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Learn Research
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DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK

III YEAR

EVEN SEMESTER

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INDEX

HEAD OF THE DEPARTMENT

ACOE **PRINCIPAL** **CHAIRMAN**

CCS356

OBJECT ORIENTED SOFTWARE ENGINEERING

UNIT I

SOFTWARE PROCESS AND AGILE DEVELOPMENT

Introduction to Software Engineering, Software Process, Perspective and Specialized Process Models –Introduction to Agility-Agile process-Extreme programming-XP Process-Case Study.

Q.NO	QUESTION	CO	BTL	MARK
	PART A			
1.	What is software engineering? What are its application?	1	1	2
2.	Write the IEEE definition of software engineering.	1	2	2
3.	Define the terms product and process in software engineering.	1	1	2
4.	Software doesn't wear out. Justify.	1	2	2
5.	Why software architecture is important in software process?	1	2	2
6.	What are the umbrella activities of a software process?	1	1	2
7.	List two deficiencies in waterfall model. Which process model do you suggest to overcome each efficiency?	1	2	2
8.	How does "Project Risk" factor affect the spiral model of software development?	1	2	2
	PART – B			
1.	Define software life cycle. List all life cycle models and explain all the models in detail with neat diagram.	1	4	16
2.	What is process model? Describe the process model that you would choose to manufacture a car. Explain by giving suitable reasons.	1	1	16
3.	Discuss the Extreme Programming Process. What are some of the issues that leads to an XP debate?	1	6	16
4.	List the principles of agile software development.	1	3	16

UNIT II

REQUIREMENTS ANALYSIS AND SPECIFICATION

Requirement analysis and specification – Requirements gathering and analysis – Software Requirement Specification – Formal system specification – Finite State Machines – Petrinets – Object modelling using UML – Use case Model – Class diagrams – Interaction diagrams – Activity diagrams – State chart diagrams – Functional modelling – Data Flow Diagram-CASE TOOLS.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	Write distinct steps in requirement engineering process.	2	1	2
2	Why SRS must be traceable? What is traceability requirement?	2	1	2
3.	List the characteristics of good SRS.	2	2	2
4.	Define functional and non- functional requirements.	2	1	2
5.	Define feasibility study and list the types.	2	1	2
6.	What is the purpose of petrinet?	2	2	2
7.	Draw the context flow graph of a ATM automation system.	2	2	2
8.	What are all the various types of diagram that can be drawn in UML .	2	2	2
	PART – B			
1.	Explain the software requirement engineering process with neat diagram .	2	5	16
2.	What are the components of the standard structure for the software requirement document? Explain in detail. (Or) Show the template of IEEE standard software requirement document.	2	5	16
3.	Explain Petri Net in details. Draw a Petri Net that depicts the operation of an “Automated Teller Machine”. State the functional requirements you are considering.	2	6	16
4.	Draw Sequence and collaboration diagram for online course reservation system.	2	6	16

UNIT III

SOFTWARE DESIGN

Software design – Design process – Design concepts – Coupling – Cohesion – Functional independence – Design patterns – Model-view-controller – Publish-subscribe – Adapter – Command – Strategy – Observer – Proxy – Facade – Architectural styles – Layered – Client Server – Tiered Pipe and filter- User interface design-Case Study.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What are the Characteristics of Good Design? What are the steps involved in design stage of a software?	3	1	2
2	Define data abstraction.	3	1	2
3.	What are certain issues that are considered while designing the software?	3	2	2
4.	Name the levels of abstraction, which are in practice for the design	3	2	2
5.	What are the architectural design various system models can be used?	3	2	2
6.	Define Coupling and Cohesion.	3	1	2
7.	In what way abstraction differs from refinement?	3	1	2
8.	Define Refactoring.	3	1	2
	PART – B			
1.	Explain architecture styles of a. Client server b. Tiered architecture c. Layered architecture.	3	5	16
2.	Discuss about pipe and filter architectural pattern.	3	6	16
3.	Explain strategy design pattern for any scenario with neat class diagram.	3	5	16
4.	Explain core activities involved in user interface design process with necessary block diagram..	3	5	16

UNIT IV

SOFTWARE TESTING AND MAINTENANCE

Testing – Unit testing – Black box testing– White box testing – Integration and System testing– Regression testing – Debugging – Program analysis – Symbolic execution – Model Checking-Case Study

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What are the principles of testing?	4	1	2
2	Difference between testing and debugging.	4	2	2
3.	Write short note on debugging techniques.	4	1	2
4.	Difference between black and white box testing.	4	2	2
5.	Define cyclomatic complexity.	4	1	2
6.	How will you test simple loop?	4	3	2
7.	List the errors identified during unit testing.	4	3	2
8.	What is static program analysis?	4	1	2
	PART – B			
1.	Explain equivalence portioning techniques with suitable example.	4	5	16
2.	Discuss about validation testing methods.	4	6	16
3.	Write short note on a. Regression testing b. Smoke testing	4	4	16
4.	With suitable example explain boundary value analysis.	4	5	16

UNIT V

PROJECT MANAGEMENT

Software Project Management- Software Configuration Management – Project Scheduling- DevOps: Motivation-Cloud as a platform-Operations- Deployment Pipeline: Overall Architecture Building and Testing-Deployment- Tools- Case Study.

Q.NO	QUESTION	CO	BTL	MARK
	PART A			
1.	How to measure the function point (FP)?	5	2	2
2	What is error tracking?	5	2	2
3.	List a few process and project metrics.	5	1	2
4.	Mention difference between organic mode and embedded mode in cocomo model.	5	2	2
5.	List two advantages of COCOMO model.	5	2	2
6.	State the advantages and disadvantages in LOC based cost estimation.	5	2	2
7.	What are the different types of productivity estimation measures?	5	2	2
8.	State any two project scheduling techniques.	5	1	2
	PART – B			
1.	(i)What are the categories of stakeholders? What are the characteristics of effective project manager? (ii)Explain W5HHH principle.	5	5	16
2.	Explain the overall architecture of DevOps?	5	5	16
3.	Explain the role of people, product and process in project management.	5	5	16
4.	Describe in detail COCOMO model for software cost estimation. Illustrate considering a suitable example.	5	4	16

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CLOUD COMPUTING

UNIT I

CLOUD ARCHITECTURE MODELS AND INFRASTRUCTURE

Cloud Architecture: System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture – Cloud deployment models – Cloud service models; Cloud Infrastructure: Architectural Design of Compute and Storage Clouds – Design Challenges

