NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SCHOOL OF SCIENCES AND TECHNOLOGY
MAY/JUNE 2012 EXAMINATION

CIT 655 WIRELESS COMMUNICATIONS (3 CR) *TIME ALLOWED:* 2½ HRS

INSTRUCTIONS: Answer any five (5) questions. Each question carries 14 marks

1a. Briefly describe the concept of wireless communication (2 marks)
b. State any four situations that justify the use of wireless technology (6 marks)
c. Enumerate any four application areas of wireless technology(6 marks)

2a. What do you understand by cellular system? (4 marks)
b. What advantages does it offer over other alternatives? (4 marks)
c. List and describe the basic parts of a cellular system (6 marks)

3a. Distinguish among Radio Wavelengths, Radio Frequencies and Radio Antennas (6 marks)
b. Outline the generations of mobile communication stating any two characteristic features of each generation (8 marks)

4a. State the three important features that discriminate MANs from LANs or WANs (6 marks)
b. What is Carrier Sense Multiple Access (CSMA)? (4 marks)
c. Briefly describe any two types of CSMA (4 marks)

5a. The different types of cells are given different names according to their size and function. State and describe any four of these types. (10 marks)
b. State the advantages given by decreasing cell size (4 marks)

6a. The antenna current of an AM transmitter is 8 A if only the carrier is sent, but it increases to 8.93 A if the carrier is modulated by a single sinusoidal wave. Determine the percentage modulation. Also find the antenna current if the percent of modulation changes to 0.8. (11 marks)
b. State the problems with conventional AM transmission (3 marks)

7a. A single-tone FM is represented by the voltage equation as $v(t) = 12 \cos(6 \times 10^8 t + 5 \sin 1250 t)$. Determine the following: (12 marks)

i) carrier frequency
ii) modulating frequency
iii) the modulation index
iv) maximum deviation
v) what power will this FM wave dissipate in 10 Ω resistor

7b. What are the factors that influence the choice of Digital Modulation? (2 marks)