



FACULTY OF SCIENCE

ACADEMY OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING

MODULE	IT00302 CRITICAL INFORMATION INFRASTRUCTURE PROTECTION
CAMPUS	APK
EXAM	EXAMINATION — NOVEMBER 2014

DATE	2014-11-12	SESSION	08:30 – 10:30
ASSESSOR(S)		DR ID ELLEFSEN	
EXTERNAL MODERATOR		PROF E KRITZINGER (UNISA)	
DURATION	2 HOURS	MARKS	100

NUMBER OF PAGES: 3 PAGES

INSTRUCTIONS: ANSWER ALL THE QUESTIONS

REQUIREMENTS: NONE

All answers must be presented in a *well-written form*. A total of **5 marks** has been assigned to each question for overall presentation. Your answers must be well structured and present a clear position with regards to the question asked. All of your answers should include an appropriate introduction and conclusion. In all cases you may make use of diagrams to aid in your explanation.

QUESTION 1

Answer the question in a single well structured format.

When developing Critical Information Infrastructure Protection (CIIP) policies and strategies aspects relating to the correct governance of the structures is important. The appropriate governance mechanisms will ensure that not only is a country secure, but also that the cyber security of a country is ensured. Based on this statement provide a discussion based on the following concepts listed below.

(a) The governance of CIIP structures can be looked at in terms of the RACI definitions. With this in mind, discuss the **development** of CIIP structures and policies in terms of **governance** of these structure and the relating components of **RACI**. In your discussion clearly outline the benefits of good governance. [10]

(b) The governance relating to CIIP has a wider impact on stakeholders apart from direct management of cyber security. Part of this is the creation of **NATIONAL FOCAL POINTS** for CIIP. With reference to the governance of the CIIP structures provide a discussion that relates the establishment of NATIONAL FOCAL POINTS to ensure the creation of effective CIIP structures. [10]

(c) **Presentation and Structure of Answer** [5]

QUESTION 2

Answer the question in a single well structured format.

The risks associated with hardware components that are used in Critical Information Infrastructures is a growing area of concern. In many cases countries have blocked overseas providers from tendering for hardware contracts.

(a) Write a discussion on the risks associated with using untrusted hardware in Critical Information Infrastructures. In your discussion draw a comparison between Critical Information Infrastructures, Critical Information Infrastructure Protection, and Cyber Threats. [10]

(b) As an aspect of the development of an effective CIIP policy, there is a need to develop technologies to protect national critical systems. Provide a discussion of this statement with reference to the need to ensure a trusted sources of technology. [10]

(c) **Presentation and Structure of Answer** [5]

WAYS:
Approaches to executing
CIIP/cybersecurity strategy

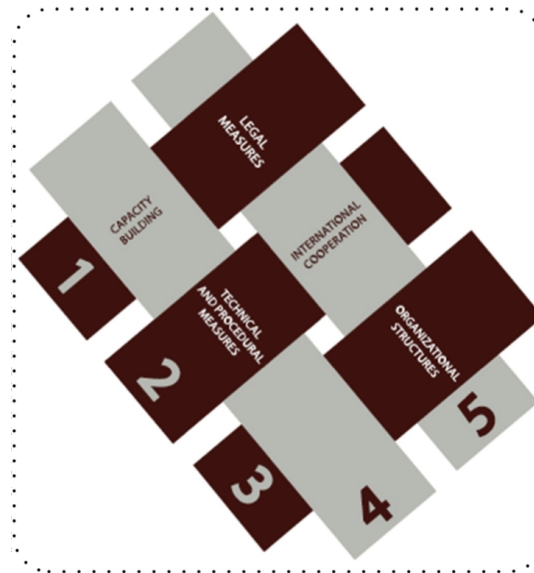


Figure 1: Ways and Means

QUESTION 3

Answer the question in a single well structured format.

The outcomes for a national cyber security policy framework results is used to create cyber security structures that are resilient against cyber attack.

- (a) With reference to Figure 1 provide a complete discussion on the outcome relating to the development of a cyber security policy framework, for each of the components outlined in the diagram above discuss the outcomes of the processes in terms of an effective framework. [10]
- (b) With regard to the development of a cyber security structure for South Africa, provide a justification (based on the content of the module) to motivate the above outcomes and how these could be implemented. [10]
- (c) **Presentation and Structure of Answer** [5]

QUESTION 4

Answer the question in a single well structured format.

- (a) The growth of broadband technologies introduces interesting problems for the development of effective CIIP structures in developing countries. The growth of Internet connectivity can contribute to a number of cyber-risk that a country can face. Discuss this aspect of the development of effective CIIP structures. As part of your discussion outline and describe the potential risks that a country could face with regards to the growth of interconnecting technologies. [10]
- (b) Based on your opinion that is justified by the course content, discuss how smaller stakeholders in the developing world (where there might not be effective CIIP frameworks in place) can effectively be protected against cyber attack. [10]
- (c) **Presentation and Structure of Answer** [5]