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What are the five essential characteristics of cloud computing according to NIST?	1	1	2
2.	List the three main service models defined by the NIST Cloud Computing Reference Architecture.	1	1	2
3.	Name the four main cloud deployment models.	1	1	2
4.	What is a hybrid cloud, and how is it beneficial?	1	2	2
5.	Which cloud deployment model is most cost-effective for small businesses? Why?	1	2	2
6.	Define scalability in the context of cloud computing.	1	2	2
7.	Why is elasticity important for handling dynamic workloads in cloud systems?	1	2	2
8.	How do latency and bandwidth issues affect cloud computing performance?	1	2	2
	PART - B			
1.	Explain the cloud service models (IaaS, PaaS, SaaS) and their applications in various domains.	1	5	16
2.	Discuss the NIST Cloud Computing Reference Architecture and its significance in cloud computing.	1	5	16
3.	Analyze the role of cloud deployment models in meeting diverse business needs, with a focus on public, private, hybrid, and community clouds.	1	5	16

4	Illustrate the importance of cloud service models in enabling efficient resource utilization and scalability, and discuss their impact on the IT industry.	1	5	16

UNIT II

VIRTUALIZATION BASICS

Virtual Machine Basics – Taxonomy of Virtual Machines – Hypervisor – Key Concepts – Virtualization structure – Implementation levels of virtualization – Virtualization Types: Full Virtualization – Para Virtualization – Hardware Virtualization – Virtualization of CPU, Memory and I/O devices.

Q.NO	QUESTION	CO	BTL	MARK
	PART - A			
1.	Define a virtual machine.	2	2	2
2.	Define virtualization.	2	2	2
3.	What is full virtualization?	2	2	2
4.	Define para-virtualization.	2	2	2
5.	List the implementation levels of virtualization.	2	1	2
6.	What is the difference between Guest OS and Host OS?	2	2	2
7.	Name the two types of hypervisors.	2	1	2
8.	What is a hypervisor?	2	2	2
	PART B			
1.	What is a Hypervisor? Explain its types and the significance of each type in virtualization	2	2	16
2.	Describe the different implementation levels of virtualization.	2	2	16
3.	Differentiate between Full Virtualization and Para Virtualization. Provide advantages and disadvantages of each.	2	2	16
4	Explain how virtualization is achieved for CPU, memory, and I/O devices. Illustrate with relevant examples.	2	2	16

UNIT III

VIRTUALIZATION INFRASTRUCTURE AND DOCKER

Desktop Virtualization – Network Virtualization – Storage Virtualization – System-level of Operating Virtualization – Application Virtualization – Virtual clusters and Resource Management – Containers vs. Virtual Machines – Introduction to Docker – Docker Components – Docker Container – Docker Images and Repositories.

Q.NO	QUESTION	CO	BTL	MARK
	PART - A			
1.	What is desktop virtualization?	3	2	2
2	Define storage virtualization.	3	2	2
3.	What is system-level virtualization in operating systems?	3	2	2
4.	What is application virtualization?	3	2	2
5.	What is the main purpose of network virtualization?	3	2	2
6.	What is Docker?	3	2	2
7.	What is a Docker container?	3	2	2
8.	What is a Docker image?	3	2	2
	PART-B			
1.	Discuss the concept of Desktop Virtualization.	3	2	16
2.	Explain Storage Virtualization and its role in data management.	3	2	16
3.	Explain the concept of Virtual Clusters and Resource Management in cloud computing.	3	2	16
4	Explain Docker Containers, Images, and Repositories.	3	2	16

UNIT IV

CLOUD DEPLOYMENT ENVIRONMENT

Google App Engine – Amazon AWS – Microsoft Azure; Cloud Software Environments – Eucalyptus – OpenStack.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	Summarize the Service Offerings by AWS	4	2	2
2.	Depict the benefits of OpenStack Compute	4	2	2
3.	What do you mean by open cloud ecosystem	4	2	2
4.	Write the procedure to deploy the application in Google App Engine	4	2	2
5.	What is MS Azure	4	2	2
6.	What are the benefits of using Amazon AWS	4	2	2
7.	Identify the key services provided by MZ Azure	4	1	2
8.	What is OpenStack	4	2	2
	PART – B			
1.	Discuss Amazon AWS and MS Azure	4	2	16
2.	Draw and explain the architecture of Eucalyptus	4	2	16
3.	What is Google App Engine? Describe the major building blocks and functional modules of the Google Cloud Platform with a diagram	4	2	16
4	Breakdown the architecture of OpenStack and explain how its components interact.	4	2	16

UNIT V

CLOUD SECURITY

Virtualization System-Specific Attacks: Guest hopping – VM migration attack – hyperjacking. Data Security and Storage; Identity and Access Management (IAM) - IAM Challenges - IAM Architecture and Practice.

Q.NO	QUESTION	CO	BTL	MARK
	PART A			
1.	What is Hyper jacking attack	5	2	2
2.	List out the IAM challenges	5	1	2
3.	What is guest hopping in virtualization security	5	2	2
4.	What are the common virtualization system specific attacks	5	2	2
5.	What is the purpose of identify and access Management	5	2	2
6.	Define VM Migration attack	5	2	2
7.	Describe the role of IAM in cloud security	5	2	2
8.	List out the key components of data security and storage in cloud environments	5	1	2
	PART – B			
1.	List the virtualization system specific attacks and explain any two of them	5	2	16
2.	Write a note about guest hopping and VM Migration attacks. Provide real time case studies for the same	5	2	16
3.	Write a detailed note on cloud security	5	2	16
4	What is Identity and Access Management? Describe its architecture. Depict the procedure to carry out IAM in AWS cloud platform.	5	2	16

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MULTIMEDIA AND ANIMATION

UNIT-I

INTRODUCTION TO MULTIMEDIA

Definitions, Elements, Multimedia Hardware and Software, Distributed multimedia systems, challenges: security, sharing / distribution, storage, retrieval, processing, computing. Multimedia metadata, Multimedia databases, Hypermedia, Multimedia Learning.

