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ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Semester Final Examination

Winter Semester, A. Y. 2022-2023

Course No. : BTM 4707

Time : 3 hours

Course Title : Technology Management

Full Marks : 150

Answer all 6 (six) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

- 1. a) Where and why technology road mapping is used for managing the technology of organizations. 10 (CO1) (PO1)
- b) ElectricCarTech (ECT) is a forward-thinking startup that specializes in manufacturing electric vehicles (EV). ECT aims to be a market leader in eco-friendly transportation solutions. ECT recognizes the growing global demand for sustainable transportation options. The increasing emphasis on reducing carbon emissions and the shift towards cleaner energy sources are driving the need for innovative EV solutions. 15 (CO3) (PO3)

ECT intends to develop EVs for urban commuters, long-distance travelers, and commercial fleets. The EV market is highly competitive, with established players and new entrants constantly introducing new features and models. Understanding market trends and consumer preferences is crucial to stay competitive. Evolving regulations and government incentives for green technology and emissions reduction are significant market drivers. Staying compliant with regulations and leveraging incentives is vital for ECT's success.

Rapid advancements in battery technology directly impact the range, charging speed, and cost of EVs. In-car technology, such as connectivity, autonomy, and infotainment, is becoming increasingly important in the EV market. Developing smart, connected vehicles is a critical technology driver. ECT's strategic priority is to develop EVs that align with sustainability goals. This includes using eco-friendly materials, optimizing energy efficiency, and reducing the carbon footprint of the manufacturing process.

ECT aims to penetrate new markets, both domestically and internationally. The strategy is to establish partnerships with local distributors, expand charging infrastructure, and understand regional market nuances. Preliminary analysis suggests that the company should focus on producing at least one model targeting the city commuter market within 1<sup>st</sup> 2 years, one EV model for intercity travel and long-distance commuting within the next 2 years and one commercial EV model for delivery and transport services in the next few years.

**Based on the above scenario answer the following question:**

Design a roadmap that aligns with the company's product development and market expansion strategy over the next five years considering appropriate product, market, technology, and strategy drivers.

2. A coffee company called Kindle is looking to manufacture a coffee maker that allows for one-cup processing with no filters cup sized grounds are utilized that come in individual serving sizes and a water-connected carafe connected to the coffee maker must be kept full, so the coffee maker is ready to go at a moment's notice. 25 (CO3) (PO3)
- Based on the requirements given, draw a stage gate and make a stage gate analysis to determine the initiatives and activities for each stage and key decisions to be made at each gate.**
3. Samsung's evolution from imitator to innovator is a noteworthy transformation. Samsung's journey began with the production of basic consumer electronics like black-and-white televisions and household appliances which has almost vanished now and the company invested heavily for its early stage Thin-Film Transistor Liquid Crystal Displays (TFT-LCD). Galaxy S series of smartphones of Samsung reached significant adoption from consumers but LED TVs catered to a broad customer base depicting an upward trend and stagnated later. The company primarily focused on replicating existing designs and technologies, serving as an imitator of established market leaders. Later, Samsung significantly invested in R & D and underwent a transition from imitator-to-innovator. This marked the beginning of the company's shift towards innovation. They began developing their technologies, such as semiconductors and display technology, and started to create original designs. Samsung expanded its consumer electronics portfolio, entering the mobile phone market with innovative devices. Samsung invested heavily in display technology, becoming a global leader in the production of high-quality, innovative displays like OLED and QLED. This allowed them to differentiate themselves in the TV market. Samsung worked on creating an ecosystem of interconnected devices, from smartphones to smart appliances, to provide a seamless user experience. This approach set them apart from competitors and enhanced customer loyalty.
- i. Draw an S-curve for Samsung Company and indicate at least one product for each stage and analyze the strategies applicable for each product at each stage of S-curve for Samsung. 15 (CO3) (PO3)
  - ii. Analyze the chasms that Samsung Company faced during its imitator-to-innovation transition phase and how the company overcame those chasms. 10 (CO3) (PO3)
4. a) What is portfolio management and how does portfolio management contribute to acquisition and selection of technological projects? 12 (CO1) (PO1)
- b) Analyze various qualitative and quantitative methods for screening individual projects for portfolio development. 13 (CO2) (PO2)
5. a) How can technology contribute to the competitiveness of organizations? Discuss with appropriate models for competitiveness. 12 (CO1) (PO1)
- b) Rapid technological advancement and dynamic business world pose new challenges for technology managers. Identify and elucidate major challenges for technology managers. 13 (CO2) (PO2)

6. Technology management framework is a general model that can be applied in various organizations regardless of type and size. Implementing a Technology Management Framework at a company is a strategic move to address current challenges, foster innovation, and ensure the company's competitiveness in the dynamic technology landscape. Through a systematic approach, the company aims to create a more agile, efficient, and forward-thinking technological ecosystem.

**In the light of above scenario, answer the following questions:**

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| a) Discuss primary and secondary activities of technology management.  | 10 | (CO2)<br>(PO2) |
| b) Develop a technology management framework for a software company and analyze how technological perspectives can be aligned with the commercial perspective. | 15 | (CO3)<br>(PO3) |