Department of Computer Science and Engineering

B. Tech. Mid Question Bank (R22 Regulation)

Academic Year: 2025-2026 **Semester: IV**

Subject Name: Software Engineering

Faculty Name: Dr.K.Maheswari, Dr.S.Suma,Dr Venkateswaralu Naik, Mrs G.Swathi, Ms Raheem Unissa

PART-A

Q.No	Questions	BL	CO	Unit No
1.	Define Software Engineering	L1	CO1	1
2.	List out the various myths about the software?	L1	CO1	1
3.	Define CMMI with different levels?	L1	CO1	1
4.	Identify the merits of incremental model?	L3	CO1	1
5.	What is Feasibility Study?	L1	CO2	2
6.	Compare between user requirement and system requirement?	L2	CO2	2
7.	What is Requirements Management?	L1	CO2	2
8.	Summarize the concept of Context model?	L2	CO2	2
9.	What are the goals of the design process?	L1	CO3	3
10.	Define the design concepts ?	L1	CO3	3

PART-B

Q.No	Questions	BL	CO	Unit No
1.	Explain in detail about software engineering and its changing the nature of software with an example?	L2	CO1	1
2.	Apply and identify the importance of improving software processes as a framework in real-world scenarios.	L3	CO1	1
3.	Software engineering is a layered approach – Explain with neat diagram?	L2	CO1	1
4.	Explain in detail about Waterfall Model and its usage?	L2	CO1	1
5.	Explain about umbrella activities in Software development?	L2	CO1	1
6.	Explain Spiral model with a neat sketch. What can you say about the software that is being developed or maintained as you move outward along the spiral process flow?	L3	CO1	1
7.	Explain the steps involved in creating system modelling and different types of Models.	L2	CO2	2
8.	Compare and Contrast between functional requirements and non-functional requirements?	L2	CO2	2
9.	Explain user requirements in detail?	L2	CO2	2
10.	Identify the essential sections of a well-structured Software Requirements Document (SRD) and demonstrate how they are organized.	L3	CO2	2

11.	Analyze the process of requirement elicitation and analysis, breaking it into its key activities, and evaluate how each activity contributes to defining accurate and complete software requirements.	L4	CO2	2
12.	Explain the key components of Behavioural Models and illustrate their structure with a diagram	L3	CO2	2
13.	Explain in detail about Design Engineering with neat diagram?	L2	CO3	3
14.	Illustrate the key characteristics of high-quality design?	L2	CO3	3
15.	Classify how to translate the analysis model into the design model? Explain with an example scenario?	L2	CO3	3
16.	Explain brief about design concepts in design Engineering?	L2	CO3	3

CMR TECHNICAL CAMPUS

B. Tech Mid Question Bank (R22 Regulation)

Academic Year: 2025-26 Semester: IV

Subject Name: DBMS (22CS402PC)

Faculty Name: Mr M Madhusudhan, Dr V Malsoru, Mr B Ramji

PART-A

Q. No	Questions	BL	CO	Unit No
1	Relate the terms Database and Database management Systems.	BL4	CO1	I
2	List the advantages of DBMS.	BL1	CO1	I
3	Define instances and Schemas of database.	BL1	CO1	I
4	How to represent the strong Entity set and Weak entity set in ER-Model?	BL2	CO1	I
5	What is Querying relational data? Justify with one example.	BL1	CO2	II
6	Give examples of selection and projection operations in relational algebra.	BL1	CO2	II
7	Illustrate division Operation in relational algebra.	BL3	CO2	II
8	Explain Domain Relational Calculus.	BL2	CO2	II
9	Give examples for UNION, INTERSECT and EXCEPT Clauses.	BL1	CO3	III
10	Define Aggregate Operators.	BL1	CO3	III