Q.No	QUESTION	CO	BTL	MARK
	PART-A			
1	What is the definition of multimedia?	1	1	2
2	Name two elements that are commonly used in multimedia content.	1	1	2
3	What is the role of multimedia hardware in a multimedia system?	1	1	2
4	Define distributed multimedia systems in the context of digital communication.	1	1	2
5	Explain the challenge of storage in multimedia systems.	1	2	2
6	How does multimedia metadata help in managing multimedia content?	1	2	2
7	What is the difference between multimedia databases and traditional databases?	1	2	2
8	How does hypermedia enhance user interaction in multimedia systems?	1	2	2
	PART-B			
1	Define multimedia and explain its core elements. How do text, images, audio, video, and animation work together to create a multimedia experience? Provide examples of how each element contributes to different types of multimedia applications.	1	3	16
2	What are distributed multimedia systems, and how do they enable the sharing and distribution of multimedia content across various devices? Discuss the challenges related to security, storage, retrieval, processing, and computing in	1	4	16

	these systems.			
3	Explain the concept of multimedia metadata and its importance in multimedia databases. How does metadata support the storage, search, and retrieval of multimedia content in digital libraries or online platforms? Provide examples of metadata types used in multimedia systems.	1	5	16
4	Define multimedia learning and explain its benefits in education. How do multimedia tools and resources enhance the learning experience? Discuss the role of multimedia in different types of educational content, such as interactive tutorials, e-learning courses, and virtual simulations	1	4	16

UNIT-II

MULTIMEDIA FILE FORMATS AND STANDARDS

File formats – Text, Image file formats, Graphic and animation file formats, Digital audio and Video file formats, Color in image and video, Color Models. Multimedia data and file formats for the web.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1	What is a text file format? Give one example.	2	1	2
2	Name two common image file formats.	2	1	2
3	What is the purpose of a graphic file format in multimedia?	2	1	2
4	Define a digital audio file format and provide an example.	2	1	2
5	How do color models influence image and video quality?	2	2	2
6	Difference between raster and vector graphic file formats.	2	2	2
7	How do multimedia file formats for the web, such as JPEG and MP4, support efficient content delivery?	2	2	2

8	What are the advantages of using animation file formats like GIF in web content?	2	2	2
PART-B				
1	Compare and contrast common text, image, and graphic file formats (e.g., TXT, PNG, JPEG, GIF). Discuss their specific use cases, advantages, and limitations in multimedia systems. How do these formats affect the performance and quality of multimedia content in digital platforms?	2	3	16
2	Analyze the role of color models (e.g., RGB, CMYK, HSL) in multimedia applications. How do different color models impact the rendering of images and videos across devices? Discuss the trade-offs between color accuracy and file size in the context of web and mobile content.	2	4	16
3	Design an efficient multimedia file management system for a web-based platform that supports text, images, audio, video, and animations. Consider how each file format would be optimized for storage, retrieval, and display. Include strategies for handling cross-platform compatibility and file format conversion.	2	5	16
4	Evaluate the impact of multimedia file formats and compression techniques on the user experience in streaming services (e.g., Netflix, YouTube). Discuss how audio and video file formats (e.g., MP3, AAC, MP4, WebM) influence streaming quality, buffering, and accessibility. Provide recommendations for improving multimedia delivery in terms of quality, speed, and device compatibility.	2	6	16

UNIT III

MULTIMEDIA AUTHORING

Authoring metaphors, Tools Features and Types: Card and Page Based Tools, Icon and Object Based Tools, Time Based Tools, Cross Platform Authoring Tools, Editing Tools, Painting and Drawing Tools, 3D Modeling and Animation Tools, Image Editing Tools, audio Editing Tools, Digital Movie Tools, Creating interactive presentations, virtual learning, simulations.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1	What are Card and Page Based Tools used for in digital content creation?	3	1	1
2	List two examples of Icon and Object Based Tools.	3	1	1
3	What is the main function of Time Based Tools in multimedia projects?	3	1	1
4	Give an example of a Cross Platform Authoring Tool and describe its purpose.	3	1	1
5	How do Editing Tools improve the quality of digital content in multimedia projects?	3	2	2
6	What is the difference between Painting and Drawing Tools and 3D Modeling Tools in digital content creation?	3	2	2
7	What are the role of Image Editing Tools in enhancing visual content.	3	2	2
8	How do Digital Movie Tools contribute to the production of interactive or multimedia-based content?	3	2	2
	PART-B			
1	Describe how you would use Card and Page Based Tools to design an interactive e-learning module. Discuss the specific features that would support user navigation and engagement.	3	3	16

2	How would you apply Icon and Object Based Tools to create an interactive virtual learning environment? Provide examples of how these tools could be used to enhance the user experience.	3	3	16
3	Evaluate the role of 3D Modeling and Animation Tools in creating realistic simulations. How do these tools enhance user interaction and learning outcomes?	3	4	16
4	Design a multimedia project that integrates Painting and Drawing Tools, Image Editing Tools, and Audio Editing Tools to create an interactive digital movie. Discuss how you would combine these tools to achieve a cohesive, engaging user experience.	3	5	16

UNIT IV

ANIMATION

Principles of animation: staging, squash and stretch, timing, onion skinning, secondary action, 2D, 2 ½ D, and 3D animation, Animation techniques: Keyframe, Morphing, Inverse Kinematics, Hand Drawn, Character rigging, vector animation, stop motion, motion graphics, , Fluid Simulation, skeletal animation, skinning Virtual Reality, Augmented Reality.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1	What is the principle of "squash and stretch" in animation, and how does it enhance the movement of characters or objects?	4	1	2
2	Define "onion skinning" and explain how it helps animators during the animation process.	4	1	2
3	What is the key difference between 2D and 3D animation?	4	1	2
4	Name one animation technique used for creating smooth transitions between frames, and briefly explain its function.	4	1	2

5	How does "secondary action" contribute to a more natural and realistic animation? Provide an example.	4	2	2
6	What are the concept of "keyframe animation" and how it is used in digital animation.	4	2	2
7	What is "inverse kinematics," and how does it help in animating a character's limbs or joints?	4	2	2
8	How does "motion graphics" differ from traditional animation, and in what contexts is it typically used?	4	2	2
PART-B				
1	Explain how you would apply the principles of staging, timing, and squash/stretch in creating an animated character performing an action. Discuss how each principle enhances the clarity of the action and the viewer's understanding.	4	3	16
2	Analyze how "skeletal animation" and "character rigging" work together to create more efficient and realistic 3D animations. Discuss their importance in modern animation workflows and their impact on character movement.	4	4	16
3	Design an animated scene that uses both stop-motion and digital animation techniques (e.g., keyframe, morphing). Discuss how you would combine these two distinct techniques to create a unique visual experience. Explain the challenges and benefits of blending both methods.	4	5	16
4	Propose an innovative use of "augmented reality" and "virtual reality" in a future animation project. How could these technologies change the way audiences interact with animated content? Outline the technical steps and creative considerations involved in your proposal.	4	6	16

