



MACHAKOS UNIVERSITY

University Examinations for 2022/2023

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO403: NETWORK APPLICATIONS

DATE:

TIME:

INSTRUCTIONS

This paper consists of FIVE questions

*Answer **question one** and **TWO** other questions.*

QUESTION ONE (COMPULSORY-30 MARKS)

- a) Outline FOUR examples of networked applications. (4 marks)
- b) Explain any TWO advantages that transaction processing monitors (TPM) provide to database systems (4 marks)
- c) Highlight FOUR desirable characteristics of a network API. (4 marks)
- d) Distinguish between the following terms as used in client/server systems:
 - i. Heterogeneous and homogeneous environments. (2 marks)
 - ii. Internet and World Wide Web. (2 marks)
- e) Provide the Internet Socket Port number used for the following applications.(4 marks)

	Service	Port Number
i	FTP	
ii	Telnet	
iii	HTTP	
iv	NFS	

- f) State FOUR principles of web engineering. (4 marks)
- g) Discuss THREE pros and THREE cons of the Client/Server computing. (6 marks)

QUESTION TWO (20 MARKS)

- a) Describe FOUR components of a Search Engine (8 marks)
- b) Discuss THREE categories of API architectures that are applicable in network applications. (6 marks)

- c) With aid of a diagram, describe the layers and function of the OSI Model (6 marks)

QUESTION THREE(20 MARKS)

- a) (i) Briefly explain the meaning of a Remote Procedure Call (RPC). (2 marks)
(ii) With aid of a well-labeled diagram, explain the components and working of an RPC- based application. (4 marks)
- b) Explain any **THREE** functions that network applications provide in supporting business needs (6 marks)
- c) Explain any **FOUR** types of searches that can be done using search tools. (8 marks)

QUESTION FOUR (20 MARKS)

- a) A startup company is contemplating deploying web services in its operations. Advise the company on **FOUR** benefits they are likely to accrue from using web services. (8 marks)
- b) Using Java Server Pages (JSP) as your technology of choice, explain **THREE** components that must be present to run a JSP application. (6 marks)
- c) Discuss **TWO** distributed object frameworks that can be used to implement distributed systems and compare them with regard to performance and security issues. (6 marks)

QUESTION FIVE (20 MARKS)

- a) Using a diagram, explain the interactions between the **THREE** major roles within the web service architecture. (8 Marks)
- b) Explain **THREE** security counter-measures that can be used to protect a web-based database system from attacks. (6 marks)
- c) Briely describe **THREE** functional interfaces provided by middleware. (6 marks)