



UNIVERSITY EXAMINATIONS
EXAMINATION FOR SEPTEMBER/DECEMBER 2015/2016 FOR
BACHELOR OF SCIENCE IN COMPUTER SCIENCE
RCCS 209 FUNDAMENTALS OF COMPUTER NETWORKS

DATE: 2nd December 2015.

TIME: 2 HOURS

GENERAL INSTRUCTIONS:

Students are NOT permitted to write on the examination paper during reading time. This is a closed book examination. Text book/Reference books/notes are not permitted.

SPECIAL INSTRUCTIONS:

This examination paper consists Questions in Section A followed by section B. Answer **Question 1 and any Other Two** questions.

QUESTIONS in ALL Sections should be answered in answer booklet(s).

1. PLEASE start the answer to EACH question on a NEW PAGE.
2. Keep your phone(s) switched off at the front of the examination room and NOT on your person.
3. Keep ALL bags and caps at the front of the examination room and DO NOT refer to ANY unauthorized material before or during the course of the examination.
4. ALWAYS show your working.
5. Marks indicated in parenthesis i.e. () will be awarded for clear and logical answers.
6. Write your REGISTRATION No. clearly on the answer booklet(s).
7. For the Questions , write the number of the question on the answer booklet(s) in the order you answered them.
8. DO NOT use your PHONE as a CALCULATOR .
9. YOU are ONLY ALLOWED to leave the exam room 30minutes to the end of the Exam.

SECTION A (COMPULSORY)

INSTRUCTIONS

Answer **Question 1**, in section A, and any other **TWO** questions from section B.

SECTION A (Compulsory-30 MARKS)

- a). Explain how you would implement security in a Local Area Network
(5Marks)
- b). Explain where Gateway, Bridges, Repeaters and Routers appear in the OSI seven layer reference model.
(4 Marks)
- c). State Five functions of the application layer of the OSI model in Networking.
(5 Marks)
- d). Differentiate between the various following transmission modes.
- i. Simplex
 - ii. Half Duplex
 - iii. Full Duplex
- (6 Marks)**
- e). A client wants to set up a Metropolitan Area Network (MAN) and has the option of implementing FDDI and DQDB. Discuss the factors you would consider if you were to advise him on an option.
(10 Marks)

QUESTION TWO(15 MARKS)

- a) Explain why all nodes within the wireless LAN require a MAC protocol.
(2 Marks)
- b) Differentiate between Data Terminal Equipment (DTE and Data Circuit Terminating Equipment (DCE).
(4 Marks)
- c) State the primary reasons for networking computers.
(3 Marks)

- d) You have been given the responsibility of recommending a suitable network to an organisation. Give your basis for recommending X.25, Frame Relay or ATM. **(6 Marks)**

QUESTION THREE(15 MARKS)

- a) Devices on LANs, MANs, and WANs use different techniques to access the Network. Explain why they have to use the different techniques and yet using the same techniques would simplify the protocols **(10 Marks)**
- b) In addition to the number of networked computers other factors affect the performance of a network, Explain Five of this factors **(3 Marks)**
- c) Explain the advantages offered by Demand priority over CSMA/CD methods in data transmission **(2 Marks)**

QUESTION FOUR (15 MARKS)

- a) Explain why putting large chunks of data on the cable at one time slows down the network **(1 Mark)**
- b) As an IT consultant of a company dealing in Networks, Describe, the four characteristics necessary when examining cables **(8 Marks)**
- c) The following are topologies employed on LAN's; discuss the effects of increase in traffic on them. **(6 Marks)**
- (i). Star
 - (ii). Bus
 - (iii). Ring

QUESTION FIVE(15 MARKS)

- a) Differentiate data encapsulation and fragmentation. **(2 Marks)**

- b) Define what is IP multicast giving its advantages and disadvantages. **(5 Marks)**
- c) The differences in concept between the OSI seven layer reference model and the TCP/IP protocol stack. **(8 marks)**