



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2019/2020**

COURSE NAME : ARTIFICIAL INTELLIGENCE
COURSE CODE : BIT 20903
PROGRAMME CODE : BIT
EXAMINATION DATE : JULY 2020
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER **ALL** QUESTIONS.
2. THE STUDENTS SHOULD
UPLOAD THE ANSWER
BOOKLET (PDF/WORD
FORMAT) WITHIN 30 MINUTES
AFTER EXAMINATION
PERIOD.

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

CONFIDENTIAL

TERBUKA

Q1 Suggest the appropriate requirements for the development of an expert system for diagnosing skin diseases, based on the following aspects:

- i) User interface
- ii) Inference engine
- iii) Knowledge base

(12 marks)

Q2 You are given an expert system with seven rules pertaining to the interpersonal skills of a job applicant. Solve the following independent cases:

```
Rule 1: IF A THEN B
Rule 2: IF C THEN A
Rule 3: IF D THEN E ELSE C
Rule 4: IF F THEN C
Rule 5: IF G AND B THEN H
Rule 6: IF H THEN I
Rule 7: IF I THEN J
```

where;

```
A = the applicant answers questions in a straightforward manner
B = she is easy to converse with
C = the applicant seems honest
D = the applicant has items on her resume that are found to be
    untrue
E = she does not seem honest
F = the applicant is able to arrange an appointment with the
    executive assistant
G = the applicant is able to strike up a conversation with the
    executive assistant
H = she is amiable
I = has adequate interpersonal skills
J = will offer the job
```

Perform each of the following analysis to determine if the applicant will be offered the job or otherwise:

- (a) Forward chaining (14 marks)
- (b) Backward chaining (14 marks)

Q3 (a) Differentiate **FOUR (4)** major component between Artificial Neural Network and biological neurons.

(8 marks)

(b) Construct a multilayer perceptron (MLP) model for Iris flower classification based on the following data:

Input: petal length, petal width, sepal length, sepal width
 Class: Iris Setosa, Iris Versicolour, Iris Virginica

(11 marks)

Q4 Based on **Table Q4**, answer **Q4(a)** and **Q4(b)**

TABLE Q4: BMI categories

| Variable | Categories | Range |
|----------|-------------|---------------------|
| Height | Short | Less than 155 cm |
| | Medium | 159 cm to 170 cm |
| | Tall | Greater than 180 cm |
| Weight | Underweight | Less than 35 kg |
| | Normal | 40 kg to 76 kg |
| | Overweight | Greater than 80 kg |
| BMI | Underweight | Less than 16.5 |
| | Healthy | 18.5 to 23.9 |
| | Overweight | More than 25 |

(a) Identify the linguistic variable(s) and the linguistic value(s) based on **Table Q4**. Write the answer in fuzzy set representation.

(6 marks)

(b) Draw a membership function graph for each inputs and output.

(15 marks)

- END OF QUESTIONS -

