



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

This exam paper must not be removed from the venue

Venue _____

Seat Number _____

Student Number

--	--	--	--	--	--	--	--

Family Name _____

First Name _____

School of Information Technology and Electrical Engineering
Semester One Final Examinations, 2023
INFS3202 Web Information Systems

This paper is for St Lucia Campus students.

Examination Duration: 120 minutes

Planning Time: 10 minutes

Exam Conditions:

- This is a Closed Book examination - no written materials permitted
- Casio FX82 series or UQ approved and labelled calculator only
- During Planning Time - Students are encouraged to review and plan responses to the exam questions
- This examination paper will be released to the Library

Materials Permitted in the Exam Venue:

(No electronic aids are permitted e.g. laptops, phones)

None

Materials to be supplied to Students:

Additional exam materials (e.g. answer booklets, rough paper) will be provided upon request.

1 x Gradescope Bubble Sheet

Instructions to Students:

If you believe there is missing or incorrect information impacting your ability to answer any question, please state this when writing your answer.

Additional exam material rough paper will be provided upon request.

Please answer all the MCQ questions (Part A) on the Gradescope Bubble Sheet and answer all the short-answer questions (Part B) on the examination paper. Total Marks: 45

For Examiner Use Only

Question	Mark
----------	------

[illegible]

Total

Part A – Multiple choice questions (20 marks, 0.5 mark per question)

Answer all questions on the MCQ answer sheet.

1. Which protocol is used for transferring files over the Internet?
 - a. SMTP
 - b. FTP
 - c. SSH
 - d. Telnet
2. What is the purpose of the three-way handshake process in TCP/IP?
 - a. To establish a connection between the server and client
 - b. To exchange data between the server and client
 - c. To terminate a connection between the server and client
 - d. To detect data errors during transmission
3. What is the purpose of a port address in TCP/IP?
 - a. To identify a specific network device on the internet
 - b. To identify a specific application on a network device
 - c. To establish a connection between two network devices
 - d. To manage network traffic and avoid congestion
4. What is the process of adding a header and trailer to a message before it is transmitted?
 - a. Encapsulation
 - b. Decapsulation
 - c. Transmission
 - d. Reception
5. Which of the following can best describe HTTP caching?
 - a. A method to store and reuse previously requested resources
 - b. A way to encrypt communication between a client and a server
 - c. A technique to throttle network traffic to conserve bandwidth
 - d. A method to manage network congestion

6. What is the purpose of DNS in networking?
 - a. To provide a way to uniquely identify devices on a network
 - b. To secure network communication between devices
 - c. To translate human-readable domain names into IP addresses
 - d. To manage network traffic and prioritize packets
7. Which part of the Linux system has provided a command-line interface for users to interact with the operating system?
 - a. Kernel
 - b. Shell
 - c. File system
 - d. Utility
8. What is the correct way to concatenate two strings in PHP?
 - a. `string1 & string2`
 - b. `string1 . string2`
 - c. `string1 + string2`
 - d. `string1 - string2`
9. What is the correct way to comment out a line of PHP code?
 - a. `// This is a comment`
 - b. `/* This is a comment */`
 - c. `# This is a comment`
 - d. All of the above
10. Which of the following is an invalid PHP variable name?
 - a. `$myVar`
 - b. `$My_Var`
 - c. `$my-var`
 - d. `$my_Var1`

11. What is a PHP function?
- a. A built-in PHP data type
 - b. A block of code that performs a specific task and can be reused throughout the script
 - c. A PHP script that is executed when a function is called
 - d. A PHP script that is included in other scripts
12. What is a cookie in PHP?
- a. A type of cake
 - b. A file stored on the server
 - c. A small piece of text stored on the client's computer
 - d. A type of database
13. How do you delete a cookie in PHP?
- a. `unset_cookie("TestCookie")`
 - b. `delete_cookie("TestCookie")`
 - c. `expire_cookie("TestCookie")`
 - d. `setcookie("TestCookie", "", time() - 3600)`
14. In MVC architecture, which component handles the user interface?
- a. Model
 - b. View
 - c. Controller
 - d. Database

15. Which of the following can best describe the separation of concerns in MVC architecture?
- a. The model handles user interface, the view handles data representation, and the controller handles data management.
 - b. Each component of the architecture has its own responsibilities and is separated from the others.
 - c. The view handles data representation, the controller handles user input, and the model handles data management.
 - d. The model and controller are combined into a single component, while the view handles data representation.
16. Which of the following is a benefit of using the MVC architecture in web development?
- a. It makes it easier to write complex SQL queries.
 - b. It reduces the amount of code required to build a web application.
 - c. It improves the security of the application.
 - d. It separates the concerns of the application into distinct components.
17. Which database driver does CodeIgniter use by default?
- a. SQLite
 - b. MySQL
 - c. PostgreSQL
 - d. MongoDB
18. Which of the following methods in CodeIgniter 4 is used to invoke a controller action when the user requests a specific URI?
- a. `init()`
 - b. `start()`
 - c. `index()`
 - d. `run()`

