



FACULTY OF SCIENCE

ACADEMY OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING

MODULE	IT18X57 / IT00157 ADVANCED ARTIFICIAL INTELLIGENCE
CAMPUS	APK
EXAM	NOVEMBER 2016

DATE: 2016/11/22

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

The biological immune system exhibits many characteristics that are of interest to information processing. Discuss computational aspects of the immune system. Refer to theoretical models of immune processes relevant to the computational aspects.

[20]

QUESTION 2

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

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

[35]

QUESTION 3

Compare clonal selection algorithms and discrete immune network models. Define your own criteria, and motivate the use of these as suitable for comparison. The comparison must be presented in a table format.

[25]

QUESTION 4

Discuss the multilevel immune learning algorithm in which both B- and T-Cell recognition mechanisms are combined.

[10]

QUESTION 5

Do you think that Immunological Computation has established itself as an alternate computing paradigm? Discuss and motivate your answer. Discuss and motivate the future of Immunological Computation as you see it.

[10]

TOTAL: [100]