



**ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO
STATE**

**FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND
COMPUTER ENGINEERING**

FIRST SEMESTER EXAMINATION, 2017/2018 ACADEMIC SESSION

COURSE TITLE: TELECOMMUNICATIONS ENGINEERING

COURSE CODE: EEE 539

EXAMINATION DATE:

COURSE LECTURER: DR. O. ADETAN

A handwritten signature in black ink, enclosed in a rectangular box. The signature appears to be 'O. Adetan'.

HOD's SIGNATURE

TIME ALLOWED: 2 HOURS

INSTRUCTIONS:

1. ANSWER FOUR QUESTIONS ONLY
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
3. YOU ARE **NOT** ALLOWED TO BORROW ANY WRITING MATERIALS DURING THE EXAMINATION.

Question #1

- Switching has been described as the heart of automatic telephone system. Mention and explain three types of switching used in telephony [11 marks]
- With the aid of a diagram, describe briefly the public telephone network [4 Marks]
- A two wire repeater uses a hybrid transformer with a direct feed loss of -60 dB. The lines are matched and hence reflection is zero. If a gain margin of -10 dB is provided for against oscillation, determine the maximum in gain in each direction [5 marks]

Question #2

- What are the distinguishing features of telegraphy, teletypewriter and telex systems? [6 Marks]
- In communication system, data can be transmitted from the source (transmitter) to the destination (receiver) via various communication lines. Mention and explain the communication lines for data transmission that you know. Give an example each [8 Marks].
- Mention and explain different types of modulation techniques known to you. Identify their merits and demerits [6 Marks].

Question #3

- Cellular telephone systems are extremely popular and lucrative worldwide. The basic premise behind cellular system design is frequency reuse, which exploits the fact that signal power falls off with distance to reuse the same frequency spectrum at spatially-separated locations. Using appropriate diagrams, discuss the cellular system architecture [5 Marks].
- What are the multiple access methods used in communication systems [6 Marks].
- What are the conceptual layers in a wireless network system? [9 Marks]

Question #4

- Wireless communications system has evolved in recent times. Discuss using a block diagram the different cellular networks evolution known to you. Give two representative standards each [8 Marks].
- Itemize the steps involved in receiving and initiating a cellular telephone call [8 Marks].
- What do you understand by the term "roaming"? [4 Marks]

Question #5

- The term telephony means a system that enables speech to be conveyed beyond the range of human voice and hearing. Using appropriate diagrams, discuss the telephone speech apparatus known to you [6 Marks].
- Write short notes on the following as used in telephony:
(i) Sidetone, (ii) PABX (iii) Ringing signal (iv) Cross talk and (v) Equalization [10 Marks]
- Mention and explain briefly the importance of signaling in the telephone system [4 Marks]

Question #6

- The European Telecommunications Standardization Institute (ETSI) adopted the GSM standard in 1991, and GSM is now used in about 160 countries. Discuss the various merits, demerits and services of the GSM that you know [6 Marks].
- Write short notes on the following terms as used in GSM: i) The BSS, ii) The MSC, iii) The VLR and AuC, and iv) EIR. [7 Marks]
- Using a sketch diagram describe the Handoff process. What are the factors influencing handoffs? [7 Marks]