UNIT V

MULTIMEDIA APPLICATIONS

Multimedia Big data computing, social networks, smart phones, surveillance, Analytics, Multimedia Cloud Computing, Multimedia streaming cloud, media on demand, security and forensics, Online social networking, multimedia ontology, Content based retrieval from digital libraries.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1	What is meant by "Multimedia Cloud Computing" and how does it differ from traditional computing models?	5	1	2
2	Define "Multimedia Streaming Cloud" and explain its role in delivering media content over the internet.	5	1	2
3	What is "content-based retrieval" in the context of digital libraries, and how does it improve search efficiency?	5	1	2
4	What does the term "multimedia ontology" refer to in the context of digital media management?	5	1	2
5	How do social networks influence the distribution of multimedia content? Provide an example of a popular platform.	5	2	2
6	What are the significance of "analytics" in multimedia computing and give an example of its application in a real-world scenario.	5	2	2
7	How does "media on demand" benefit both content creators and consumers, especially in the context of cloud computing?	5	2	2
8	What are the main concerns related to security and forensics in multimedia cloud computing, and why are they critical?	5	2	2

PART-B				
1	Explain how big data computing is used to process and analyze multimedia content in real-time. Describe an example of how this is applied in a smart city surveillance system.	5	3	16
2	Analyze the role of social networks in the distribution of multimedia content. Discuss how algorithms and data analytics are employed to determine what content gets promoted or shared.	5	4	16
3	Compare and contrast the benefits and limitations of multimedia streaming cloud services (e.g., Netflix, YouTube) with traditional media distribution models (e.g., DVD, broadcast). Discuss their impact on consumer behavior and content creation.	5	4	16
4	Design a multimedia content-based retrieval system for a digital library. Explain how it would utilize both metadata and content analysis to improve the accuracy and relevance of search results.	5	5	16

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SOFTWARE TESTING AND AUTOMATION

UNIT-I
FOUNDATIONS OF SOFTWARE TESTING

Why do we test Software?, Black-Box Testing and White-Box Testing, Software Testing Life Cycle, V-model of Software Testing, Program Correctness and Verification, Reliability versus Safety, Failures, Errors and Faults (Defects), Software Testing Principles, Program Inspections, Stages of Testing: Unit Testing, Integration Testing, System Testing

Q.NO	QUESTIONS	CO	BTL	MARK
	PART-A			
1.	Why is software testing necessary?	1	2	2
2.	Differentiate Black-Box Testing and White box Testing	1	1	2
3.	What are the phases of the Software Testing Life Cycle (STLC)?	1	2	2
4.	Describe the V-model of Software Testing.	1	1	2
5.	What is the difference between an error, a fault, and a failure?	1	1	2
6.	State any two principles of software testing.	1	1	2
7.	Define Unit Testing	1	2	2
8.	Differentiate program correctness and program verification?	1	1	2
	PART-B			
1.	i. Compare and contrast Black-Box Testing and White-Box Testing with examples. ii. Explain the relationship between failures, errors, and faults (defects) in software.	1	4 4	8 8
2.	Discuss the phases of the Software Testing Life Cycle (STLC) in detail.	1	4	16
3.	i. Explain the V-model of Software Testing and its advantages. ii. Discuss the key principles of software testing and their significance. .	1	5 5	8 8
4.	i. Elaborate on the stages of testing: Unit Testing, Integration Testing, and System Testing with examples. ii. Discuss the importance of program correctness and its verification techniques.	1	5 5	8 8

UNIT-II
TEST PLANNING

The Goal of Test Planning, High Level Expectations,Intergroup Responsibilities, Test Phases, Test Strategy, Resource Requirements, Tester Assignments, Test Schedule, Test Cases, Bug Reporting, Metrics and Statistics.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1.	What is the primary goal of test planning?	2	2	2
2.	Name the different test phases in software testing.	2	1	2
3.	Why are resource requirements important in test planning?	2	2	2
4.	What is the role of tester assignments in test planning?	2	2	2
5.	What is the purpose of bug reporting?	2	1	2
6.	Define statistics in the context of software testing.	2	1	2
7.	What is the significance of defining test phases in a project?	2	2	2
8.	Mention two essential components of a test strategy.	2	1	2
	PART-B			
1.	i. Explain the goal of test planning and its significance in software development. ii. Discuss the concept of high-level expectations in test planning with examples	2	5	8 8
2.	i. Explain the different test phases and their importance in software testing. ii. Discuss the components of an effective test strategy.	2	5	8 8
3.	i. Explain the importance of tester assignments and their role in achieving testing goals ii. Describe the characteristics of well-written test cases and their role in software testing	2	5	8 8
4.	i. Explain the process of bug reporting and its importance in software quality assurance. ii. Explain how to align test phases with project milestones to ensure efficient testing.	2	5	8 8

UNIT III

TEST DESIGN AND EXECUTION

Test Objective Identification, Test Design Factors, Requirement identification, Testable Requirements, Modeling a Test Design Process, Modeling Test Results, Boundary Value Testing, Equivalence Class Testing, Path Testing, Data Flow Testing, Test Design Preparedness Metrics, Test Case Design Effectiveness, Model-Driven Test Design, Test Procedures, Test Case Organization and Tracking, Bug Reporting, Bug Life Cycle.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1.	Define test design factors.	3	2	2
2.	What are testable requirements?	3	2	2
3.	What is modeling in the test design process?	3	1	2
4.	Define boundary value testing.	3	1	2
5.	What is equivalence class testing?	3	1	2
6.	Explain data flow testing in brief.	3	1	2
7.	Why is test case organization important?	3	2	2
8.	What is the bug life cycle?	3	1	2
	PART-B			
1.	i. Explain the steps involved in identifying test objectives and their role in the test planning process. ii. Elaborate on the process of identifying requirements and ensuring they are testable	3	5 5	8 8
2.	i. Describe the steps and considerations in modeling a test design process. ii. Compare and contrast boundary value testing and equivalence class testing with examples.	3	4 4	8 8
3.	i. Discuss the principles of path testing and its application in software testing. ii. Describe the methods to evaluate test case design effectiveness with examples.	3	5 5	8 8
4.	i. Explain the bug life cycle and the role of bug reporting in maintaining software quality. ii. Compare traditional test design approaches with model-driven test design.	3	5 4	8 8

UNIT IV

ADVANCED TESTING CONCEPTS

Performance Testing: Load Testing, Stress Testing, Volume Testing, Fail-Over Testing, Recovery Testing, Configuration Testing, Compatibility Testing, Usability Testing, Testing the Documentation, Security testing, Testing in the Agile Environment, Testing Web and Mobile Applications.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1.	Define performance testing.	4	1	2
2.	What is load testing?	4	1	2
3.	What is fail-over testing?	4	2	2
4.	What is configuration testing?	4	1	2
5.	Why is testing documentation important?	4	2	2
6.	How is testing different in the agile environment compared to traditional methods?	4	1	2
7.	What is the significance of testing web applications?	4	2	2
8.	What challenges are unique to mobile application testing?	4	1	2
	PART-B			
1.	i. Discuss the key differences between load testing, stress testing, and volume testing with examples. ii. Describe the purpose and process of fail-over testing and recovery testing.	4	5 5	8 8
2.	i. Explain the role of configuration testing in ensuring software works across different environments. ii. Discuss compatibility testing and its importance in multi-platform applications.	4	5 5	8 8
3.	i. Describe the steps involved in testing documentation and its role in software quality assurance. ii. Discuss the unique challenges and practices of testing in the agile environment.	4	5 5	8 8

4.	i. Explain the key considerations when testing web applications, including functionality, performance, and security. ii. Discuss the challenges and best practices for mobile application testing, including testing for various devices, OS versions, and screen sizes.	4	5 5	8 8

UNIT V

TEST AUTOMATION AND TOOLS

Automated Software Testing, Automate Testing of Web Applications, Selenium: Introducing Web Driver and Web Elements, Locating Web Elements, Actions on Web Elements, Different Web Drivers, Understanding Web Driver Events, Testing: Understanding Testing.xml, Adding Classes, Packages, Methods to Test, Test Reports.

