



FACULTY OF SCIENCE

ACADEMY OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING

MODULE	IT00157 ADVANCED ARTIFICIAL INTELLIGENCE
CAMPUS	APK
EXAM	NOVEMBER 2014

DATE: 2014/11/07

TIME: 08:30 – 10:30

ASSESSORS(S)

Prof EM Ehlers

EXTERNAL MODERATOR

Dr WJC van Staden (UNISA)

DURATION: 2 HOURS

MARKS: 100

THIS PAPER CONSISTS OF 2 PAGES INCLUDING THE COVER PAGE

INSTRUCTIONS:

1. Answer **ALL** the questions.
2. Write neatly and legibly.
3. Read the questions thoroughly.
4. Ensure that all questions are clearly marked on the answer sheet.

REQUIREMENTS: NONE

QUESTION 1

Discuss immunity-based computational models. Your discussion should include:

- a) Shape-space and affinity (5)
- b) Affinity measures (5)
- c) Solving problems applying immunity-based models (5)

[15]

QUESTION 2

Considering all aspects of T Cell-inspired algorithms create as comprehensive an ontology as possible which includes the concepts and aspects that you deem to be the most important.

Use a diagram to present the ontology. (Be as descriptive as possible by giving short definitions where necessary).

[25]

QUESTION 3

Considering existing B Cell-inspired algorithms discuss and compare different algorithms which are mainly inspired by B cells' response to antigens.

[35]

QUESTION 4

Danger theory is an immune-computing model that appears to have potential in providing more insights of immune processes. Briefly discuss Danger Theory.

[10]

QUESTION 5

Do you think that immunological computation (IC) has established itself as a computing paradigm? Discuss and motivate your answer. Discuss and motivate the future of immunological computation as you see it.

[15]

TOTAL: [100]