



MASINDE MULIRO UNIVERSITY OF

SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

MAIN EXAM

2021/2022 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER EXAMINATION

FOR THE DEGREE

OF

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE CODE: BCS 456

COURSE TITLE: WIRELESS SYSTEM PROTOCOLS

DATE: Monday 25/04/2022

TIME: 8:00a.m-10:00a.m

INSTRUCTIONS TO CANDIDATES:

SECTION A IS COMPULSORY. ANSWER ANY OTHER TWO QUESTIONS IN SECTION B

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

Paper Consists of 2 Printed Pages. Please Turn Over



SECTION A [COMPULSORY]: 30 MARKS

QUESTION ONE

- a) Differentiate between tunneling and encapsulation [4 MARKS]
- b) Explain SIX major goals of mobile IP [6 MARKS]
- c) Differentiate between Medium Access Control and Radio Link Control protocols [4 MARKS]
- d) Discuss FOUR Transmission protocols in the Um interface [8 MARKS]
- e) Mobile Ad hoc Networks are wireless networks which are characterized by dynamic topologies and no fixed infrastructure. Discuss FOUR properties of MANETs [8 MARKS]

QUESTION TWO

- a) Differentiate between Operation and Support Subsystem and Base Station Subsystem [4 MARKS]
- b) Discuss TWO elements of Base Station Subsystem section of the 2G GSM network architecture associated with communicating with the mobiles on the network. [4 MARKS]
- c) GPRS is a packet oriented service for mobile data transmission and their access to internet. It uses unused slots and channels in TDMA mode of a GSM for packetized transmission from a mobile station. Discuss SIX elements that GPRS system brings to an existing GSM network [12 MARKS]

QUESTION THREE

- a) Discuss the actions taken for communication on inter cell handoff [6 MARKS]
- b) The Broadcast Control channels are broadcast from the BTS to MSs in the coverage area of the BTS and are one way channels. The BCH provides synchronization for all mobiles

within the cell and is occasionally monitored by mobiles in neighboring cells. Discuss
THREE broadcast channels [6 MARKS]

- c) The GSM network architecture is defined in the GSM specifications and it can be grouped into four main areas. Discuss [8 MARKS]

QUESTION FOUR

- a) Assume you are the Network Administrator in MMUST and management has instructed you to install a new wireless network node at the graduation square for FRESHAs night. Discuss FIVE Wireless LAN Requirements to consider when deploying this new node and the advantages. [10 MARKS]

- b) Dynamic Source Routing protocol is a simple and efficient routing protocol designed specifically for use in multi-hop wireless ad hoc networks of mobile nodes. It allows the network to be completely self-organized and self-configured, without the need for any existing network infrastructure or administration. Discuss the advantages and disadvantages of Dynamic Source Routing protocol in an organization. [10 MARKS]

QUESTION FIVE

- a) Wireless LAN is best suited for dynamic environment. Discuss THREE major areas where WLAN is applied [8 MARKS]
- b) The GSM system architecture contains a variety of different elements, and is often termed the core network. It is essentially a data network with some various entities that provide the main control and interfacing for the whole mobile network. Discuss SIX major elements within the core network. [12 MARKS]