PART-B

Q. No	Questions	BL	CO	Unit No
1	Compare and Contrast File Systems with Database Systems.	BL2	CO1	I
2	Discuss about different types of Data Models.	BL2	CO1	I
3	Write about various database system applications in detail	BL2	CO1	I
4	Describe the Structure of DBMS.	BL2	CO1	I
5	Draw and explain Data Abstraction and Data Independence in detail.	BL4	CO1	I
6	What is Entity and an attribute? Explain various types of attributes with examples.and Develop an E -R Diagram for Banking enterprise system	BL3	CO1	I
7	Illustrate about integrity constraints with suitable examples	BL3	CO2	II
8	Explain Views and its advantages and Disadvantages. How to alter, destroy tables and views? Give example queries	BL2	CO2	II
9	Explain the fundamental operations in relational algebra with examples.	BL2	CO2	II
10	Elaborate on logical database design with examples.	BL2	CO2	II
11	Explain Tuple relational calculus.	BL2	CO2	II
12	Consider the following relations Sailors (sid, sname, rating, age) Boats (bid, bname, color) Reserves (sid, bid, day) Write the statements in Relational Algebra, Relational Calculus, Domain Relational Calculus and SQL for the following questions. a) Find the names of sailors who have reserved a Red boat. b) Find the names of sailors who have reserved at least one boat. c) Find the names of sailors who have reserved a Red and a Green boat. d) Find the names of sailors who have reserved a Red or a White boat. e) Find the	BL6	CO2	II

	names of sailors who have reserved all boats			
13	Discuss Basic SQL Queries of DDL & DML Commands.	BL2	CO3	III
14	Discuss about Complex integrity constraints in SQL.	BL2	CO3	III
15	Write a Query for IN ,NOTIN,NULL and NOTNULL	BL6	CO3	III
16	Consider the following relational schema. *Student (id, name, age, city)* Retrieve the names of all students. Display the id's of all students who are having age above 20. Display the names and id's of all students who are having age between 20 and 25 and lives in Hyderabad city.	BL6	CO3	III

Department of CSE

B.Tech Mid Question Bank (R22 Regulation)

Academic Year: 2025-26 Semester: IV

Subject Name: OPERATING SYSTEMS (22CS403PC)

PART-A

Q.No	Questions	BL	CO	Unit No
1	Define A System Call in The Context of An Operating System	L1	CO1	I
2	Identify various types of system components?	L3	CO1	I
3	Differentiate between Program and Process.	L2	CO1	I
4	Explain the Process state diagram.	L2	CO1	I
5	List out the CPU Scheduling Algorithms.	L1	CO2	II
6	Discuss about Resource Allocation Graph?	L2	CO2	II
7	Describe the necessary conditions required for deadlock to occur in an operating system.	L3	CO2	II
8	Define Turnaround Time and waiting time?	L2	CO2	II
9	What Are the Three Conditions That a Solution to the Critical Section Problem Must Satisfy?	L1	CO3	III
10	Name Two Classical Synchronization Problems.	L1	CO3	III

PART-B

1	Write in detail about the services of OS.	L2	CO1	I
2	Explain OS Structure with neat diagram	L2	CO1	I
3	Discuss about the Process Control Block.	L3	CO1	I
4	Discuss about different types of OS Schedulers	L3	CO1	I
5	Explain the various types of Operating Systems in detail.	L2	CO1	I
6	Discuss about process and Process State Diagram along with PCB	L3	CO1	I
7	List out the CPU scheduling algorithms and Discuss the scheduling criteria in detail.	L2	CO2	II
8	Discuss Process Management System Calls- fork(), exit(), wait(), exec()	L3	CO2	II
9	Define Deadlock. Explain necessary Conditions for	L2	CO2	II

<table>
<tr><td></td><td>Deadlock</td><td></td><td></td><td></td></tr>
<tr><td>10</td><td>Discuss about the Deadlock Detection and Deadlock Recovery</td><td>L3</td><td>CO2</td><td>II</td></tr>
<tr><td>11</td><td>Consider the following five processes =(P1,P2,P3,P4,P5) with Arrival times = (0,0, 2, 4, 6) and Burst Time = (9, 8, 4, 3, 7) respectively. Find average waiting time and average turnaround time for the above processes using FCFS and SJF- CPU scheduling algorithms</td><td>L3</td><td>CO2</td><td>II</td></tr>
<tr><td>12</td><td>Considering a system with five processes P0 through P4 and three resources of type A, B, C. Resource type A has 10 instances, B has 5 instances and type C has 7 instances. Suppose at time t0 following snapshot of the system has been taken:
<table>
<tr><th rowspan="2">PROCESS</th><th colspan="3">ALLOCATION</th><th colspan="3">MAX</th><th colspan="3">AVAILABLE</th></tr>
<tr><th>A</th><th>B</th><th>C</th><th>A</th><th>B</th><th>C</th><th>A</th><th>B</th><th>C</th></tr>
<tr><td>P0</td><td>0</td><td>1</td><td>0</td><td>7</td><td>5</td><td>3</td><td>3</td><td>3</td><td>2</td></tr>
<tr><td>P1</td><td>2</td><td>0</td><td>0</td><td>3</td><td>2</td><td>2</td><td></td><td></td><td></td></tr>
<tr><td>P2</td><td>3</td><td>0</td><td>2</td><td>9</td><td>0</td><td>2</td><td></td><td></td><td></td></tr>
<tr><td>P3</td><td>2</td><td>1</td><td>1</td><td>2</td><td>2</td><td>2</td><td></td><td></td><td></td></tr>
<tr><td>P4</td><td>0</td><td>0</td><td>2</td><td>4</td><td>3</td><td>3</td><td></td><td></td><td></td></tr>
</table>
a) What will be the content of the Need matrix?
b) Is the system in a safe state? If yes, then what is the safe sequence?
c) What will happen if the resource request (1, 0, 0) for process P1 can the system accept this request immediately?</td><td>L3</td><td>CO2</td><td>II</td></tr>
<tr><td>13</td><td>Describe Necessary conditions for solution to Critical Section Problem</td><td>L2</td><td>CO3</td><td>III</td></tr>
<tr><td>14</td><td>Explain any one Classical problem of synchronization.</td><td>L3</td><td>CO3</td><td>III</td></tr>
<tr><td>15</td><td>Discuss Synchronization Hardware</td><td>L3</td><td>CO3</td><td>III</td></tr>
<tr><td>16</td><td>Explain Critical region characteristics and requirements in process synchronization.</td><td>L2</td><td>CO3</td><td>III</td></tr>
</table>

