iii) relationships within the existing distribution channel. [45%]
- (c) The same manufacturer is a subsidiary of a European-based holding company. It has traditionally operated almost exclusively in the UK, but is considering expanding into other parts of the European Union (EU). Discuss the key issues that the company should consider before undertaking such an expansion. [40%]

5 Strategy has been defined as 'the match an organisation makes between its internal resources and skills ... and the opportunities and risks created by its external environment' (Grant).

Discuss this statement with respect to Porter's positioning view of strategy and the resource-based view of strategy. Illustrate your answer with examples. [100%]

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- 6 (a) Define technology roadmapping, and discuss the various purposes for which it has been used. [25%]
- (b) Attachment 1 shows a technology roadmap developed by Biko, a traditional, but well regarded, bicycle manufacturer with a strong brand and global manufacturing and distribution networks. Biko has just been acquired by a large sports equipment and clothing manufacturer, Sportco. The new owner has requested this technology roadmap to communicate Biko's business vision and strategic plan. If convinced of the business case, Sportco is willing to make a significant long-term investment, in addition to investment that Biko has already planned for new product development.

Initial market research and strategy work highlighted two key opportunities for product innovation: power-assisted bikes, typically for commuting; and high-performance 'life style' bikes, such as mountain bikes

Initial roadmaps were produced for each of these options to explore: how the existing product could be upgraded (in 2 years' time); the form a radical new product could take (in 5 years' time); and what a next generation product might look like (in 10 years' time).

Further work has resulted in a combined roadmap (Attachment 1) showing how the existing product can provide a platform from which three distinct new products can be developed to serve three different market segments: the robust 'City' bicycle range for general urban use, based directly on the current product (budget already planned by Biko); the 'X-Ranger' high-performance, leisure bicycle, aimed at the affluent young professional (budget already planned by Biko); and the 'Power-Commute' power-assisted bicycle aimed at the growing professional urban commuting market (budget not yet planned by Biko).

(cont

With reference to Attachment 1, discuss:

- (i) the meaning of each layer (market, business, etc) of the roadmap;
- (ii) the critical links between layers, giving examples;
- (iii) where the key strategic decision points are in the roadmap;
- (iv) what further information will be needed before these decisions are made. [50%]
- (c) Discuss what relevance the activities of technology foresight and technology intelligence might have for the further development of the roadmap. [25%]

END OF PAPER

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