NATIONAL OPEN UNIVERSITY OF NIGERIA,
14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS.
SCHOOL OF SCIENCE AND TECHNOLOGY
SEPTEMBER/OCTOBER 2016 EXAMINATION

COURSE CODE: CIT 755
COURSE TITLE: Wireless Communication I
TIME ALLOWED: 3hrs
INSTRUCTION: Answer any **five (5)** questions.

QUESTIONS

1a. Based on your knowledge of wireless communication, how would you make a distinction among the following multiple access techniques: FDMA, TDMA, CDMA and SDMA , in the event that you had to use the following as the parameters for your comparison:

i. Modulation
ii. Forward error correction and) 4 marks each
iii. Source coding

(12 marks)

1b. In not more than one sentence, describe the concept of threshold crossing rate

(2 marks)

[Total =14 marks]

2. Assuming a cellular system uses a six-cell reuse pattern and 1MHz of the total bandwidth is allocated for control channels, and has a total bandwidth of 25 MHz which employs two 30 kHz simplex channels in offering full duplex voice and control channels, determine:

i. the number of voice channels per cell, (4 marks)

ii. the number of control channels (2 marks)

iii. the total available channels (4 marks)

iv. an equitable distribution of control and voice channels in each cell. (4 marks)

[Total =14 marks]

3a. In very concise terms describe the notion of line coding. (4 marks)

3b. How is multiple access accomplished in Orthogonal Frequency Division Multiple Access? (4 marks)

3c. Write down the full meaning of the following acronyms:

i. LP-OFDMA (2 marks)
ii. FC-FDE (2 marks)
iii. WDMA (2 marks)

[Total =14 marks]

4a. With the aid of well-labelled diagrams, give a brief description of three (3) basic techniques for linking customers to fixed channel radio links. (12 marks)

4b. State the actual prediction of the free space-radio propagation model. (2 marks)

[Total =14 marks]

5a. Explain the concept of Carrier Sense Multiple Access. (6 marks)

5b. Name four (4) common forms of Carrier Sense Multiple Access. (8 marks)

[Total =14 marks]

6a. The Mobile Telephone Switching Office usually link s up to three subsystems. Name and describe these subsystems. (12 marks)

6b. State any four (4) situations that justify the use of wireless technology. (2 marks)

[Total =14 marks]

7a. State the expression for determining the average non fade duration (ANFD), detailing each of the symbols used in the expressed. (6 marks)

7b.Explain the concept of transmission efficiency within the context of the useful message power and the large carrier power in wireless communications. (8 marks)

[Total =14 marks]