Max Marks:40   Time:90 Minutes

Q1   **Answer the followings in brief (Any 5)**   [05 marks]
  1) What is VM Escape?
  2) Why was Jericho Forum Group formed?
  3) What do you understand by Bare Metal Virtualization?
  4) Explain the term 'Multi-Tenancy'
  5) What is proactive scaling?
  6) What is the use of IAM in cloud computing?
  7) Describe the term 'Discretionary Access Control'

Q2   **Do as Directed: (Any 5)**   [20 marks]
  1. Explain the significance of audit in cloud, differentiate between internal and external audit
  2. Discuss Cloud Cube Model
  3. Differentiate between full virtualization Vs. os-assisted virtualization
  4. Differentiate between Static vs. Dynamic provisioning
  5. Write a short note on cloud security design principles
  6. Differentiate between Vertical Vs. Horizontal Scaling
  7. Write a short note on different modes for access control in cloud computing

Q3   **Discuss the following AWS terms in detail (Any 3)**   [15 marks]
  1. Virtual Private Cloud (VPC)
  2. Route 53
  3. Databases in AWS
  4. Elastic block storage
  5. Security in AWS

Subject: Mobile Application Development
Time: 1 hr & 30 min

Date: 08 / 12 / 2023
Max. Marks: 20

Que: 1 Fill-in-the-blank (Any 5) **[05]**

1. A(n) _____ is a unique identifier assigned to each view in the user interface, allowing developers to reference and manipulate it programmatically.
2. SQLite is a _____ database management system widely used in Android for local data storage.
3. The class _____ is essential for managing database creation and version management in Android SQLite implementations.
4. _____ is a mechanism in Android that allows communication between different components, such as activities, services, and broadcast receivers.
5. To perform asynchronous tasks in Android, developers often use the _____ class, which allows background operations without freezing the main UI thread.
6. _____ dir is responsible for managing and organizing application resources, including layout files, images, and strings.
7. Android supports a _____ architecture pattern, which separates the user interface from the underlying data.
8. The underlying kernel in the Android operating system is based on the _____ kernel.

Que: 2 Explain in details (Any 4) **[12]**

1. Discuss the differences between SharedPreferences and SQLite as mechanisms for data storage in Android applications. Provide use-case scenarios where one is more suitable than the other, and justify your choices.
2. Detail the purpose and functionality of the SQLiteOpenHelper class in Android. Explain how this class assists in managing SQLite database creation, versioning, and upgrades.
3. Discuss the advantages and limitations of using SQLite for data storage in Android. Provide practical examples of use cases where SQLite are appropriate and situations where alternative storage methods might be more suitable.
4. Describe the purpose and use of the RecyclerView in Android. Include details on how RecyclerView improves list-based UIs compared to traditional approaches, and provide a code snippet demonstrating its implementation.
5. Explain the role of the findViewById method in Android development. Provide a step-by-step explanation of how it is used to reference and manipulate UI elements in an Activity, and discuss its importance in the Android development process.
6. Describe the difference between Serializable and Parcelable in Android.

Que: 3 Write a code snippet to create table, insert, update and delete data in SQLite **[03]**
Note: Not required DBManager class.

Subject: Object Oriented Software Engineering
Time: 1 hr & 30 mins

Date: 7 / 12 / 2023
Max. Marks: 40

Q-1   Answer the following questions   20

a)   What is SRS? List the important issues which SRS must address.

b)   List out requirement elicitation techniques. Explain any one in detail.

c)   Write a note on requirement traceability.

d)   Discuss the use-case point method with a suitable example.

