ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE
FACULTY OF ENGINEERING
DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY

FIRST SEMESTER EXAMINATION, 2019/2020 ACADEMIC SESSION

COURSE TITLE: COMPUTER SECURITY TECHNIQUES

COURSE CODE: ECT 523

EXAMINATION DATE:

COURSE LECTURER: ENGR. O. O AFOABI

HOD's SIGNATURE

TIME ALLOWED: 2 HOURS

INSTRUCTIONS:
1. ANSWER ANY **FOUR** QUESTIONS
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

a. Given a security policy specifications defined as: "secure" and "non-secure" actions. State the three strategies a security mechanism adopts in handling an attack. [6marks]

b. Structurally describe how a channel reliability can be secured in a disk storage with a Cyclic Redundancy Check at the source and destination of information transmission as proposed by Shannon. [4marks]

c. Discuss the concept of Perfect Secrecy with respect to One-time Pad. [5marks]

Question 2

a. Define the term Information Entropy. [3marks]

b. Consider tossing a die with outcomes 1, 2, 3, 4, 5, or 6, each occurs at probability 1/6. Calculate the Information Entropy. [4marks]

c. Consider tossing a coin with equal occurrences of head and tail. Calculate the Information Entropy. [4marks]

d. Consider tossing a coin with the occurrence of heads 70% of the toss than the tails. Calculate the Information Entropy. [4marks].

Question 3

a. Discuss into some details the principle of Conditional Access system. [5marks]

b. Discuss into some details how Videoguard works. [5marks]

c. Outline the five parameters used for quantitative analysis of video encryption techniques. [5marks]

Question 4

a. Given the following set of natural numbers: [9marks]
   i.   1, 8, 27, 64, 125, ..., ...
   ii.   1, 3, 6, 10, 15, 21, ..., ...
   iii. 1, 1, 2, 3, 5, 8, 13, 21, ..., ...

Figure out the two subsequent terms in each case and mention the types of natural number they are.

b. Using Euclidean Algorithm, compute the gcd(1160718174, 316258250). [6marks]

Question 5

a. Mention two cases that won a patent for computer process in 1981. What was the rationale for upholding the right to patent computer process? [5marks]

b. Discuss the relationship between Trade Secret and Reverse Engineering using a relevant case study? [4marks]

c. Clarify the concept of Ownership of a Copyright in the context of "work for hire". [3marks]

d. Why is it difficult to apply Trade Secret to computer programs? [3marks]

Question 6

a. Complete the missing information in the following table using Vernam cipher. [4marks]

	Plaintext	Keys	Ciphertext
i.	01101111	00010101	?
ii	01101001	11010100	?

b. Voice authentication exists in two forms. Discuss. [4marks]

c. Enumerate two biometric features used for eye authentication. [4marks]

d. State the advantage of multiple authentication technique. [3marks]