



COLLEGE OF ENGINEERING DESIGN, ART AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

CMP1103: INFORMATION & COMMUNICATION TECHNOLOGY

BSc. Biomedical, Computer, Electrical & Telecommunications-1st Year

FIRST YEAR EXAM

WEDNESDAY 21st NOVEMBER, 2018. 2:00PM-5:00PM

INSTRUCTIONS:

Attempt only four out of the six questions for full Marks.
Clear explanations and appropriate examples for full marks.

Question One

(25 marks)

- a) Write the following in full with examples if any: DOS, UNIX, DHCP, SMTP, XML. (4 marks)
- b) Describe the term ICT and state any four types of ICTs. (6 marks)
- c) Why is ICT critical to Uganda's development as planned by the NDP II in vision 2040? (7 marks)
- d) Describe four network topologies for setting up a personal network. (6 MARKS)
- e) To what extent is a router similar to a gateway? (2 marks)

Question Two

(25 marks)

- a) List any three classes of general purpose computers and three of the special purpose computers with examples. (6 marks)
- b) Explain any two engineering functions that super computers might do similarly or differently from main frames and why you think so. (5 marks)
- c) What is the difference between public domain and open source software? (4 marks)
- d) What disadvantages does either the Harvard Architecture or the Von Neumann Architecture have? (6 marks)
- e) Explain two applications of Harvard Architecture and Von Neumann Architecture? (4 marks)

Question Three

(25 marks)

- a) Convert the following numbers and state one application of the target base.
 - i) 100101011.111 to decimal and octal. (6 marks)
 - ii) 1111000111111101 to binary coded decimal. (3 marks)
- b) Memory is one of the hardware components of a computer.
 - i) Name any three types of computer memory? (3 marks)
 - ii) An uncle wants to choose a motherboard and memory for his pc to be used by children in primary and the other for his work. How can you use your knowledge as studied in this course to advise on key things to consider? (5 marks)

- c) What changed between the third and fourth generations of computers? (4 marks)
- d) What are the elements of a computer information system? (4 marks)

Question Four

(25 marks)

- a) How is C programming useful to an innovator in the engineering field? (4 marks)
- b) ICT and innovation are key in UN Sustainable Development Goal (SDG) 9 "*Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*"
 - i) Write C program and use it to define part of an ICT innovation of your choice that is capable of addressing any UN SDG, preferably in Ugandan context. Note: The program must be capable of input, output and comparing at least two parameters. Proceed to describe the practical (real life) solutions offered by the chosen innovation. (11 marks)
 - ii) Differentiate between a linker and an assembler in programming. (2 marks)
- c) Google, one of the pioneer search engines was launched on the 27th September 1998.
 - i) What is the difference between a search engine and a browser? (3 marks)
 - ii) Name five issues that search engines face now differently from the Google milestone 20 years ago. (5 marks)

Question Five

(25 marks)

- a) John, a first year Makerere student requests notes from a colleague with email address omusomi_year1@cedat.mak.ac.ug. His colleague sends a URL: https://www2.courses.cedat.mak.ac.ug/electrical/cmp1103/lecture1_Computer_history.html/?studentID=omusom&%ist=#2018239423
 - i) How are URL and email address above similar and dissimilar? (7 marks)
 - ii) Explain the difference in the detailed processing of John's web requests in the two addresses above (indicate relevant protocols) (7 marks)
 - iii) If a student instead miscopied the url to https://www1.electrical.courses.cedat.mak.ac.ug/cmp1103/lecture1_Computer_history.html/?studentID=omusom&%ist=#2018239423 . what would the changed url change in terms of how or where the notes are actually accessed from? (6Marks)
 - iv) Should the students at Makerere University be concerned about the privacy of the email communication? Give reasons as to why or not? (5 marks)

Question Six

(25 marks)

- a) What is online collaboration and why is it important to students? (3 marks)
- b) Which collaboration tools are used in communication, project management and software development? Name 3 of each. (6 marks)
- c) What netiquette attributes could you suggest to your friend so that they better their collaboration online? (5 marks)
- d)
 - i) What do OSI and TCP/IP stand for (2 marks)
 - ii) State four main difference between the two OSI and TCP/IP (3 marks)
 - iii) Describe any three user-centered layers in the OSI model and give an example of at least one protocol (6 marks)