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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2022/2023**

- COURSE NAME : POSTHARVEST TECHNOLOGY
COURSE CODE : BWD21402
PROGRAMME CODE : BWD
EXAMINATION DATE : JULY/AUGUST 2023
DURATION : 2 HOURS
INSTRUCTION : 1. ANSWER **ALL** QUESTIONS
2. THIS FINAL EXAMINATION IS CONDUCTED VIA
 Open book
 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 **FOUR (4)** PAGES

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Q1 During post-harvest operations, the structure of the paddy grain can be compromised, resulting in reduced quality. For instance, if the hull is damaged during threshing, it can expose the grain to moisture and pests. Similarly, if the bran layer is removed during milling, the grain can lose its nutritional value and flavor, making it less desirable in the market. This will consequently cause the kernel to get contaminated by microorganisms such as bacteria, mold and yeast.

(a) The rice grain/paddy consists of three main layers; the hull or husk, the bran and the inside kernel. List the parts of paddy structure as shown in **Figure Q1.1**.

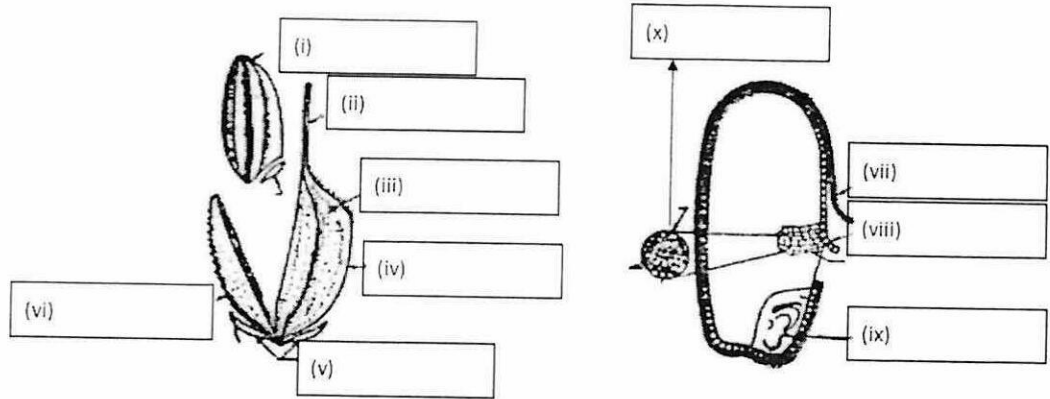


Figure Q1.1: Structure of paddy grain

(10 marks)

(b) Air drying is a common method applied in removing the moisture content of rice grain. Discuss **THREE (3)** advantages and disadvantages of conducting air drying process of rice grain.

(6 marks)

(c) Parboiled rice is considered as easy-cooked rice. Demonstrate the main operation process of producing parboiled rice.

(4 marks)

Q2 Herbs and spices play an essential role in the flavor and aroma of Malaysian soups, adding depth, complexity, and richness to the dish. “*Sup bunjut*” is a combination of whole spices tied up inside a piece of small square muslin wrap to make soup as shown in **Figure Q2.1**



Figure Q2.1: Sup Bunjut is a famous soup spices in Malaysia

- (a) Demonstrate the collective sequential procedure in making of “*Sup bunjut*”.
- (4 marks)
- (b) Drying is a crucial process in processing the soup spices. Prior to the drying process, pre-treatments are necessary to precondition the spices. Compare and contrast **FOUR (4)** pre-treatment techniques with appropriate examples.
- (16 marks)

Q3 Coffee is one of the most important agricultural commodities in the world. The coffee quality is highly associated with effective production methods during post-harvest management activities.

- (a) Name the genus of coffee.
- (1 mark)
- (b) Explain why coffee is an important commodity in the global market.
- (4 marks)
- (c) Sketch the process flow chart of coffee production applicable in the industry.
- (9 mark)

- (d) Compare and contrast **THREE (3)** different processing method of coffee bean

(6 marks)

Q4 Tomato production can serve as a source of income for most rural and pre-urban producers in most developing countries of the world. However, post-harvest losses make its production unprofitable in these parts of the world as it can be as high as 42% globally.

- (a) Explain why post-harvest loss is mostly happen in developing countries rather than in developed countries.

(4 marks)

- (b) Predict the **THREE (3)** primary cause of post-harvest loss of tomato in global market.

(5 marks)

- (c) Effective preharvest management is essential in maintaining the quality and prolonging the shelf life of fresh produce in fruit ecosystems. Explain **THREE (3)** effective pre-harvest management practices with appropriate examples that can help minimize post-harvest losses of tomatoes.

(10 marks)

-END OF QUESTIONS-