Reg. No.															

Question Paper Code	13228

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Seventh Semester

Information Technology

(Common to Computer and Communication Engineering)

20ITEL708 – FULL STACK SOFTWARE DEVELOPMENT

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

	Marks	K – Level	CO
1. Which of the following technologies is primarily used for front-end development? (a) Node.js (b) HTML (c) Express.js (d) MongoDB	1	K1	CO1
2. The primary purpose of the Model-View-Controller (MVC) architecture is (a) To manage database connections (b) To separate application logic into three interconnected components (c) To enhance website loading speed (d) To simplify CSS styling	1	K2	CO1
3. Choose which is NOT a back-end technology? (a) PHP (b) Ruby on Rails (c) React (d) Django	1	K1	CO1
4. In Bootstrap, which class is used to create a responsive grid layout? (a) .container (b) .grid (c) .row (d) .flex	1	K2	CO2
5. The Bootstrap component used to display important messages or warnings is ____ (a) Button (b) Jumbotron (c) Alert (d) Progress Bar	1	K1	CO2
6. Bootstrap in web development is used (a) To manage server-side logic (b) To provide a responsive front-end framework (c) To handle database queries (d) To create web services	1	K1	CO2
7. The significance of NPM (Node Package Manager) is (a) To manage server-side databases (b) To manage packages and dependencies for Node.js applications (c) To style web pages (d) To create user interfaces	1	K1	CO3
8. In React, what does JSX allow you to do? (a) Write HTML-like syntax within JavaScript code (b) Create CSS styles directly in JavaScript (c) Define TypeScript types (d) Manage state and lifecycle methods	1	K2	CO3
9. Which of the following is a feature of TypeScript? (a) It does not support block scope (b) It allows for defining interfaces (c) It only works with JavaScript functions (d) It lacks type annotations	1	K1	CO3
10. The Spring MVC framework is used (a) To handle database interactions (b) To simplify the development of web applications following the MVC pattern (c) To manage security in web applications (d) To provide a templating engine for views	1	K2	CO4

11.	In Spring MVC, what does the DispatcherServlet do? (a) It handles database connections (b) It acts as the central controller that routes requests to appropriate handlers (c) It manages the view rendering process (d) It configures security settings	*1*	*K1*	*CO4*
12.	The role of the Model interface in Spring MVC is (a) To define view templates (b) To hold data that can be accessed in the view layer (c) To manage security aspects (d) To handle HTTP requests and responses	*1*	*K2*	*CO4*
13.	CRUD stands for (a) Create, Read, Update, Delete (b) Create, Retrieve, Update, Display (c) Create, Render, Update, Delete (d) Connect, Read, Update, Delete	*1*	*K1*	*CO5*
14.	In Hibernate, the purpose of the `@Entity` annotation is (a) To define a database connection (b) To mark a class as a persistent entity that maps to a database table (c) To specify a transaction (d) To configure caching behavior	*1*	*K2*	*CO5*
15.	Which Hibernate mapping is used to represent a parent-child relationship in a class hierarchy? (a) Collection Mapping (b) Inheritance Mapping (c) Association Mapping (d) Component Mapping	*1*	*K1*	*CO5*
16.	The primary benefit of using caching in Hibernate is (a) To improve the readability of code (b) To reduce the number of database queries and improve performance (c) To simplify file uploads (d) To handle form validation	*1*	*K2*	*CO5*
17.	The purpose of health checks in Kubernetes is (a) To monitor resource usage (b) To ensure that containers are running and healthy (c) To manage network policies (d) To scale applications	*1*	*K2*	*CO6*
18.	_____command is used to build aDocker image from a Dockerfile. (a) docker run (b) docker build (c) docker create (d) docker pull	*1*	*K2*	*CO6*
19.	_____ is a core construct of Kubernetes. (a) Container (b) Service (c) Pod (d) All of the above	*1*	*K2*	*CO6*
20.	What is the major role of Kubernetes in a microservices architecture? (a) To create Docker images (b) To orchestrate and manage containerized applications (c) To build web applications (d) To store application data	*1*	*K1*	*CO6*

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21.	Differentiate between front-end and back-end development. Provide examples of technologies used in each.	*2*	*K2*	*CO1*
22.	Illustrate how to center an image in HTM5?	*2*	*K2*	*CO1*
23.	Describe the grid system in Bootstrap. How does it facilitate responsive web design?	*2*	*K2*	*CO2*
24.	Compare and contrast jQuery selectors and traditional CSS selectors. How does using jQuery improve DOM manipulation?	*2*	*K2*	*CO2*
25.	List out the purpose of NPM in a Node.js environment. What are some common commands used in NPM?	*2*	*K2*	*CO3*
26.	Differentiate classes and interfaces in TypeScript. How does each contribute to type safety?	*2*	*K2*	*CO3*

27.		Mention the benefits of dependency injection.	2	K2	CO4
28.		Explain how the Chain of Resolvers works in Spring MVC for resolving views.	2	K2	CO4
29.		Illustrate how validation is implemented in Spring for file uploads using forms.	2	K2	CO5
30.		Define Kubernetes.	2	K1	CO6

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31.	a)	Elaborate on web services and its types with suitable example.	10	K2	CO1
		OR			
	b)	Illustrate the CSS outline and Box Model with an example.	10	K2	CO1
32.	a)	Demonstrate the jQuery methods for changing and manipulating HTML elements and attributes.	10	K2	CO2
		OR			
	b)	Develop a fully responsive web page using Bootstrap components such as grids, navigation bar, forms, and buttons. Evaluate how Bootstrap's grid system helps in creating a responsive layout, and explain the role of typography and color schemes in enhancing user experience.	10	K2	CO2
33.	a)	Illustrate how TypeScript enhances JavaScript development with features like block scope, destructuring, and spread/rest operators. Describe how TypeScript's type system helps in writing more reliable code by providing examples of using interfaces and classes in a React component.	10	K2	CO3
		OR			
	b)	Explain the key features of NPM and its role in managing dependencies for a Node.js project. Demonstrate how NPM commands are used to set up and manage a project, with examples of standard modules.	10	K2	CO3
34.	a)	Develop a spring application for user registration and login.	10	K3	CO4
		OR			
	b)	Describe the Spring MVC architecture and its key components. Explain how interceptors function within Spring MVC and provide a practical example where an interceptor can be used to handle request pre-processing or post-processing.	10	K2	CO4
35.	a)	Outline the architecture of Hibernate and describe its integration with Spring.	10	K2	CO5
		OR			
	b)	Build a Java Web application using Hibernate with Spring for Patient medicine and Appointment Tracking system.	10	K3	CO5
36.	a)	Describe the process of containerization using Docker. Demonstrate how to build a Docker image, push it to Docker Hub, and deploy it to a Kubernetes cluster. Include an example that covers basic image creation, tagging, and deployment steps.	10	K3	CO6
		OR			
	b)	Explain the core constructs of Kubernetes architecture, such as Pods, Nodes, and Services. Illustrate how application scheduling is managed within a Kubernetes cluster to ensure reliable deployment and scaling of microservices.	10	K2	CO6