



Institute of Information Technology

Jahangirnagar University

Post-Graduate Diploma in IT

3rd Semester Final Examination- Summer 2021

Duration: 3 Hours

Course Code: PGDIT-315

Batch: 15

Full Marks: 60

Course Title: Network Security

Do not write anything on the question paper.

There are **7 (Seven)** questions. Answer any **5 (Five)** of them.

Figures in the right margin indicate marks.

1. a) What do you mean by multiplicative inverse of an integer? Using Extended Euclidean Algorithm, determine the multiplicative inverse of 15 in 26 modulus. (4)
b) Define binary operation. Find the result of the following modulus operations: (4)
(i) $10 \bmod 10$, (ii) $9 \bmod 18$, (iii) $35 \bmod 7$, (iv) $-13 \bmod 8$
c) What does Z and Z^* mean? Using Euler's Phi-Function, find the number of elements in: (4)
(i) Z_{30}^* (ii) Z_{49}^*
2. a) What is the difference between Additive cipher and Auto-key cipher? (1)
b) Given some traditional ciphers. Identify which are monoalphabetic and polyalphabetic? (2)

Affine cipher, Hill cipher, Additive cipher, Autokey cipher,
Multiplicative cipher, Playfair cipher, Caesar cipher, Vigenere cipher.

c) Encrypt the message 'blockchain' using any THREE of the following ciphers. (Use modulo 26). To check your answer, decrypt the message to get the original plaintext. (9)
(i) Multiplicative cipher with key = 9 [$9^{-1} = 3$]
(ii) Autokey with initial key = 14
(iii) Affine cipher with key = (3, 7) [$3^{-1} = 9$]
(iv) Additive cipher with key = 12
3. a) Define transposition cipher. Encrypt the message 'Better late than never' using keyless transposition cipher. Check your answer by decrypting the message after encryption. (4)
b) An encryption key is given as 3 5 4 6 2 1. Determine the corresponding decryption key and then decrypt the message 'YTPORCAHPYRG' using keyed transposition cipher. (4)
c) Encrypt the message "digital bangladesh" using Columnar transposition cipher with the help of encryption key 41523. (4)
4. a) Define digital signature. What three purposes are served by a digital signature? (4)
b) Illustrate the processes of signing and verification used by digital signature. (4)
c) Differentiate between conventional signature and digital signature. (4)
5. a) Define cryptographic hash function. List some hash functions used in cryptography. (4)
b) State the importance of hash function in network security. (4)
c) Briefly describe some desirable properties a cryptographic hash function should have. (4)
6. a) List some critical characteristics of information security. What layers of security a successful organization should have? (5)
b) Define network security. Illustrate a general model for network security. (5)
c) List some necessary tools for maintaining information security. (2)
7. Write short notes on any THREE of the following: (3×4 = 12)
 - Three Pass Protocol
 - CIA and DAD Triad of information security
 - General Idea Behind Asymmetric-Key Cryptography
 - Creating Digital Signature



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Post Graduate Diploma in IT (PGDIT) Program

3rd Trimester Final Examination, Summer 2022

Intake: Summer 2021 (Batch 16)

Duration: 3 Hours

Full Marks: 60

Course Code: PGDIT 301

Course Title: Web Programming

There are 07 (Seven) questions. Answer any **5 (Five)** of them.

Figures in the right margin indicate marks.

1.
 - a) Mention the structure of HTTP request. Write the information it provides. 2+3
 - b) Show how connection can be established in TCP/IP protocol. 3
 - c) How web browser works? 4
2.
 - a) Write the syntax of any four new semantic elements included in HTML5. 4
 - b) Mention the basic differences among web storage, local storage and session storage. 4
 - c) Mention some input elements you can use to make a form for personal information. 4
3.
 - a) Mention some new features of PHP7. 4
 - b) Mention the different variable scope in PHP. 2
 - c) How associative array can be declared in PHP? Which loop is appropriate for this array? 2+2
 - d) What is PHP session variable? 2
4.
 - a) How CSS can be added in HTML code? Mention some features of W3CSS. 2+2
 - b) How three types of selector can be define in CSS? 4
 - c) How font size can be manipulate using CSS? 4
5.
 - a) Why JavaScript is a popular scripting language? 3
 - b) Mention the JavaScript events. 2
 - c) Show the DOM elements. 3
 - d) There are some error in the following program. Identify the error and correct it. 2+2

```
<!doctype html>
<html>
<head>
<meta charset="utf-8">
<title>JavaScript Objects</title>
</head>
<body>
<h2>Creating a JS object CAR</h2>
<p id ="pid"></p>
<script>
const car={
name :
model: 500,
weight:
color: "white",
};
document.getElementById("pid").innerHTML = "The car name is " +
car.name + "<br>"+ " Model is " + car.model + "<br>"+ " Weight is "
+ car.weight + "<br>" + "Color is "+car.color+"<br>";
</script>
</body>
</html>
```
6.
 - a) How serverside and clientside validation is performed? 3+3
 - b) How the document ready event works in JQuery? 2
 - c) Mention the difference between Get and Post method. 2
 - d) What is ASP? 2
7.
 - a) How caching in client side can make applications faster? 4
 - b) Write the syntax of the following operation: 2×4=8
 - i. Defining color in CSS
 - ii. Function in JavaScript
 - iii. Inserting a canvas in HTML5
 - iv. Isset function in PHP