Department of CSE

B.Tech Mid Question Bank (R22 Regulation)

Academic Year: 2025-26 **Semester:IV**

Subject Name: Web Technologies

Faculty Name: K. Ranjith Reddy, Najeema Afrin, G.Kalpana Devi, V.Neeraja, M Srilekha, V.Hari Hara Nadha Sai, T.Vasavi

UNIT-1

PART-A

Q.No	Questions	BL	CO	Unit No
1	Describe how functions are declared and used in PHP	L2	CO1	I
2	State the rules for declaring variables in PHP.	L1	CO1	I
3	Explain the various types of arrays supported by PHP.	L2	CO1	I
4	Define Cookie and Session in PHP with one example each	L1	CO1	I
5	What is a Cascading Style Sheet (CSS)? Give an example.	L1	CO2	II
6	Explain frames in HTML with an example.	L2	CO2	II
7	Define Document Type Definition (DTD) and list its types	L2	CO2	II
8	What is XML? State its purpose	L1	CO2	II
9	List the advantages of Servlets over CGI	L1	CO3	III
10	Describe the Servlet life cycle methods.	L2	CO3	III

PART-B

Q.No	Questions	BL	CO	Unit No
1	Explain the different control structures used in PHP	L2	CO1	I
2	Write a PHP program to i) find the length of the String ii) display reverse of the String iii)count the number of words in the String	L3	CO1	I
3	Write a PHP program to read the data from Text Field and Check box	L3	CO1	I
4	Distinguish between the **GET** and **POST** methods in PHP with suitable examples.	L4	CO1	I
5	Explain the execution of queries in PHP with an example	L2	CO1	I

6	Demonstrate various file handling operations in PHP with an example	L3	CO1	**I**
7	Explain the List and Table tags in HTML with examples	L2	CO2	**II**
8	Differentiate between XML and HTML.	L4	CO2	**II**
9	Demonstrate the use of DOM to read and display data from an XML file.	L3	CO2	**II**
10	Design a simple HTML quiz page which includes: 3-5 multiple choice questions, add radio buttons for options and a submit button	L6	CO2	**II**
11	Explain the XML SAX parser in Java with an example.	L2	CO2	**II**
12	Differentiate between XML Schema and DTD with suitable examples	L4	CO2	**II**
13	Discuss about Common Gateway Interface	L2	CO3	**III**
14	Discuss the process of deploying a web application	L2	CO3	**III**
15	Explain the life cycle of a Servlet with neat diagram	L2	CO3	**III**
16	Explain about Servlet API	L2	CO3	**III**

Department of CSE

B.Tech Mid-1 Question Bank (R22 Regulation)

