



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2012/2013**

COURSE NAME : ARTIFICIAL INTELLIGENCE
COURSE CODE : BIT 20903
PROGRAMME : 3 BIT
EXAMINATION DATE : DECEMBER 2012 / JANUARY 2013
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : ANSWER ALL QUESTIONS

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

Instruction: Answer ALL questions.

- Q1** (a) **Figure Q1** shows a tree with L2 as its goal. Based on Figure Q1, answer **Q1(a)(i)** and **Q1(a)(ii)**.

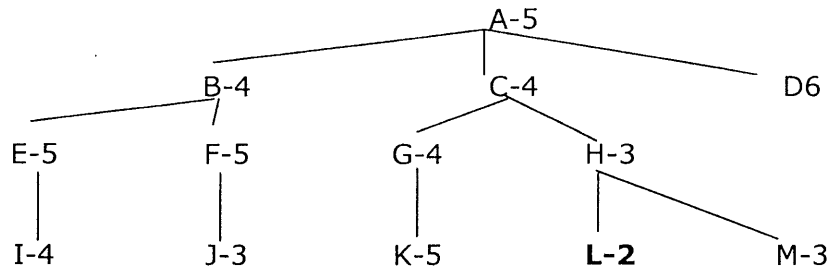


FIGURE Q1

- (i) Traverse the tree according to Best First Search with L2 as its goal. (8 marks)
- (ii) Traverse the tree according to Depth First Search with L2 as its goal. (10 marks)
- (b) Give **ONE (1)** difference between Data Driven strategy and Goal Driven strategy. (2 marks)
- Q2** (a) Prove that $(P \rightarrow Q) = (\sim Q \rightarrow \sim P)$ using truth table. (10 marks)
- (b) Translate each of the following sentences into a statement in the predicate calculus.
- (i) Hafiz is a badminton player. (2 marks)
- (ii) All badminton players are tall. (2 marks)
- (iii) Every badminton players will involve in at least three tournaments. (3 marks)
- (iv) Some badminton players will involve in every tournament. (3 marks)

- Q3**
- (a) Explain **TWO (2)** reasons why we need an expert system for assisting expert. (4 marks)
 - (b) Discuss on how working memory works as one of expert system problem solving component. (4 marks)
 - (c) Explain **ONE (1)** responsibility of Knowledge Engineer. (3 marks)
 - (d) Give **ONE (1)** difference between unstructured and structured interview. (4 marks)

- Q4**
- (a) Define fuzzy logic. (2 marks)
 - (b) Explain **TWO (2)** advantages of using Fuzzy Logic. (3 marks)
 - (c) Neural network and fuzzy logic are one of artificial intelligence area that had been applied in many domains, such as medical, business, education, geological, chemistry and others. Discuss **ONE (1)** application for neural network. (5 marks)

- Q5**
- (a) Differentiate between procedural knowledge and declarative knowledge. Give **ONE (1)** example for both procedural and declarative knowledge. (5 marks)

- (b) Frames are a collection of attributes and associated values that describe some entity in the world. Based on below statement, design class frame(s).

<ul style="list-style-type: none"> • Cat is mammal. • Bird is mammal. • Cat eats fish. • Cat has fur. • Car has four legs. 	<ul style="list-style-type: none"> • Bird eats worm. • Bird has wings. • Bird has two legs. • Mammal is warm blood. • Mammal gives birth.
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(14 marks)

- Q6 (a) State the output of each questions.
- i. ?- X is $10 + 5 * 6 / 3$. (1 mark)
 - ii. ?- $7 = 4 + 3$. (1 mark)
 - iii. `append([a,b,c],X,[a,b,c,d,e,f])`. (1 mark)
 - iv. `a(red)`.
`a(blue)`.
`b(apple,melon)`.
`b(orange,peach)`.
`P(X,Y,Z):-`
`a(X),!,`
`b(Y,Z)`. (3 marks)
- (b) Translate the following Scholarship Application Status into Prolog facts and rules. This statement is related with each other.

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Aqeel is a student.
Azman is a student.
Aqeel CGPA is 3.7.
Azman CGPA is 2.8.
Aqeel extra curricular activities point is 8.
Azman extra curricular activities point is 4.
Application will be accepted if CGPA is 3.5 and
above and extra curricular is 7 and above.
Application will be rejected if CGPA below 3.0 and
extra curricular activities point below 7.

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(10 marks)

- END OF QUESTION -