

EGT3
ENGINEERING TRIPOS PART IIB

Thursday 7 May 2026 9.30 to 11.10

Module 4E4

MANAGEMENT OF TECHNOLOGY

*Answer not more than **two** 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.*

*Write your candidate number **not** your name on the cover sheet.*

STATIONERY REQUIREMENTS

Single-sided script paper

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAM

CUED approved calculator allowed

Engineering Data Book

10 minutes reading time is allowed for this paper at the start of the exam.

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

You may not remove any stationery from the Examination Room.

LM/1.4

1 (a) Explain what is meant with *dynamic capabilities* (Teece, 2007), illustrating why these capabilities are relevant for companies and how the main concepts discussed in the Management of Technology module align with them. [30%]

(b) You are part of a consulting team supporting MedTech Solutions Ltd, a medium-sized firm that develops diagnostic devices for hospital and home-care markets. The company faces significant uncertainty about future trends and is worried about different aspects including the adoption of digital and AI-enabled diagnostics.

The company's senior management team recognises the need to take a longer-term, structured view of how markets, technologies, and capabilities may evolve, and to develop a coherent plan but lacks a method to do so.

(i) Based on your knowledge of technology management tools, advise the senior management on how they could develop an approach that combines *scenario planning* and *technology roadmapping* to support their strategic planning. Discuss the value of the tools and, if appropriate, illustrate the approach with sketches. [40%]

(ii) You advise that the company needs to make an ongoing effort to keep up to date with the trends in the AI-enabled diagnostics environment. Suggest an approach for accessing different *sources of information*, discussing their role, pros and limitations. [30%]

2. (a) NeoDrive Systems Ltd. is a medium-sized engineering firm supplying electric drive systems to automotive customers. The company has historically competed on mechanical and power-electronics engineering excellence, reliability, and close relationships with customers (large automotive firms). NeoDrive currently has strong mechanical and electrical engineering capabilities, limited embedded software expertise, established manufacturing operations, moderate financial resources.

A key customer has indicated that future contracts will increasingly depend on advanced control software and data-driven diagnostics integrated into drive systems. NeoDrive's senior management must decide how the company should proceed to establish this new technology competence over the next 5–10 years.

(i) Discuss how NeoDrive could use the *Make vs Buy* framework to decide whether to develop the new control-software and data-driven diagnostics competence internally or externally. [40%]

(ii) Assuming NeoDrive decides that developing the capability entirely in-house is not appropriate at this stage, based on your understanding of the *open innovation inbound/acquiring process*, explain how NeoDrive could proceed to access the required technology externally. [40%]

(b) Explain the links between *Intelligence* and *Roadmapping* and how these are practically useful in the development of strategic plans. [20%]

LM/1.4

3 (a) Explain the concept of *disruptive technologies* and discuss why large, established firms find it difficult to respond to technologies which have the potential to become disruptive. [20%]

(b) (i) Explain the *Business Model Canvas*. [15%]

(ii) Using the *Business Model Canvas*, describe the business model of the University of Cambridge. [30%]

(c) PhotonIQ Ltd is a university spin-out developing a novel optical sensing technology with potential applications in medical diagnostics and the monitoring of industrial systems. The founding team includes academic researchers who value publication and scientific recognition, alongside a newly appointed commercial director focused on building long-term industrial competitive advantage.

Recent experimental results demonstrate strong technical performance for their optical sensing technology, and the academic team is preparing to publish information about their technology in a high-profile academic journal paper. At the same time, early discussions with potential investors have raised concerns about intellectual property protection and freedom to operate. PhotonIQ must decide between *publishing* and *patenting* as it develops its technology and business.

Discuss the two options and where you see the main challenges for the team. [35%]

END OF PAPER