Q-2   Answer the following questions (Any two)   10

a)   Write a note on ISO 9126

b)   What is software coupling? Explain some coupling metrics with example.

c)   Differentiate between verification and validation

Q-3   Answer the following questions   10

a)   What are levels of testing? Explain any one in detail

b)   Explain the following software quality attributes

I.   Functionality

II.   Reliability

III.   Usability

IV.   Testability

V.   Adaptability

DEPARTMENT OF COMPUTER SCIENCE
GUJARAT UNIVERSITY
MCA Sem-3
Sessional Examination - II
Time: 1 hr 30 min
Max. Marks. 30

Subject: Web Security
Date: 06/11/2023

All questions are compulsory. Make your best attempt to answer each question. Good luck!

Q1. Select the correct option (10 marks)

1) You find a way to inject JavaScript into a web application's comment section that is executed when read by another user. What kind of attack is this?
   - ✓ a) Stored XSS
   - b) SQL Injection
   - c) Reflected XSS
   - d) CSRF Attack

2) A company's website allows file uploads but only checks the file type on the client side. An attacker manages to upload a malicious script disguised as an image. What security control was bypassed?
   - a) Encryption
   - ✓ b) Server-side validation
   - c) Firewall
   - d) Intrusion Detection System

3) You discover that entering a specific SQL query in the search field returns the entire customer database. What type of vulnerability is this?
   - ✓ a) SQL Injection
   - b) Buffer Overflow
   - c) Cross-Site Request Forgery
   - d) Insecure Cryptographic Storage

4) A web application sanitizes user input but only for a few specific SQL keywords. An attacker manages to retrieve sensitive data anyway. What did the attacker likely exploit?
   - a) Insufficient logging and monitoring
   - ✓ b) Inadequate input validation
   - c) Use of hard-coded credentials
   - d) Security misconfiguration

5) An attacker crafts a URL that, when visited by a user, causes the user's browser to perform an unwanted action on a web application where the user is authenticated. What type of attack is this?
   - a) SQL Injection
   - b) Command Injection
   - ✓ c) Cross-Site Request Forgery (CSRF)
   - d) Phishing

6) An organization's security team discovers that an attacker has been storing malicious scripts in their web application's database through a user profile input field. What type of attack does this represent?
   - a) Stored XSS
   - b) SQL Injection
   - c) CSRF Attack
   - ✓ d) Directory Traversal

7) Which HTTP method is generally used for reading data?
   - a) POST
   - ✓ b) GET
   - c) DELETE
   - d) PUT

8) Which of the following is not an HTTP status code category?
   - a) Informational
   - b) Redirection
   - c) Client Errors
   - ✓ d) Fatal Errors

9) In the Chrome DevTools, where can you view the HTTP headers of a request?
   - a) Console Tab
   - b) Elements Tab
   - ✓ c) Network Tab
   - d) Sources Tab

DEPARTMENT OF COMPUTER SCIENCE
GUJARAT UNIVERSITY
MCA Sem-3
Sessional Examination - II
Time: 1 hr 30 min
Max. Marks: 30

Subject: Web Security
Date: 06/11/2023

All questions are compulsory. Make your best attempt to answer each question. Good luck!

10) Which of the following techniques is a recommended mitigation strategy to prevent SQL Injection attacks?
   - a) Storing passwords in plain text for quick database retrieval.
   - b) Embedding user inputs directly into SQL queries.
   - ✓ c) Using parameterized queries and prepared statements.
   - d) Running a Web Application Firewall (WAF) in detection-only mode.

Q2. Answer in brief (20 marks)

1. Describe the steps you would take to perform a penetration test on a web application's login form suspected of being vulnerable to SQL injection.
2. What process would you follow to identify a file upload vulnerability in a web application?
3. Outline the procedure to test for a Reflected XSS vulnerability in a web application.
4. What steps would you take to determine if a web application is vulnerable to Command Injection via a form input?
5. Explain the process of testing for Stored XSS vulnerabilities in a web application that stores and displays instant messages in an inbox.

Date:- 04/12/2023   Time:- 1.5 hrs.   Marks:- 30

Section - I

Que – 1   Answer the following questions   **[5]**

1. What is REPL in Node.js, and why is it useful for developers?
2. Node.js is a _____-side JavaScript runtime built on Chrome's V8 JavaScript engine.
3. What is Console in Nodejs?
4. In Node.js, callbacks are often used to handle _____ operations.
5. HTTP stands for _____.

