



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR DEGREE IN
BACHELOR OF SCIENCE IN COMPUTER SCIENCE

SCO 403: NETWORK APPLICATIONS PROGRAMMING

DATE: 31/5/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer all questions in section A and any two questions from section B

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

- a) Explain **any three functions** that network applications provide in supporting business's needs (6 marks)
- b) Differentiate between the terms search engine and directories in network applications (4 marks)
- c) Define the following terms as used in meta search engines (6 marks)
 - i. Software agents
 - ii. Toolbars
 - iii. Portals
- d) Name and explain **any four types** of web based portals communication services that can be provided by network applications (8 marks)
- e) Explain **the three main criteria** used to define a web service (6 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

- a) Explain the concept of virtual universities (2 marks)
- b) Name and explain **any five** communication services that can be provided by network applications. (10 marks)
- c) Name and explain **the** four key standards or protocols that web services are based upon. (8 marks)

QUESTION THREE (20 MARKS)

- a) With the aid of a diagram, name and explain the typical components of a web based application system. (8 marks)
- b) Explain any **three** main control measures that are used to provide security of data in databases. (6 marks)
- c) Explain any **three** security counter-measures that can be used to protect a database system from web-based attacks. (6 marks)

QUESTION FOUR (20 MARKS)

- a) With the aid of a diagram, explain the three-schema architecture used in database systems (8 marks)
- b) With the aid of a diagram, explain the 3-tier Database system architecture design (8 marks)
- c) Explain any **two** advantages that transaction processing monitors (TPM) provide to Database systems (4 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the concept of the model view controller architecture as is applicable to a network application design (6 marks)
- b) Using Java Server Pages (JSP) as our technology of choice, explain any three components that must be present to run a JSP application. (6 marks)
- c) Using Apache Tomcat Servlet technology, write a welcome Servlet that responds to a simple HTTP **get** request. (8 marks)