Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018

COURSE NAME	:	ARTIFICIAL INTELLIGENCE
COURSE CODE	:	BIT 20903
PROGRAMME CODE	:	BIT
EXAMINATION DATE	:	JUNE / JULY 2018
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Instruction: Answer **ALL** questions.

Q1 State:

(a) The justification which would convince you that a given machine is truly intelligent.

(6 marks)

(b) The tedious tuning process when training a neural network

(6 marks)

(c) The purpose of cross-validation.

(6 marks)

Q2 Differentiate:

(a) Breadth-first search and best-first search

(6 marks)

(b) Supervised and unsupervised learning

(6 marks)

(c) Blind search and heuristic search

(6 marks)

Q3 Based on **Figure Q3**, examine **TWO (2)** factors that can affect the efficiency of a search based problem solving.

(6 marks)

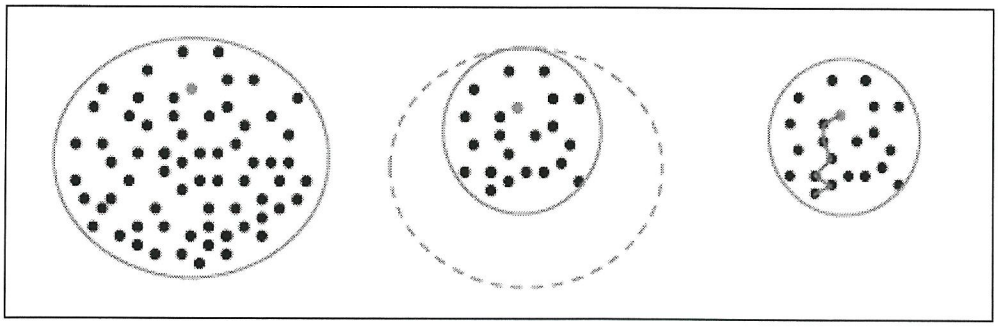

Figure Q3

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Q4 Determine weather the following logic sentences are TRUE or FALSE:

(a) $(A \wedge B) \vee (\neg C \vee \neg D)$

(2 marks)

(b) $A \Rightarrow B$

(2 marks)

(c) $A \wedge C \Rightarrow B \vee D$

(2 marks)

(d) $(\neg B \Rightarrow \neg A) \Leftrightarrow (\neg A \vee B)$

(2 marks)

(e) $(B \Rightarrow \neg A) \Leftrightarrow (\neg C \wedge D)$

(2 marks)

Q5 Construct all the membership functions from fuzzy associative memory in **Figure Q5.** (9 marks)

Input #1	Wind Speed (meter per second)	Low
		Medium
		High
Input #2	Relative Humidity (%)	Low
		Medium
		High
Output	Temperature (Celcius)	Cold
		Warm
		Hot

Figure Q5

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Q6 Draw a semantic network from the given facts in **Figure Q6**.

(7 marks)

```
A chicken is a bird
Chicken has wings
Bird has wings
Bird has two legs
Bird is food
Bird is animal
An orange is a fruit
Fruit has a stem
Fruit is food
Fruit is vegetable
An animal is a living thing
A vegetable is a living thing
```

Figure Q6

Q7 Answer **Q7(a) - Q7(d)**, based on the model given in **Figure Q7**.

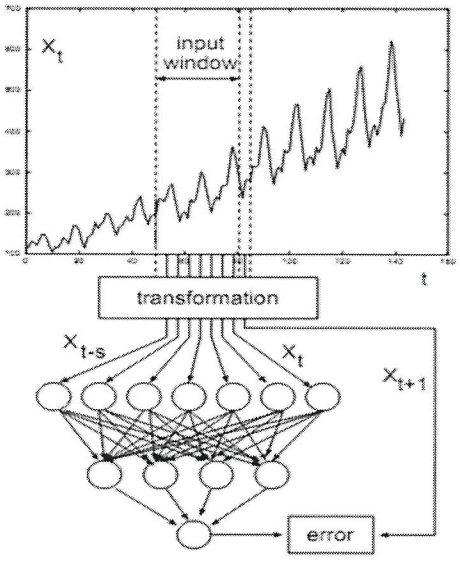

Figure Q7

(a) Describe the process of input-output mapping that involves in the model.

(10 marks)

(b) Discuss **TWO (2)** real world applications which can be solved by the model.

(6 marks)

(c) Discuss how performance of the model is assessed, using **TWO (2)** evaluations measures.

(8 marks)

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(d) Sketch and label a possible learning curve for the model.

(8 marks)

- END OF QUESTION -