Q.NO	QUESTION	CO	BTL	MARK
	PART-A			
1.	What is automated software testing? Mention any two advantages.	5	2	2
2.	Define automated testing for web applications.	5	2	2
3.	What is Selenium, and why is it widely used for web application testing?	5	1	2
4.	Define web elements in the context of Selenium.	5	1	2
5.	List any two types of web drivers in Selenium.	5	2	2
6.	Define the purpose of a testing.xml file.	5	1	2
7.	How can you add classes to a testing.xml file?	5	2	2
8.	What is the significance of adding packages to a testing.xml file?	5	2	2
	PART-B			
1.	i. Discuss the process of automating the testing of web applications with Selenium. ii. Explain the concept of a Web Driver in Selenium and the role it plays in test automation.	1	5 5	8 8
2.	i. Describe the different methods of locating web elements in Selenium and their use cases. ii. Compare different types of Web Drivers in Selenium and their applications.	1	5 5	8 8
3.	i. Discuss the purpose and structure of a testing.xml file in TestNG, with examples. ii. Describe the steps involved in adding classes,	1	5 5	8 8

		packages, and methods to a testing.xml file.			
4.	i.	Explain how test reports are generated using TestNG and their importance in automation testing.	1	5	8
	ii.	Explain the role of TestNG annotations in managing test execution and reporting.		5	8

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CCS374

WEB APPLICATION SECURITY

UNIT I

FUNDAMENTALS OF WEB APPLICATION SECURITY

The history of Software Security-Recognizing Web Application Security Threats, Web Application Security, Authentication and Authorization, Secure Socket layer, Transport layer Security, Session Management-Input Validation

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What is the significance of recognizing web application security threats?	1	1	2
2	Define Web Application Security.	1	1	2
3.	Differentiate between Authentication and Authorization.	1	2	2
4.	What is Secure Socket Layer (SSL)?	1	1	2
5.	What are the role of a Web Application firewall (WAF)?	1	2	2
6.	What is Cross-Origin Resource Sharing (CORS), and why is it relevant to web application security?	1	1	2
7.	Define Distributed Denial of Service (DDoS) attack.	1	1	2
8.	What is the concept of Clickjacking?	1	2	2
	PART – B			
1.	Explain the various authentication mechanisms commonly employed in web applications, along with their strengths and weaknesses. Compare and contrast session-based and token-based authentication methods.	1	2	16
2.	Describe the components and processes involved in Secure Socket Layer (SSL) and Transport Layer Security (TLS), elucidating how they ensure secure communication over the internet.	1	5	16
3.	Analyze the impact of common web application security threats such as Cross-Site Scripting (XSS), SQL Injection, and Cross-Site Request Forgery (CSRF) on the security posture of web applications. Propose mitigation strategies to address these threats effectively.	1	4	16
4	Examine the role of Web Application firewalls (WAFs) in protecting web applications from various threats, including SQL Injection, DDoS attacks, and malicious bots. Compare the effectiveness of network-based and host-based WAF deployments in different scenarios.	1	4	16

UNIT II

SECURE DEVELOPMENT AND DEPLOYMENT

Web Applications Security - Security Testing, Security Incident Response Planning,The Microsoft Security Development Lifecycle (SDL), OWASP Comprehensive Lightweight Application Security Process (CLASP), The Software Assurance Maturity Model (SAMM).

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What is the purpose of security testing in web applications?	2	1	2
2	What is Microsoft Security Development Lifecycle (SDL)?	2	1	2
3.	Define OWASP CLASP.	2	1	2
4.	Define Software Assurance Maturity Model (SAMM)	2	1	2
5.	What are the name a widely used tool for security testing in web applications?	2	1	2
6.	What are the key considerations for effective Security Incident Response Planning?	2	1	2
7.	What is the phases of the Microsoft Security Development Lifecycle?	2		2
8.	What are some advantages of implementing Microsoft SDL?	2	1	2
	PART – B			
1.	Compare and contrast the Microsoft Security Development Lifecycle (SDL) and OWASP Comprehensive Lightweight Application Security Process (CLASP) in terms of their approaches, methodologies, and effiectiveness in enhancing web application security.	2	5	16
2.	Explain the process of security testing in web applications, highlighting its importance in ensuring robust security measures.	2	2	16
3.	Evaluate the strengths and weaknesses of the OWASP Comprehensive Lightweight Application Security Process (CLASP) and its applicability in diverse software development environments. Provide recommendations for overcoming potential limitations.	2	5	16
4	Assess the effectiveness of the Software Assurance Maturity Model (SAMM) in improving software security across different stages of the development lifecycle. Discuss its impact on organizational security practices and its alignment with industry standards and best practices.	2	6	16

UNIT III

SECURE API DEVELOPMENT

API Security- Session Cookies, Token Based Authentication, Securing Natter APIs: Addressing threats with Security Controls, Rate Limiting for Availability, Encryption, Audit logging, Securing service-to-service APIs: API Keys , OAuth2, Securing Microservice APIs: Service Mesh, Locking Down Network Connections, Securing Incoming Requests.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What is the purpose of session cookies in API security?	3	1	2
2	What is the role of encryption in API security?	3	1	2
3.	Why is audit logging important in API security?	3	1	2
4.	How are incoming requests secured in API development?	3	1	2
5.	What is the concept of token-based authentication in API security?	3	2	2
6.	What is OAuth2, and how does it contribute to securing APIs?	3	1	2
7.	What are the primary security benefits of using a service mesh in microservice architectures?	3	2	2
8.	How can network connections be locked down to enhance API security?	3	1	2
	PART - B			
1.	Discuss the role of session cookies and token-based authentication in securing APIs. Compare and contrast their implementation, security implications, and suitability for different use cases in web application development.	3	6	16
2.	Evaluate the effectiveness of different authentication mechanisms, including API keys and OAuth2, in securing service-to-service APIs. Discuss their strengths, weaknesses, and suitability for various deployment scenarios, considering factors such as scalability, manageability, and security requirements.	3	5	16
3.	Explore the challenges and benefits of securing microservice APIs using a service mesh architecture. Discuss how service mesh technologies facilitate secure communication, traffic management, and observability in distributed microservice environments, and assess their impact on overall system reliability and security posture.	3	5	16

