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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014**

COURSE NAME : ARTIFICIAL INTELLIGENCE
COURSE CODE : BIT20903
PROGRAMME : 2 BIT
EXAMINATION DATE : DECEMBER 2013/JANUARY 2014
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

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

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- Q1**
- (a) Define neural network. (3 marks)
 - (b) State **TWO (2)** advantages of neural network. (4 marks)
 - (c) State **TWO (2)** advantages of fuzzy logic. (4 marks)
 - (d) Discuss **ONE (1)** application of fuzzy logic technique. (4 marks)

- Q2**
- (a) Define expert system. (3 marks)
 - (b) Explain on how expert system works for interpretation and prediction categories. (4 marks)
 - (c) Use a diagram to differentiate problem solving approach between human human expert and expert system. (8 marks)
 - (d) Translate the conversation using IF THEN statement based on the following information.

Ahmad : Mr. Mechanic, I can't start the car today.
Mechanic : What happen? There are a few problem related with it. Is there any noise when you turn the key in the ignition?
Ahmad : No, i don't think so.
Mechanic : What about the lights? Is it on? If the car does not turn over and the lights is off it should be because of the cables or battery.
Ahmad : Really?
Mechanic : Yes. However if the car does not turn over and light is on maybe its because of the starter.
Ahmad : Ok. Now I know. Thanks Mr Mechanic.

(5 marks)

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Q3 Questions **Q3(a)** and **Q3(b)** are based on Figure **Q3**.

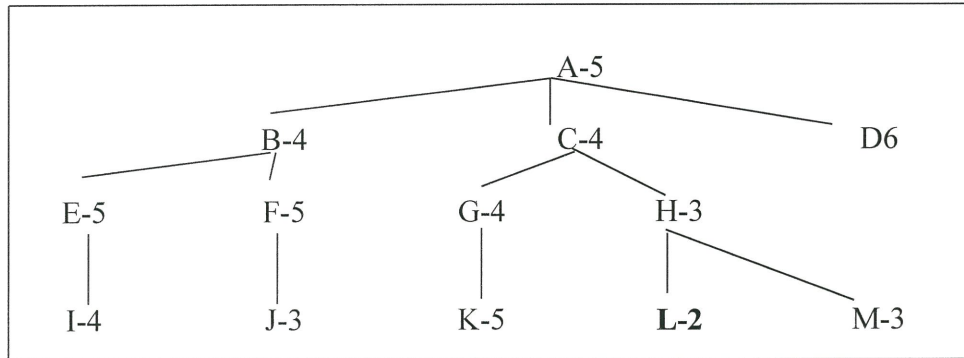


Figure Q3

- (a) Traverse the tree using depth first search with L2 as its goal. (8 marks)
- (b) Traverse the tree using best first search with L2 as it goal. (5 marks)
- (c) State **ONE (1)** advantage of depth first search. (2 marks)

Q4 (a) Give **ONE (1)** difference between procedural knowledge and declarative knowledge. (4 marks)

(b) Draw semantic network for the given facts.

Sally has pet named Koko.
 Koko is a rabbit.
 Sally is a rabbit lover.
 Sally is a human.
 Goat is a vegetarian.
 Rabbit is an animal.
 Human is an animal.
 Vegetarian doesn't eat animal.
 Vegetarian eat grass.
 Goat eat grass.
 Man is a human.
 Man is an adult.
 Man is a male

(16 marks)

Q5 (a) Construct a truth table for the following formula:

$$(p \vee \neg q) \rightarrow (p \wedge q)$$

(5 marks)

(b) Translate each of the following sentences into a statement in the predicate calculus. Each sentence is related.

(i) ahmad is an IT student

(1 mark)

(ii) ahmad travel by taxi

(1 mark)

(iii) all IT student must take a programming course

(2 marks)

(iv) everybody must take a programming course or be an IT student

(3 marks)

(v) every taxi will travel to at least one city

(3 marks)

Q6 Translate Job Application Status in **Table 1** into Prolog clauses. It should contain rules and facts that used to consider the job application status. Use *applicant*, *CGPA*, *experience*, *statusrejected* and *statusaccepted* as your predicates.

Table 1: Job Application Status

Applicant	CGPA	Experience
Sally	2.9	1 year
Danny	3.5	2 year

Additional rules:

Application will be accepted if CGPA is 3.0 and above and experience is 1 year and above. Application will be rejected if CGPA below 3.0 and experience is below 1 year.

(15 marks)

- END OF QUESTION -