

SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

CSC 317: NETWORK AND DISTRIBUTED PROGRAMMING

DATE: 6TH DECEMBER, 2017 TIME: 1.30 -3.30 PM

INSTRUCTIONS TO CANDIDATES

- a) Answer <u>ALL</u> questions from section A(Compulsory)
- b) Answer ANY TWO questions from section B

SECTION A:

ANSWER ALL QUESTIONS

{30 MARKS}

QUESTION ONE

- a) Define the following terms as used in network programming
 - i. Packet Datagram
 - ii. Tracert
 - iii. Socket address
 - iv. ARP command
 - v. Encapsulation

(5 Marks)

b) i) Describe the a process and its elements

(2 Marks)

ii) Elaborate why Concurrency control is crucial in distributed systems

(4 Marks)

- c) Explain the Challenges of the 3rd generation programming languages in relation to network programming and how the 4th generation languages have address these. Cite Example
 (4 Marks)
- d) Write a code in java that will give as output the IP address for local Machine (4 Marks)
- e) Discuss the concept of network byte ordering and the two examples of implementation (4 Marks)
- f) With Aid of diagram ,Describe how Remote Method invocation call works (7 Marks)

SECTION B: ANSWER ANY TWO QUESTIONS {20 MARK EACH}.

QUESTION 2

- a) Threads are important constructs for facilitating concurrent programming, describe
 Three
 - Approaches deployed thread implementation

(6 Marks)

- b) Write Java code for Mutual exclusion implementing Monitor
- (6 Marks)
- c) Using an illustration and pseudo code describe the steps followed in a connectionless client server (8 Marks)

QUESTION 3

- a) Using a clearly illustrated diagram examine and describe the functions of the component TCP header (8 Marks)
- b) Using Java write a code that implement a Server Echo program (4 Marks)
- c) Compare and contrast the OSI reference model and the TCP/IP Protocol stack and justify (4 Marks)
- d) Using an illustration discuss the implementation handshake procedure for termination/close in TCP communication (4 marks)

QUESTION 4

- a) Elaborate on two types of Transparencies employed in distributed systems (4 Marks)
- b) Write code that can be used to display the IP address associated with a given Website

(6 Marks)

- c) Using diagram discuss the concept of data encapsulation (6 Marks)
- d) Discuss two approaches that DNS servers use to resolve IP address (4 Marks)