19. In CodeIgniter 4, which of the following is a method of the controller class that is used to load a view?
- a. view()
 - b. return()
 - c. load()
 - d. display()
20. What is the purpose of the "after controller" filter in CodeIgniter 4?
- a. To load additional data into the view
 - b. To manipulate the HTTP request before it reaches the controller
 - c. To manipulate the HTTP response after the controller has executed
 - d. To check if the user is authenticated before executing the controller
21. Which of the following is true about the query() function of the Database class in CodeIgniter 4?
- a. It can only execute SELECT queries.
 - b. It can execute both SELECT and non-SELECT queries.
 - c. It can only execute non-SELECT queries.
 - d. It can only execute UPDATE and DELETE queries.
22. Which method is used to execute a SELECT query using CodeIgniter 4 Query Builder?
- a. select()
 - b. from()
 - c. where()
 - d. execute()
23. Which of the following is a correct usage of the from() function in CodeIgniter 4 Query Builder class?
- a. `$this->db->from('my_table')->select("");`
 - b. `$this->db->select("")->from('my_table');`
 - c. `$this->db->from('my_table')->where('id', 1);`
 - d. `$this->db->where('id', 1)->from('my_table');`

24. Which folder is used to store temporary files that are generated during the runtime of CodeIgniter 4?
- a. public folder
 - b. system folder
 - c. writable folder
 - d. application folder
25. Which method of the Email class in CodeIgniter 4 sets the recipient(s) of the email?
- a. setCC()
 - b. setTo()
 - c. setBCC()
 - d. setSubject()
26. What does AJAX stand for?
- a. Asynchronous JavaScript and XML
 - b. Actionable JavaScript and XML
 - c. Asynchronous Java and XML
 - d. Actionable Java and XML
27. Which of the following is a valid XML element declaration?
- a. <ELEMENT>
 - b. <element>
 - c. <Element>
 - d. All of the above
28. Which of the following is true regarding the case sensitivity of XML tags?
- a. XML tags are case insensitive.
 - b. XML tags are case sensitive.
 - c. XML tags can be both case sensitive or case insensitive.
 - d. None of the above.

29. Which of the following data types is not supported by JSON?
- a. String
 - b. Number
 - c. Boolean
 - d. Function
30. Which of the following is an advantage of using a NoSQL database?
- a. They are easier to use than SQL databases.
 - b. They are less expensive than SQL databases.
 - c. They are more scalable than SQL databases.
 - d. They have better support for complex queries than SQL databases.
31. What does the CAP theorem state?
- a. A database system can have consistency, availability, and partition tolerance, but not all three at the same time.
 - b. A database system can have consistency and availability, but not partition tolerance.
 - c. A database system can have availability and partition tolerance, but not consistency.
 - d. A database system can have consistency, availability, and partition tolerance simultaneously.
32. Which of the following is true about MongoDB?
- a. It is a relational database management system.
 - b. It is a document-oriented database management system.
 - c. It is a column-oriented database management system.
 - d. It is a graph database management system.
33. What is Flask in Python?
- a. A web framework for building complex web applications
 - b. A database management system
 - c. A programming language
 - d. A testing framework

34. What is SQL injection?

- a. A technique used by hackers to place malicious code in SQL statements which might destroy your database
- b. A technique used to improve the performance of SQL queries
- c. A technique used to encrypt SQL queries for security purposes
- d. A technique used to compress SQL queries for faster processing

35. Why is salt used in PHP password hashing?

- a. To encrypt the password
- b. To store the password in plain text
- c. To prevent brute-force attacks
- d. To increase the speed of password hashing

36. Which of the following encryption methods uses public and private keys for encryption and decryption?

- a. Symmetric encryption
- b. Asymmetric encryption
- c. All of the above
- d. None of the above

37. What is the first step in the Knowledge Discovery in Databases (KDD) process?

- a. Data cleaning
- b. Selection of data mining algorithm
- c. Selection of data mining task
- d. Selection of Dataset

38. What is web content mining?

- a. Extracting useful information from the content of web pages
- b. Hacking web pages to steal data
- c. Creating fake web pages to mislead users
- d. Collecting information about web page views

39. How does cloud computing benefit web development in terms of scalability?
- a. Cloud computing limits the scaling potential of web applications.
 - b. Cloud computing allows applications to scale automatically based on demand.
 - c. Cloud computing offers fixed resources that cannot be adjusted for web applications.
 - d. Cloud computing reduces the need for server resources in web applications.
40. Which of the following is a key advantage of using Platform-as-a-Service (PaaS) for web development?
- a. Lower initial investment in hardware
 - b. Slower deployment process
 - c. Requires expertise in server management
 - d. Less scalable infrastructure

Part B – Short answer questions (25 marks)

There are seven questions in this part. Please answer all questions in the spaces provided on this examination paper.

Question 1: (**4 marks**) Briefly explain the role of each layer in the TCP/IP suite and provide an example protocol for each layer.

Question 2: (**4 marks**) Explain the concepts of cookies and sessions in web development and highlight their key differences.

Question 3: (**4 marks**) What are CRUD operations in databases? Provide a brief explanation of each operation.

Question 4: **(3 marks)** With Ajax, web information systems (web applications) can send and retrieve data from a server asynchronously without interfering with the display and behaviour of the existing page. Briefly describe the major advantages of using AJAX in Web design.

Question 5: **(4 marks)** What is the purpose of an XML declaration, and what are the three main attributes it can include to provide metadata about the XML document?

Question 6: **(3 marks)** What are Cross-Site Scripting (XSS) attacks and what are the two main types of XSS attacks?

Question 7: **(3 marks)** Encrypt the message $m = 4$ by using RSA Encryption Scheme ($c = m^e \bmod n$). Generate the encryption key with the given prime number $p = 3$ and $q = 11$. You are required to list all possible encryption keys.

END OF EXAMINATION