MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR

SCHOOL OF SCIENCE AND INFORMATION SCIENCES
FOURTH YEAR SEMESTER I EXAMINATIONS FOR THE BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE CODE: COM 409
COURSE TITLE: DISTRIBUTED SYSTEMS

DATE: 13TH DECEMBER, 2018 **TIME: 0830 - 1030 HRS**

INSTRUCTIONS TO CANDIDATES

ANSWER Question **ONE** and any other **TWO**

QUESTION ONE

a) Define the following terms in relations to distributed systems
   i. Distributed system
   ii. Distribution transparency
   iii. Stub
   iv. Performance
   v. Client **[5 marks]**

b) Discuss the need of systems distribution as opposed to centralized systems.
[5 marks]

c) Explain FOUR distinct characteristics of distributed systems
[8 marks]

d) Distributed systems design includes both hardware aspects and software aspects. Using appropriate diagrams, qualify this statement.
[12 marks]

QUESTION TWO

a) Write a C++/java program pseudo to accept messages from a client process by transmission control protocol.
[10 marks]

b) Discuss in detail the goals that designers try to achieve in the design of distributed systems. **[10 Marks]**

QUESTION THREE

a) Explain the concept of a 'port' in relation to distributed systems.
[4 marks]

b) RMI (Remote Method Invocation) is an API that provides a mechanism to create distributed application in JAVA. Use a clear diagram to elaborate all steps taken when an RMI is invoked. **[16 marks]**

QUESTION FOUR

a) Transmission Control Protocol sockets are referred to as 'connection-oriented' links. Explain. **[4 marks]**

b) Using code examples, describe the steps necessary when setting up server processes in transmission control protocol sockets.
[10 marks]

c) Write a client program in C++/java to invoke communication with a server process that you described in question (b).
[6 marks]

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