Academic Year: 2025-26 **Semester:IV**

Subject Name: Discrete Mathematics

Faculty name:P. Santhuja, A. Ganapathi,D.Nageswar rao, CH.Mallikarjuna Reddy

PART-A

Q.No	Questions	BL	CO	Unit No
1	What are the different types of logical connectives? Write their corresponding truth tables.	L1	C01	1
2	Define a Well-Formed Formula (WFF) in propositional logic. Write suitable examples.	L2	C01	1
3	Define Tautology, Contingency, and Contradiction With Suitable Example Each.	L1	C01	1
4	Write the Predicate forms of All Monkeys have tails, No Monkeys have tails, Some Monkeys have tails, Some Monkeys have no tails.	L2	C01	1
5	LetA={1,2,3}andB={1,2,3,4)thenfindAUB,A∩B, A-B,AXB.	L1	C02	2
6	Define Compatibility Relation? If A={1,2,3,4} and R={(1,1),(1,2),(1,3),(2,1),(2,2),(2,3),(3,1),(3,2),(3,3), (4,4)}is R a Compatibility Relation?	L2	C02	2
7	Define Partial Order Relation and Equivalence Relation with an example.	L2	C02	2
8	What is one-one (injective) function and onto (surjective) function. Give one example for each.	L1	C02	2
9	Define Semi Group.	L1	C03	3
10	State any two properties of an algebraic structure.	L2	C03	3

PART-B

Q.No	Questions	BL	CO	Unit No
1	Show that (P∨Q)∧(P→R)∧(Q→R)→R is Tautology.	L2	CO1	1
2	Obtain the PCNF of (¬ P→R)^(Q⇔P) Using Replacement Process and also With Truth Table.	L2	CO1	1
3	Define PDNF? Obtain PDNF of P→(Q∧R) Using Truth Table Method.	L3	CO1	1
4	a) Show that **P→S** can be derived from the given premises. ¬P∨Q, ¬Q∨R, R→S Using Rule-CP. b) Verify the validity of the following argument All Men are Mortal Socrates is a Men Therefore Socrates is a Mortal	L4	CO1	1
5	Verify the validity of the following argument.	L3	CO1	1

	Every living thing is a plant or an animal. John's gold fish is alive and it is not a plant. All animals have hearts. Therefore John's gold fish has a heart			
6	a) Show that the following is logically equivalent $(\neg P \wedge (Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \Leftrightarrow R$ b) Show that the following set of premises are inconsistent using indirect method of proof: P -> Q, Q -> R, ¬(P∧R), P ∨R=>R.	L3	CO1	1
7	a).Let A={0,2,4,6,8,10}B={0,1,2,3,4,5,6}and C= {4,5,6,7,8,9,10} find i).A∩B∩C ii)AUBUC b. Let f&g be the function from the set of integers to defined by the f(x)=2x+3,g(x)=3x+2 find (i) fog (ii) gof	L2	CO2	2
8	Define POSET? Construct the Hasse diagram for the divisibility on the set A={1,2,3,4,6,9,12,18,36}	L3	CO2	2
9	Define Relation? Explain Reflexive Relation. Transitive Relation, Irreflexive Relation AntiSymmetric Relation, Asymmetric Relation, Symmetric Relation's, With Example for Each.	L2	CO2	2
10	Define bijective function. Find whether the function f(x) = 3x + 5 is bijective or not. Also find its inverse function.	L3	CO2	2
11	**For** each of these relations on the set{1,2,3,4} a. Define whether it is reflexive, symmetric, transitive i) {(2,2),(2,3), (2,4),(3,2),(3,3),(3,4)} ii) {(1,3), (1,4),(2,3),(2,4),(3,1),(3,4)} iii) {(1,1),(1,2), (2,1),(2,2),(3,3), (4,4)} b. Let X={1,2,3}and f,g,h be the functions from X to X given by f={(1,2),(2,3),(3,1)} g={(1,2),(2,1),(3,3)}, h={(1,1),(2,2),(3,1)} find fog, fohog	L2	CO2	2
12	a).Describe the sets A&B given that A-B={1,2,4},B-A={7,8}&AUB={1,2,4,5,7,8,9} b)Define The Relations and Construct the Hasse diagram for the divisibility relation on following sets i)A={3,6,12,36,72} ii)A={1,2,3,5,6,10,15,30}	L4	CO2	2
13	Let G be the set of real numbers not equal to-1and *be defined by a*b=a+b+ab Show that<G,*> is an abelian group.	L2	CO3	3
14	Define cyclic group? Verify the algebraic system <G,*>is a cyclic group. Where G={1,-1,i,-i}and *is multiplication operation.	L3	CO3	3
15	Define Subgroup and Group? Prove that H={0,2,4,}form a subgroup of <Z6,+6>.	L4	CO3	3
16	Describe an algebraic structure and explain all its properties.	L3	CO3	3