



UNIVERSITI KUALA LUMPUR
MALAYSIA ITALY DESIGN INSTITUTE

FINAL EXAMINATION
MARCH 2026 SEMESTER

COURSE CODE : PXB10503
COURSE TITLE : TECHNOLOGY MANAGEMENT 1
PROGRAMME NAME : BACHELOR OF TECHNOLOGY MANAGEMENT (HONOURS)
DATE : 23 JUNE 2026
TIME : 9:00AM - 11:30AM
DURATION : 2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of TWO sections.
4. Answer ALL questions for Section A.
5. Section B consist of four questions. Answer THREE (3) questions only.
6. Please write your answer on the answer booklet provided.
7. Please answer all questions in English only.
8. Please answer MCQ/EMQ questions using OMR sheet. ☐ *Tick if applicable*
9. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

THERE ARE 6 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 40 marks)

Answer ALL questions.

Please use the answer booklet provided.

Question 1

Describe how technology management contributes to the effective planning, implementation, and control of technological resources in an organization.

(10 marks)

Question 2

Explain the purpose of a Technology Management Framework in organizations. Discuss how a strategic approach and business alignment support effective management of technology.

(10 marks)

Question 3

Explain how technology improves efficiency and productivity and enhances communication in modern society. Provide relevant examples in your answer.

(10 marks)

Question 4

Compare the differences between digitization, digitalization, and digital transformation. Provide suitable examples for each concept.

(10 marks)

SECTION B (Total: 60 marks)

Answer **THREE (3)** questions only.

Please use the answer booklet provided.

Question 1**Case Study: Tesla Inc**

Tesla, Inc. has grown from a small startup into a global leader in electric vehicles (EVs), energy storage, and solar energy by using a strong technology management strategy focused on innovation and long-term sustainability. Founded in 2003, the company aims to accelerate the world's transition to sustainable energy, relying heavily on internal research and development (R&D), data-driven decision-making, and vertical integration to control much of its production and software systems.

To overcome major challenges such as technological uncertainty, scaling production, competitive pressure from traditional automakers, and sustainability goals, Tesla adopted several key strategies. These include developing in-house technologies like batteries and autonomous driving software, investing heavily in R&D through facilities like Gigafactories, and using real-time vehicle data to continuously improve performance and features. Tesla also uses technology roadmapping to guide long-term innovation and has embraced open innovation by making its patents available to encourage wider EV adoption.

As a result, Tesla has achieved market leadership in EVs, major advances in battery technology and autonomous driving, and improved production scalability through its Gigafactory model. However, the company still faces challenges such as production delays, quality control issues, and regulatory concerns around self-driving technology. Overall, Tesla's success highlights how integrated, data-driven, and innovation-focused technology management can drive industry transformation while still requiring ongoing adaptation to scaling and regulatory pressures.

- (a) Justify the role did technology roadmapping play in Tesla's ability to maintain long-term strategic direction?

(10 marks)

- (b) Identify in what ways did Tesla's open innovation strategy differentiate it from other competitors in the EV market?

(10 marks)

Question 2**Case Study: Netflix**

Netflix began in 1997 as a DVD rental service but successfully transformed into a global streaming giant by leveraging strong dynamic capabilities—its ability to integrate, build, and reconfigure resources to adapt to a changing environment. A key turning point came in the mid-2000s when Netflix recognized the rise of broadband internet and shifted early into streaming. This adoption of new technology allowed Netflix to move ahead of competitors like Blockbuster, which failed to adapt, giving Netflix a strong first-mover advantage in the digital entertainment space.

As streaming competition increased, Netflix faced the risk of losing content from third-party studios, so it reconfigured its strategy by developing original content. Using user data and analytics, Netflix began producing hit shows such as *House of Cards*, *Stranger Things*, and *The Crown*. This shift allowed Netflix to reduce dependence on external studios, gain full control over exclusive content, and strengthen customer loyalty through unique offerings that competitors could not easily replicate.

Netflix also expanded globally in 2016, making its service available in over 130 countries. It adapted to different markets by localizing content, adding subtitles, and producing regional hits like *Sacred Games* in India and *Money Heist* in Spain. Alongside this, Netflix continuously improved its platform using data-driven innovation to personalize recommendations and enhance user experience. These combined dynamic capabilities—technology adoption, content creation, global adaptation, and data-driven innovation—have enabled Netflix to maintain a strong competitive advantage in the rapidly evolving entertainment industry.

- (a) How did Netflix's ability to embrace streaming technology exemplify its dynamic capabilities?

(10 marks)

- (b) In what ways did Netflix's shift to producing original content demonstrate its dynamic capabilities?

(10 marks)

Question 3**Case Study: TechNova**

A technology company, TechNova, is trying to develop a new smart home energy system. Initially, the company relies only on its internal research and development (R&D) team. However, progress is slow, and the product does not fully meet customer expectations in terms of affordability and usability.

To improve innovation, TechNova adopts an open innovation strategy. It collaborates with university researchers to improve energy efficiency algorithms, partners with startups for low-cost sensor technology, and gathers feedback from customers through online platforms. The company also allows independent developers to contribute add-on applications for the system.

As a result, TechNova is able to launch a more affordable, user-friendly, and efficient product. However, the company also faces challenges such as protecting intellectual property, coordinating external contributors, and integrating diverse ideas into a single system.

- (a) Analyse how the adoption of open innovation helped TechNova improve its smart home energy system compared to relying only on internal R&D.

(10 marks)

- (b) Analyse the challenges TechNova may face when using open innovation and how these challenges could affect the success of the smart home energy system.

(10 marks)

Question 4**Case Study: Alpha Tech**

A mid-sized electronics manufacturer, "AlphaTech," was struggling to coordinate innovation across its R&D and product teams. Multiple projects were running in parallel, but leadership lacked visibility into which technologies were worth scaling and which were becoming obsolete. To address this, AlphaTech implemented a set of technology management tools including Patent Analysis, Portfolio Management, and Road Mapping to structure decision-making and align innovation with long-term strategy.

Using Patent Analysis, the company identified emerging competitors in battery efficiency and wireless charging, helping them avoid investing in saturated areas. Through Portfolio Management, AlphaTech categorized projects into "core improvements," "adjacent innovations," and "breakthrough bets," allowing better allocation of R&D budgets. A Road Mapping process was introduced to align product releases with technology readiness, ensuring that innovations were timed with market demand. The company also applied the S-Curve model to recognize when existing display technologies were reaching maturity and needed replacement.

To improve commercialization success, AlphaTech integrated a Stage-Gate system to evaluate projects at key development milestones and used Value Analysis/Value Innovation to redesign products for higher customer value at lower cost. As a result, development waste decreased significantly, and two previously underperforming projects were restructured into profitable product lines. For teams needing support, AlphaTech relied on external benchmarking reports, patent databases, innovation toolkits, and industry frameworks as key resources for technology management tools, ensuring continuous learning and improvement.

- (a) Determine why are technology management tools important for organizations?

(10 marks)

- (b) Identify how do project management tools and technology roadmaps help in managing technology?

(10 marks)

END OF EXAMINATION PAPER