4	Analyse the importance of locking down network connections in API security. Discuss strategies for implementing network-level security measures such as firewalls, network segmentation, and access control policies to protect API endpoints from unauthorized access and malicious attacks.	3	5	16

UNIT IV

VULNERABILITY ASSESSMENT AND PENETRATION TESTING

Vulnerability Assessment Lifecycle, Vulnerability Assessment Tools: Cloud-based vulnerability scanners, Host-based vulnerability scanners, Network-based vulnerability scanners, Database- based vulnerability scanners, Types of Penetration Tests: External Testing, Web Application Testing, Internal Penetration Testing, SSID or Wireless Testing, Mobile Application Testing.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What is the Vulnerability Assessment Lifecycle?	4	1	2
2	What is the primary purpose of network-based vulnerability scanners?	4	1	2
3.	What is the primary objective of Mobile Application Testing in penetration testing?	4	1	2
4.	What are the stages involved in the Vulnerability Assessment Lifecycle?	4	1	2
5.	What is Network-based vulnerability scanners?	4	1	2
6.	What are the types of penetration test?	4	1	2
7.	What is web application testing? And its types.	4	1	2
8.	What is the primary objective of Mobile Application Testing in penetration testing?	4	1	2
	PART - B			
1.	Discuss the Vulnerability Assessment Lifecycle in detail, outlining each stage's significance and activities involved. Provide examples of tools and techniques commonly used in each stage to effiectively identify, remediate, and verify vulnerabilities within an organization's infrastructure.	4	6	16

2.	Compare and contrast various types of vulnerability assessment tools, including cloud-based, host-based, network-based, and database-based scanners. Evaluate their strengths, weaknesses, and suitability for diffierent environments and scenarios, considering factors such as scalability, accuracy, and ease of use.	4	4	16
3.	Explore the importance of penetration testing in identifying and mitigating security risks within an organization's infrastructure. Discuss the diffierent types of penetration tests, including External Testing, Web Application Testing, Internal Penetration Testing, SSID or Wireless Testing, and Mobile Application Testing, and provide examples of when each type should be employed.	4	6	16
4	Evaluate the significance of Mobile Application Testing in penetration testing and its role in identifying security vulnerabilities in mobile applications and their interaction with backend services. Discuss common security challenges faced by mobile applications, and provide strategies for securing mobile applications against potential threats.	4	5	16

UNIT V

HACKING TECHNIQUES AND TOOLS

Social Engineering, Injection, Cross-Site Scripting(XSS), Broken Authentication and Session Management, Cross-Site Request Forgery, Security Misconfiguration, Insecure Cryptographic Storage, Failure to Restrict URL Access, Tools: Comodo, OpenVAS, Nexpose, Nikto, Burp Suite, etc.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What is Social Engineering in the context of hacking?	5	1	2
2	What type of attack is commonly associated with injecting malicious code into databases?	5	1	2
3.	What vulnerability is exploited when sensitive data is stored in an insecure manner?	5	1	2
4.	What role does Burp Suite play in the field of cybersecurity?	5	1	2
5.	Define Social Engineering and its significance in cybersecurity.	5	1	2

6.	What are the common types of injection attacks, and how do they exploit vulnerabilities?	5	1	2
7.	What are the importance of secure cryptographic storage in protecting sensitive data?	5	2	2
8.	What is the impact of Cross-Site Scripting (XSS) attacks on web applications and users?	5	2	2
	PART - B			
1.	Explore the techniques and psychological principles behind Social Engineering attacks, and discuss their effectiveness in bypassing traditional cybersecurity defences. Provide real-world examples of Social Engineering attacks and analyse their impact on organizations and individuals.	5	6	16
2.	Discuss the various types of injection attacks, including SQL injection, LDAP injection, and XML injection, and explain how they exploit vulnerabilities in web applications. Evaluate the severity of injection attacks in terms of potential damage and provide recommendations for mitigating these risks.	5	6	16
3.	Analyze the prevalence of Cross-Site Scripting (XSS) vulnerabilities in web applications and their impact on security. Discuss the diffierent types of XSS attacks, such as reflected XSS, stored XSS, and DOM-based XSS, and provide strategies for detecting, preventing, and mitigating XSS vulnerabilities.	5	4	16
4	Evaluate the risks associated with broken authentication and session management vulnerabilities in web applications. Discuss common causes of these vulnerabilities, such as weak passwords, sessionfixation, and insufficient session expiration policies, and provide best practices for improving authentication and session management security.	5	5	16

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OBT351

FOOD, NUTRITION AND HEALTH

UNIT I

FOOD AND MICROBIOLOGY OF HEALTH

Food resources (plant, animal, microbes); Overview of current production systems; Overview of current production systems. Functional and "Super" Foods - role in optimal nutrition. Sugar, protein and fat substitutes. Food and behaviour- physiological disturbances in alcoholism, drug abuse and smoking. Food Related Laws: Inspection – Microbial Indicators of product quality – Indicators of food safety – 229 Microbiological safety of foods - control strategies – Hazard Analysis Critical Point System (HACCP concept)- Microbiological criteria.

Q.NO	QUESTION	CO	BTL	MARK
	PART A			
1.	Define health microbiology.	1	1	2
2	Compare functional foods and super foods.	1	2	2
3.	State food quality inspection.	1	1	2
4.	What is the purpose of HACCP?	1	1	2
5.	What is a microbial analysis of food quality?	1	1	2
6.	What is microbial quality control?	1	1	2
7.	What do you mean by control strategy?	1	1	2
8.	Write note on microbiological criterion in the food industry.	1	5	2
	PART B			
1.	Explain various Food Related Laws & microbial indicators of product quality.	1	2	16
2.	Write brief note on Health Benefits and Safety Concerns of Fat Substitutes.	1	5	16
3.	Describe physiological disturbances in alcoholism, drug abuse and smoking.	1	2	16
4	Explain the various indicator of food safety. Write about the control strategies in food safety.	1	2	16

UNIT II

NUTRIENTS AND FOOD ADDITIVES

Macro nutrients- carbohydrates, proteins and lipids. Micronutrients-Minerals: Calcium, Magnesium, Iron, Zinc, Copper and Selenium; Vitamins. Nutritional Physiology: Digestion, absorption, and utilization of major and minor nutrients. Biotechnology of food additives- Bio flavors and colors, microbial polysaccharides, recombinant enzymes in food sector.

