

THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
B.Sc. DEGREE PROGRAMME: LEVEL 05
NO BOOK TEST 1: 2015/2016
CPU3243: PRINCIPLES AND TECHNIQUES OF ARTIFICIAL INTELLIGENCE
DURATION: ONE HOUR (1 HOUR)



Date: 2nd October, 2016

Time: 4.00 pm –5.00 pm

Answer ALL questions.

Q1.

“The field of Artificial Intelligence is attempted not just to understand them but also to build intelligent entities”

- a) In 1950 Alan Turing proposed the Turing Test, was designed to provide a satisfactory operational definition of intelligence. Explain briefly.
- b) Describe the following 3 subfields of Artificial Intelligence
 - i. Natural Language Processing
 - ii. Expert Systems
 - iii. Fuzzy Logic
- c) What are the seven types of reasoning techniques?
- d) What is the most suitable reasoning technique for each of the following examples?
 - i. Create an online application to display examination result of a given student.
 - ii. Develop an electronic medical system that can suggest a suitable doctor.

Q2.

“Propositional logic is the branch of mathematical logic concerned with the study of propositions that are formed by other propositions with the use of logical connectives”.

- a) Using suitable examples, describe what is Tautology, Contradiction, Counterexample and Module assignment?
- b) Identify key limitations of the propositional logic?
- c) What are the steps in converting propositional logic formula into CNF?

d) Using truth tables, determine whether the following are Tautologies, Contradiction or neither.

i. $\neg(P \leftrightarrow Q) \equiv P \leftrightarrow \neg Q$

ii. $P \leftrightarrow Q \equiv (P \wedge Q) \cup (\neg P \wedge \neg Q)$

e) Using the interpretations; A = I can play cricket, B = I have a bat, C = Ball is available in the stationary shop and D = Ball is made of plastic, Translate the following well-formulae into English.

i. $(B \wedge C) \rightarrow A$

ii. $(D \vee \neg B \vee \neg C) \leftrightarrow \neg A$

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