



GRETSA UNIVERSITY - THIKA

UNIVERSITY EXAMINATIONS JANUARY – APRIL 2017 SEMESTER

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE CODE: BSCS 407

COURSE TITLE: DISTRIBUTED SYSTEMS

DATE: 7 APRIL 2017

TIME: 8.00 AM – 11.00 AM

INSTRUCTIONS TO CANDIDATES

1. SECTION A IS **COMPULSORY**.
2. SECTION B: ANSWER ANY OTHER **THREE** QUESTIONS.
3. **DO NOT** WRITE ANYTHING ON THIS QUESTION PAPER AS IT WILL BE AN EXAM IRREGULARITY.
4. ALL ROUGH WORK SHOULD BE AT THE BACK OF YOUR ANSWER BOOKLET AND CROSSED OUT.

CAUTION: All exam rooms are under CCTV surveillance during the examination period.

SECTION A COMPLUSORY

QUESTION ONE

40MKS

- (a). A popular model of distributed systems is the client server model. Explain **three advantages** and **three disadvantages** of this model. [6]
- (b). One Way of classifying network is according to connection method. Discuss any **Two** Wired network technology. [4]
- (c). Briefly explain the following terms
- (i). Race condition [2]
 - (ii). Critical section [2]
 - (iii). Process [2]
 - (iv). Pipe [2]
- (d). Discuss any **FIVE** types of networks 10]
- (e). Explain any **TWO** models of replication [4]
- (f). Explain any **four** types of attacks on communication channels. [8]

SECTION B. ANSWER ANY OTHER THREE QUESTIONS

QUESTION TWO (2)

[20]

- (a) Using a diagram describe the OSI reference model. [14]
- (b) Briefly discuss the following.
- i. Intranet [2]
 - ii. Extranet [2]
 - iii. Internet [2]

QUESTION THREE (3) **[20]**

- (a) Explain **FIVE** major components of CORBA [10]
- (b) Explain any **THREE** design issues that must be taken into account when designing a secure distributed system. [6]
- (c) Name four design principles of Sun Network File System. (NFS). [4]

QUESTION FOUR (4) **[20]**

- (a) Briefly describe **FIVE** system models [10]
- (b) Explain **THREE** types of Ciphers [6]
- (c) Outline **FOUR** kinds of names [4]

QUESTION FIVE (5) **[20]**

- (a) Explain the following terms as relates to naming
 - i. Name resolution [1]
 - ii. Naming service [1]
 - iii. Path name resolution [1]
- (b) Name **three** goals of replication. [3]
- (c) Explain the following communication sockets.
 - i. Datagram socket. [2]
 - ii. Raw socket. [2]
- (d) Discuss **FOUR** security threats. [8]
- (e) Define the following terms:
 - (i) Cryptography [1]
 - (ii) Digital signature [1]