Q.NO	QUESTION	CO	BTL	MARK
	PART A			
1.	What are micronutrients and macronutrients?	2	1	2
2	List out the functions of micro minerals.	2	1	2
3.	State the role of Iron, zinc, copper,Selenium,vitamin in micronutrients.	2	1	2
4.	Why are minerals micronutrients?	2	3	2
5.	What is the role of lipids in food?	2	1	2
6.	Why is protein the most important macronutrient?	2	3	2
7.	What is the role of digestion in nutrients physiology?	2	1	2
8.	What are the functions of micro minerals?	2	1	2
	PART B			
1.	Explain the various Macro nutrients, carbohydrates, proteins and lipids with example.	2	2	16
2.	Write the recombinant enzymes in food sector with examples.	2	5	16
3.	Explain Biotechnology of food additives and Bio flavours and colours.	2	2	16
4	Explain microbial polysaccharides briefly.	2	2	16

UNIT-III

NANO FOOD TECHNOLOGY

Nanomaterial as food components, food packaging and nano materials, policies on usage of nano materials in foods. Food product development: steps involved in food product development, shelf-life assessment.

Q.NO	QUESTION	CO	BTL	Marks
	PART A			
1.	How are nanomaterials used in the food industry?	3	1	2
2	What is Food Product Development?	3	1	2
3.	What is the aim of food product development?	3	1	2
4.	What are the steps in food product development?	3	1	2
5.	Write the 10 stages of product development.	3	5	2
6.	What are three ways nanotechnology is being used in food and food packaging?	3	1	2
7.	What is an example of nanotechnology in food security?	3	1	2
8.	Why are nano materials used in food?	3	3	2
	PART B			
1.	Explain Nano materials as food components, and nano material as food packaging.	3	2	16
2.	Write about the policies on usage of nano materials in foods.	3	5	16
3.	Explain the Food product development and steps involved in food product development.	3	2	16
4	Discuss Food product development and the shelf-life assessment.	3	2	16

UNIT IV

FOOD RELATED NUTRITIONAL DISORDERS AND ENERGY CALCULATION

Type I Disorders-Causes of life style and stress related diseases. Cardio-vascular diseases, hypertension, obesity. Type-II Disorders: Cancer, diabetics, ulcers, electrolyte and water imbalance. Health indices. Preventive and remedial measures. Energy balance and methods to calculate individual nutrient and energy needs. Planning a healthy diet.

Q.NO	QUESTION	CO	BTL	Marks
	PART – A			
1.	Define diabetes nutrition type 1.	4	1	2
2	What are the causes of lifestyle disease?	4	1	2
3.	What is a lifestyle disorder?	4	1	2
4.	State the serious diseases caused by stress.	4	2	2
5.	What is electrolytic disorder?	4	2	2
6.	What is the most common disturbance of water balance?	4	2	2
7.	How do you calculate energy balance in nutrition?	4	3	2
8.	How do you prepare a healthy diet?	4	3	2
	PART B			
1.	Discuss Type I Disorders and Causes of life style briefly.	4	2	16
2.	Explain the Energy balance and methods to calculate individual nutrient and energy needs.	4	2	16
3.	Discuss stress related diseases and Cardio-vascular diseases.	4	2	16
4	Explain about the Health indices, Preventive and remedial measures	4	2	16

UNIT-V

CONSUMERS ON GM FOODS AND CONTEMPORARY ISSUES

Global perspective of consumers on GM foods; Major concerns of transgenic, foods GM ingredients in food products. (labeling, bioavailability, safety aspects); regulatory agencies involved in GM foods, Case studies- GM foods.

Q.NO	QUESTION	CO	BTL	Marks
	PART A			
1.	What is the global status of GM foods?	5	1	2
2	List out the consumer perceptions of GMO.	5	2	2
3.	What are 3 safety concerns when using GMOs?	5	1	2
4.	How are genetically modified foods produced and GM foods classified?	5	3	2
5.	What are the regulatory agencies in India for genetically engineered products?	5	1	2
6.	What bacteria is used in GMO and the benefits of genetically modified animals?	5	1	2
7.	State the importance of food and nutrition in human health.	5	1	2
8.	What is one main concern with transgenic crops and state 3 GM foods?	5	1	2
	PART B			
1.	Explain the foods GM ingredients in food products and labelling.	5	2	16
2.	Write the regulatory agencies involved in GM foods.	5	5	16
3.	Case studies- GM foods.	5	5	16
4	Explain the Major concerns of transgenic and the Global perspective of consumers on GM foods.	5	2	16

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MX3089

INDUSTRIAL SAFETY

UNIT I

SAFETY TERMINOLOGIES

Hazard-Types of Hazard- Risk-Hierarchy of Hazards Control Measures-Lead indicators - lag Indicators - Flammability - Toxicity Time - weighted Average (TWA) - Threshold LimitValue (TLV) - Short Term Exposure Limit (STEL) - Immediately dangerous to life or health (IDLH) - acute and chronic Effects - Routes of Chemical Entry - Personnel Protective Equipment - Health and Safety Policy - Material Safety Data Sheet MSDS.

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	Define the term "hazard."	1	1	2
2	Differentiate between lead and lag indicators with an example for each.	1	2	2
3.	Distinguish between flammability and toxicity.	1	2	2
4.	Define Time-Weighted Average	1	1	2
5.	Differentiate between acute and chronic effects with examples.	1	2	2
6.	Name the four primary routes of chemical entry into the body.	1	1	2
7.	What is the purpose of a Health and Safety Policy?	1	1	2
8.	How does an MSDS help in chemical safety management?	1	2	2
	PART - B			
1.	Explain the types of Hazard in detail.	1	2	16
2.	Analyze the effectiveness of the hierarchy of hazard control measures in reducing risks in a manufacturing plant with toxic fumes and rotating machinery.	1	4	16

3.	Analyze how acute and chronic effects influence the choice of safety measures in handling hazardous chemicals.	1	4	16
4	Evaluate the effectiveness of a health and safety policy in fostering a culture of safety in an organization.	1	5	16

UNIT II

STANDARDS AND REGULATIONS

Indian Factories Act-1948 - Health - Safety- Hazardous materials and Welfare - ISO 45001:2018 health and safety (OH&S) - Occupational Safety and Health Audit IS14489:1998 – Hazard Identification and Risk Analysis - code of practice IS 15656:2006

