



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2019/2020**

COURSE NAME : PHYTOMEDICINE  
COURSE CODE : BWJ 41103  
PROGRAMME : BWW  
EXAMINATION DATE : DECEMBER 2019 / JANUARY 2020  
DURATION : 3 HOURS  
INSTRUCTIONS : ANSWER ALL QUESTIONS

**TERBUKA**

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

- Q1** (a) Herbal-based medicine has shown a sharp growth since 1990's. Discuss the factors that have contributed to the growth of these phytopharmaceutical products in the market. (5 marks)
- (b) Herbal medicine has many differences and similarities with well-defined synthetic drugs. Using a flow chart, outline the research approach of standardized herbal medicine. (10 marks)
- (c) Pre-clinical study and clinical trial are often conducted for the discovery of new drug from natural product. Highlight and discuss in-depth the methodology or activity in the clinical trial study. (10 marks)
- Q2** (a) Fast and sophisticated development of sciences and technology contributes to important roles in the development of herbal medicines. List and discuss **FIVE (5)** important technologies being used in the development of standardized herbal product. (10 marks)
- (b) Imagine you are working as a herbal product developer in a herbal nutraceutical company. You are to design a nutraceutical herbal product that can be used as anti-cancer and anti-gout. Propose medicinal plants that can be incorporated in your product and highlight major compounds that have the potential to show such effects. (15 marks)
- Q3** (a) Diabetes mellitus refers to a group of diseases that affect how your body uses blood sugar (glucose).
- (i) List **FIVE (5)** plants that can be considered as having potent anti-diabetic potential. (5 marks)
- (ii) Based on your answer in **Q3 (a)(i)**, choose **TWO (2)** plants and highlight the phytochemical that might contribute to the effect. Point out the mechanism of action of the compound(s) to act as anti-diabetic agent. (10 marks)
- (iii) Propose the *in vitro* and *in vivo* study in order to evaluate the efficiency of herbal product as anti-diabetic agent. (10 marks)

TERBUKA

- Q4** (a) Modern medicine is considered as first line treatment for diseases in human. Meanwhile, herbal medicine is still considered as complementary and alternative treatment in medicine. Please elaborate the reason for this situation. (10 marks)
- (b) Many Malaysian herbs have been used traditionally to treat tuberculosis.
- (i) Propose **THREE (3)** plants that have been shown scientifically to display potent anti-tuberculosis potential. (6 marks)
- (ii) From your answer in **Q4(b)(i)**, highlight the major phytochemicals which might contribute to the anti-tuberculosis effects. (3 marks)
- (iii) From your answer in **Q4(b)(ii)**, recommend the mechanism of action on how each phytochemicals can act as anti-tuberculosis agents. (6 marks)

- END OF QUESTIONS -

TERBUKA