Que – 2   Answer the following questions[ANY TWO]   **[5]**

1. Difference between Core module, Local module and Third-Party module.
2. Difference between synchronous and asynchronous event handling in Node.js with example.
3. Explain HTTP server in Node.js with example.

Section - II

Que – 1   Answer the following questions   **[5]**

    (i) JavaScript is widely used for
      a. Server-side web development
      b. Client-side web development
      c. Both Server side and client-side web development
      d. Neither server nor client-side web development
    (ii) Which Command is use to create component in angular?
    (iii)In Which Year AngularJs was introduced?
    (iv) Which of the following community Angular JS belong to?
      a. Twitter
      b. Facebook
      c. Google
      d. Microsoft
(v)Which angular Directive is used for Two-way Binding? Give examples.

Que – 2   Explain map, filter and reduce method of array with example   **[5]**

Que – 3   Write Down Short not on below JavaScript concepts (Any two)   **[4]**

    a. Hoisting
    b. Async/Await
    c. JavaScript usage with example

Que – 4   Difference Between library and Framework.   **[3]**

Que – 5   What is SPA? Explain with advantages and disadvantages   **[3]**

EJT

Subject: ~~Object Oriented Software Engineering~~

Time: 1 hr & 30 mins

Date: 7 / 12 / 2023

Max. Marks: 40

Q-1. Attempt any eight (Select your answer from a/b/c etc..) **(4)**

1. Which method do you need to override of the HttpServlet class when you specify the http request parameters inside the URL?
   E.g. http://www.mydomain.com/servlet/TestServlet?action=create

   a) protected void doPost (HttpServletRequest req, HttpServletResponse resp)
   b) protected void doGet (HttpServletRequest req, HttpServletResponse resp)
   c) protected void doPost (ServletRequest req, ServletResponse resp)
   d) protected void doPut (HttpServletRequest req, HttpServletResponse resp)
   e) protected void doPut (ServletRequest req, ServletResponse resp)

2. What is the correct syntax for declaring and initializing a variable in JSP?
   a) <% int x = 10; %>
   b) <%! int x = 10; %>
   c) <%-- int x; x = 10; --%>
   d) <%! int x; x := 10; --%>

3. What is the output when you try to invoke the servlet defined below with the following URL from the address line from your browser:
   http://localhost/servlet/com.baboon.scwcd.servletmodel.TestParamServlet?Param=10

   ```
   package com.baboon.scwcd.servletmodel;
   public class TestParamServlet extends HttpServlet {

       protected void doPost(HttpServletRequest req, HttpServletResponse resp)

       throws ServletException, IOException {

       resp.getWriter().println (req.getParameter("param"));

       }

   }
   ```

   a) Code compiles, blank page is displayed with the value 10 printed out.
   b) Code compiles, blank page is displayed.
   c) Code compiles, blank page is displayed with the value null printed out.
   d) Code fails compilation, exception NullPointerException not caught.
   e) Code compiles, HTTP GET request not supported.

4. Which servlet life-cycle method will the servlet container call to initialise a servlet?
   a) void init(ServletConfig config) from Servlet interface.
   b) void init() from Servlet interface.
   c) The constructor of your servlet.
   d) public void service(ServletRequest req, ServletResponse res) from Servlet interface.
   e) void init(ServletContext context) from Servlet interface.