Q.NO	QUESTION	CO	BTL	MARK
	PART – A			
1.	What is the primary objective of the Indian Factories Act, 1948?	2	1	2
2	Name two health provisions under the Indian Factories Act, 1948.	2	1	2
3.	What is the main objective of risk analysis?	2	1	2
4.	List two examples of hazardous materials commonly found in industries.	2	1	2
5.	How does ISO 45001:2018 differ from traditional safety practices?	2	2	2
6.	What is IS 14489:1998 related to?	2	1	2
7.	What is the role of HIRA in workplace safety?	2	1	2
8.	How does IS 15656:2006 contribute to industrial safety?	2	2	2
	PART - B			
1.	Explain the key provisions of the Indian Factories Act, 1948 related to health, safety, hazardous materials, and worker welfare. How do these provisions ensure a safe	2	4	16

	working environment?			
2.	Discuss the key principles of ISO 45001:2018 and its role in occupational health and safety management. How does it help organizations improve workplace safety?	2	4	16
3.	What is the significance of IS 14489:1998 in occupational safety audits? Describe the steps involved in conducting a workplace safety audit as per this standard.	2	4	16
4	Develop a Hazard Identification and Risk Analysis (HIRA) framework based on IS 15656:2006 for a manufacturing plant. How would you implement risk control measures to minimize workplace hazards?	2	6	16

UNIT III

SAFETY ACTIVITIES

Toolbox Talk- Role of safety Committee- Responsibilities of Safety Officers and Safety Representatives- Safety Training and Safety Incentives- Mock Drills- On-site Emergency Action Plan- Off-site Emergency Action Plan- Safety poster and Display- Human Error Assessment.

Q.NO	QUESTION	CO	BTL	MARK
	PART A			
1.	What is the primary function of a safety committee?	3	1	2
2	What are two responsibilities of a safety officer in an organization?	3	2	2
3.	How does a safety representative contribute to workplace safety?	3	2	2
4.	Give two examples of safety incentives used to encourage safe behavior	3	2	2
5.	What is the purpose of conducting a mock drill?	3	2	2

6.	What is the significance of safety posters in the workplace?	3	2	2
7.	What is meant by human error in workplace safety?	3	2	2
8.	Name two methods used to assess human error in industrial settings	3	2	2
	PART - B			
1.	Explain the structure and functions of a safety committee in an organization. How does it contribute to workplace safety?	3	4	16
2.	Discuss the importance of safety training programs in an industrial setting. How do safety incentives encourage a culture of safety?	3	5	16
3.	Design a comprehensive emergency action plan for an industrial plant, including both on-site and off-site measures. What challenges might arise during implementation?	3	6	16
4	Analyze different types of human errors in the workplace. How can organizations assess and minimize the risk of human errors affecting safety?	3	4	16

UNIT – IV

WORKPLACE HEALTH AND SAFETY

Noise hazard- Particulate matter- musculoskeletal disorder improper sitting poster and lifting Ergonomics RULE & REBA- Unsafe act & Unsafe Condition- Electrical Hazards- Crane Safety- Toxic gas Release

Q.NO	QUESTION	CO	BTL	Marks
	PART-A			
1.	State how prolonged exposure to high noise levels can affect human health.	4	2	2
2	Define particulate matter and give an example of its source.	4	2	2

3.	Identify two ergonomics solutions to prevent musculoskeletal disorders caused by improper lifting.	4	2	2
4.	Compare RULE and REBA in terms of their application in ergonomic risk assessment.	4	2	2
5.	Differentiate between an unsafe act and an unsafe condition with examples.	4	2	2
6.	State two safety measures to prevent crane related accidents on a construction site.	4	2	2
7.	Why grounding and insulation are essential to prevent electrical hazards in the workplace?	4	2	2
8	Name two toxic gases commonly released in industrial accidents and their primary health effects.	4	2	2
PART B				
1.	Discuss the various types of electrical hazards in the workplace. What precautions and safety measures should be taken to prevent electrical accidents?	4	2	16
2.	Illustrate how to apply REBA to identify and mitigate ergonomic risk in various job tasks.	4	3	16
3.	Explain the impact of improper sitting posture and incorrect lifting techniques on musculoskeletal health. Suggest ergonomic solutions to prevent such disorders.	4	2	16
4	What are the causes and consequences of toxic gas release in industries? Discuss control measures, emergency response strategies and the role of safety regulations in preventing such incidents.	4	2	16

UNIT V

HAZARD IDENTIFICATION TECHNIQUES

Job Safety Analysis-Preliminary Hazard Analysis-Failure mode and Effects Analysis-Hazard and Operability- Fault Tree Analysis- Event Tree Analysis Qualitative and Quantitative Risk Assessment- Checklist Analysis- Root cause analysis- What-If Analysis-and Hazard Identification and Risk Assessment

PART - A				
Q.NO	**QUESTION**	**CO**	**BTL**	**MARK**
1.	What is Job Safety Analysis (JSA), and why is it important?	5	1	2
2	Define Preliminary Hazard Analysis (PHA) and mention its primary purpose.	5	1	2
3.	List two key objectives of Failure Mode and Effects Analysis (FMEA).	5	2	2
4.	How does a Hazard and Operability Study (HAZOP) help in process safety?	5	2	2
5.	Differentiate between Fault Tree Analysis (FTA) and Event Tree Analysis (ETA).	5	2	2
6.	Explain the purpose of Qualitative and Quantitative Risk Assessment in workplace safety	5	3	2
7.	How does Checklist Analysis contribute to hazard identification?	5	3	2
8.	Give an example of how Root Cause Analysis (RCA) can be used to prevent future accidents.	5	3	2
PART B				
1.	Describe the key principles of the Job Safety Analysis (JSA) process. What are the main steps involved, and how does this technique help in ensuring workplace safety? Provide examples of how JSA can be applied in different industries.	5	2	16
2.	Explain the importance of Failure Mode and Effects Analysis (FMEA) in the context of risk management.	5	3	16

	How does this method contribute to the identification of potential failures and the prevention of system breakdowns? Provide an example of how FMEA is used in a high-risk industry such as aerospace or manufacturing			
3.	Apply the principles of Hazard and Operability Study (HAZOP) to analyze the potential risks involved in a chemical processing plant. How would you identify deviations in the process and suggest appropriate safeguards to prevent hazardous events? Discuss how the HAZOP process can be applied to ensure safety in complex industrial systems.	5	4	16
4	Design a comprehensive risk management plan for a construction project that involves multiple stakeholders and complex processes. Synthesize various risk assessment methods such as Fault Tree Analysis (FTA), Event Tree Analysis, and Root Cause Analysis to develop a holistic framework for identifying, analyzing, and mitigating risks. What strategies would you incorporate to ensure that safety and operational efficiency are maintained throughout the project lifecycle?	5	4	16

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