

EGT3
ENGINEERING TRIPPOS PART IIB

Thursday 8 May 2025 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.

1 (a) Explain the technology management process framework (ISAEP) and its applications. [30%]

(b) Describe the *Industrial Emergence Framework* and explain how it can be used by a startup developing advanced battery technology. [40%]

(c) For innovation management in the context of new product development (NPD), discuss the differences (including strengths and weaknesses) between:

- (i) the *Waterfall* or *Stage-Gate®* model and
- (ii) *Agile* methodologies.

Provide examples to support your answer and explain in what contexts each approach might be more appropriate. [30%]

2 (a) Discuss how a small or medium-sized enterprise (SME) in the food manufacturing sector could apply technology management tools and techniques to respond to the emergence of automation technologies. [50%]

(b) If a company is deciding between two projects — one involving the development of a new product for a growing but competitive market and another focused on incremental improvement of an existing product in a well-established market — how would the *opportunity and feasibility method* guide the decision-making process? [30%]

(c) Explain what *scenario planning* is and how it is used for strategic planning. [20%]

3 (a) Discuss, providing examples, the different business models for bringing a technology to market. [20%]

(b) (i) Explain how patents work. [10%]

(ii) For each of the five (ISAEP) *technology management processes*, provide one example that explains the importance of patents or patent data for the related technology management decisions. [30%]

(c) You are the CTO of a company that wants to upgrade its operations to reduce its carbon footprint. As a result of a technology intelligence exercise you have identified a group of suitable software technologies available from different providers that might help monitor and optimise resources. Using the *technology acquisition process*, discuss what needs to be considered to prepare for the acquisition of the software technology from different technology providers. [40%]

END OF PAPER