5. Which interface of the Servlet API's defines methods to extract form parameters from the HTTP request?

   a) HttpServletRequest
   b) Servlet
   c) ServletRequest
   d) HttpServletResponse
   e) ServerResponse

6. Which method returns all the names of the context's initialisation parameters? The method returns an **Enumeration of String objects.**
   a) ServletContext.getInitParameterNames()

b) ServletContext.getAttribute(java.lang.String name)
c) ServletContext.getAttributeNames()
d) ServletContext.getInitParameter(java.lang.String name)
e) ServletConfig.getInitParameterNames()

7. Which method can you use to obtain parameters mentioned in the deployment descriptor of your web-application?

a) String getInitParameter(String name);
b) String getParameter(String name);
c) String getInitAttribute(String name);
d) String getAttribute(String name);
e) String getResource(String name);

8. Which interface declares the setAttribute(String name, Object obj) method to allow objects to be stored in a session?

a) javax.servlet.Session
b)   javax.servlet.http.HttpSession
c) javax.servlet.http.ServletSession
d)   javax.servlet.session.HttpSession
e) jsvax.servlet.session.ServletSession

9. Consider the following code-snippet in the deployment-descriptor from the web-application EMS. To which rule will the following request URI map: /EMS/hall/hall/door?.

```
<!-- Rule 1 -->

<servlet-mapping>

  <servlet-name>VauxHallServlet</servlet-name>

  <url-pattern>/hall/*</url-pattern>

</servlet-mapping>


<!-- Rule 2 -->

<servlet-mapping>

  <servlet-name>VauxHallServlet</servlet-name>

  <url-pattern>/hall/hall/*</url-pattern>

</servlet-mapping>


<!-- Rule 3 -->

<servlet-mapping>

  <servlet-name>VauxHallServlet</servlet-name>

  <url-pattern>/hall/door/*</url-pattern>

</servlet-mapping>
```

a) Rule 1   b)   Rule 2.
✓ c) Rule 3.   d)   The default servlet.   e) None of the above.

10. Which method defined in the javax.servlet.http.HttpSession interface can be used to expunge/kill a session?
    a)   void destroy()   ✓ b)   void invalidate()   c.   void expunge()
    d.   void kill()
                                e) void release()

11. Which of the following statements are valid import declarations?
    a) <%@ page import="com.j2eecertificate.exams.*",
       "com.j2eecertificate.questions.Q1" %>
    b) <%@ page import="com.j2eecertificate.exams.*",
       com.j2eecertificate.questions.Q1" %>
    c) <%@ page import="com.j2eecertificate.exams.*;
       com.j2eecertificate.questions.*" %>
    d)   <% import="com.j2eecertificate.exams.*" %>

12. Which of the following statements regarding this scriptlet is true
    <% int count=0;
    count++; %>

    1.   The scriptlet is executed each time the page is accessed and The Java code in the scriptlet becomes part of the _JspService()
         method during the translation phase of the servlet life-cycle.
    2.   The count variable retains its value between subsequent client requests.
    3.   The Java code in the scriptlet is validated during the translation phase of the servlet life-cycle.
    4.   The Java code in the scriptlet is invalid because there is a semicolon after the declaration of the count variable

Q-2.   Attempt any four   (8)

    ✓ 1. State the difference between: Generic Servlet and Http Servlet
    ✓ 2. State the difference between: GET and POST
    ✓ 3. Explain use of ServletConfig and ServletContext object with example
    ✓ 4. List the attributes of page directive in JSP? Explain any two with example.
      5. Explain use of <jsp: useBean> action tag with example.
      6. What is the difference between Request dispatcher's forward() and include() method?
      7. What is difference between include directive and <jsp:include> action tag?

Q-3.   Attempt any two   (8)

    1. List and explain various phases of JSP life cycle?
            OR
      ✓ List and explain various stages of Servlet life cycle.

    2. Write working of session management in servlet with example code.
    3. Write a Servlet/JSP code to display current date and time in following format.

    "Saturday 02, December 2023 12:12:30".
            OR
    Write a Servlet that takes two numbers as an input and display Multiplication of that no's. Also write web.xml description for the Servlet
            OR

    Write an employee bean class with property employee_id, name, address, and department_name. Write JSP page to set and display all property.

    ✓ 4. What is MVC architecture? Explain and write advantages of it.