Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2022/2023

COURSE NAME	:	INNOVATION AND COMMERCIALIZATION MANAGEMENT
COURSE CODE	:	BPB 32603
PROGRAMME CODE	:	BPA
EXAMINATION DATE	:	JULY / AUGUST 2023
DURATION	:	3 HOURS

INSTRUCTIONS

1. ANSWER **ALL** QUESTIONS.
2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK.**
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 Developing new products and processes give critical roles for organization. Most organizations have not evolved or been designed to do new product development (NPD) or processes. Most organization are structured to serve operational need and it is unusually and unfrequently to do the NPD. The first decision an organization must consider in NPD is for setting up team. Different team structures associate with different roles for team members and project managers.

(a) Explain **FOUR (4)** types of team structure.

(8 marks)

(b) Draw a diagram consisting of **THREE (3)** functional teams in a case of a bicycle manufacturing company.

(5 marks)

(c) Discuss the operations and strategic decision of the functional teams in **Q1(b)** for the new product and process development of electric bicycle.

(12 marks)

Q2 (a) Define **FOUR (4)** knowledge typology hierarchy.

(4 marks)

(b) Illustrate the knowledge typology from **Q2(a)** in a pyramid view.

(4 marks)

(c)

Figure Q2: Cooking oil production floor

(i) Outline **FIVE (5)** examples of explicit knowledge that can be observed from **Figure Q2**.

(5 marks)

(ii) Propose **THREE (3)** strategies of acquiring knowledge for the company in **Figure Q2** with relevant examples.

(12 marks)

Q3 KUCHING (Sept 23): The Malaysian Rubber Council (MRC) has witnessed the signing of a memorandum of understanding (MoU) between Green Space Industries (Malaysian-owned company), Cranfield University, and Levidian Nanosystem Ltd in Bedford, United Kingdom. MRC chief executive officer Nor Hizwan Ahmad said for the first time, the technology used successfully converts harmful methane gas into more environmentally friendly graphene and when it is combined with natural rubber, the resulting material is proven to be more sustainable and durable. "This collaboration has indirectly encouraged the advancement of rubber technology so that innovation can be applied to redefine the future of rubber applications," he said in a press release today.

According to him, Malaysia, as a leading country in rubber technology, will gain profits through the commercialisation of high-performance rubber products in addition to opening new markets and further increasing the global value chain of the Malaysian rubber industry. "We will be more progressive towards unlimited progress with the wealth of rubber resources that we have—from plantations to aerospace." Humans have been exploring all corners of the earth for a long time, and now it is time for the rubber industry to move beyond borders. "Through the development of contemporary rubber materials that are formulated through the infusion of graphene and latex, the application can be carried out comprehensively to industries involving earth resources and the aerospace environment," Nor Hizwan added.

Nor Hizwan said that the parties involved will work together to promote as well as foster better uptake of graphene by industry in Malaysia, which is believed to be able to add value to raw materials such as natural rubber to produce high-value end products. Consequently, this shall enable more production of high-value, graphene-enhanced latex products into the market by the industry, especially in Malaysia. By having so, it will also help to increase the latex price especially at the smallholders' level, benefitting the Malaysian upstream rubber sector. Simultaneously, MRC promotes green technology by utilising graphene recovered from the decarbonization of methane generated from industrial combustion processes, in accordance with Sustainable Development Goals (SDG) 2030 and Net Zero Carbon objective.

Hizwan added that the goal of this international partnership is to draw investment from all over the world, not just from the UK. In a nutshell, it is a natural rubber and graphene extract-based aerospace balloon idea. Future plans call for underdeveloped nations to have affordable access to satellite applications. Aerospace balloons made of natural rubber and graphene extract will be more affordable and environmentally friendly than rockets used to send objects into space. Furthermore, once launched from the balloon, the satellite may be brought down using reasonably sustainable technology. As a result, the price will be ten times less than that of a rocket launch. A satellite launch with a rocket cost at least USD60 million. The graphene-enhanced aerospace rubber balloon itself is expected to reach the market in 3 years. It will

then be attached together with other advanced applications including cube satellite and start to provide comprehensive solutions to the market by year five.

On Sept 15, MRC organised the Industry Consultation 2022, an annual event involving rubber industry players from various fields to provide valuable feedback and suggestions directly on MRC's direction and way forward to support the rubber industry towards greater heights. From Sept 27-29, MRC will be participating in EVM Asia Expo 2022, the region's No. 1 Electric Vehicle Exhibition, hosted by the Malaysia Industry-Government Group for High Technology (MIGHT) and supported by the Malaysia Automotive Robotics and IoT Institute (MARii). This event brings together industry players in the field of manufacturing electric, hybrid, and autonomous vehicles under one roof in Malaysia International Trade and Exhibition Centre, Kuala Lumpur. – Lim How Pim

(*Source: Borneo Post Online & BusinessToday.com.my, October 2022*)

Based on the excerpt given, answer all questions.

(a) Identify **FIVE (5)** entities that have the potential to involve in collaboration.

(5 marks)

(b) Outline **EIGHT (8)** positive effects of collaboration among organizations in **Q3(a)**.

(8 marks)

(c) Construct a complete model for innovation collaboration for Green Space Industries with relevant explanations and examples.

(12 marks)

Q4 3D printing technology emerged in the 1980s largely for industrial application. However, the expiry of patent rights over many of these early technologies has prompted renewed interest in its potential to transform manufacturing supply chains. The availability of low-cost, high-performance 3D printers has put the technology within reach of consumers, fuelling huge expectations about what it can achieve. The 3D printing process starts either with a digital file in which the object to be printed is digitally formatted using either 3D print software, or a 3D scanner. The file is then exported to a 3D printer using dedicated software, which transforms the digital model into a physical object through a process in which molten material is built up layer upon layer until the finished object emerges. This process is also referred to as additive manufacturing. The 3D printers available today use a variety of materials ranging from plastics to ceramics, and from metals to hybrid materials. The 3D printing technology is evolving at a breath-taking pace. For example, MIT's Computer Science and Artificial Intelligence Laboratory recently developed a 3D printing technique to print both solid and liquid materials at the same time using a modified off-the-shelf printer, opening up a huge range of possible future applications. Furthermore, the applications in areas ranging from food to regenerative medicine and prosthetics. The expanding range of materials used for 3D printing means that the technology's application is having an impact on a whole range of industries, fostering new opportunities for innovation and business development. Even food is being 3D printed. It makes it possible to automate certain time-consuming aspects of food preparation and assembly, makes it easier to create freshly made snacks, has huge scope for food customization and can convert alternative ingredients like proteins from algae, beet

leaves and insects into tasty meals. Within the medical field, for example, using a commercially available 3D printer, researchers at the National University of Singapore have found a way to print customizable tablets that combine multiple drugs in a single tablet, so that doses of medicines are perfectly adapted to the needs of individual patients. Even the agro-food industry is exploring the potential of 3D printing for customized food products.

(Source: WIPO Magazine, February 2017)

Based on the excerpt given, answer all questions.

(a) Intellectual property is a mean of protecting the results of innovation and creative activity.

Discuss **TWO (2)** characteristics of intellectual property.

(4 marks)

(b) Propose the intellectual property protections that are ideal for 3D printing activities with examples.

(9 marks)

(c) Justify the impacts of 3D printing advancement on the protection of **THREE (3)** intellectual properties using a simple toy car as example.

(12 marks)

– END OF QUESTIONS –