

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING ASSIGNMENTS

**ACADEMIC YEAR: 2024-25 SEM: I ASSIGNMENT-1**

## COMPUTER ORGANIZATION AND ARCHITECTURE II YEAR I SEM

1. (a) **Explain** about Block Diagram of Digital computer. **(CO1)**
   1. **Differentiate** between Computer Organization &Architecture. **(CO1)**
2. (a) **Explain** about Micro Operations. **(CO1)**
   1. **Define** Micro operations and **explain** various types of micro operations with example.

## (CO1)

1. (a) Draw arithmetic logic shift unit and **explain**.**(CO1)**
   1. **Discuss** computer registers and computer instructions. **(CO1)**
2. **Explain** about Instruction format and Instruction cycle. **(CO1)**
3. (a) **Explain** about addressing modes. **(CO2)**
   1. **Explain** about Address sequencing. **(CO2)**

## OBJECT-ORIENTED PROGRAMMING THROUGH JAVA II YEAR I SEM

1. a) **Explain** about various data types in java. **(CO1)**
   1. **Explain** usage of "this" keyword in java. **(CO1)**
2. a) **List** and **explain** about java buzzwords. **(CO1)**
   1. **What** is recursion? **Write** a java program for finding factorial of given number using recursion. **(CO1)**
3. a) **Explain** various forms of inheritance with suitable examples. **(CO2)**
   1. **What** is the use of "final" keyword in java. **(CO2)**
4. a) **What** is polymorphism? With suitable examples **explain** various types of polymorphism. **(CO2)**
   1. **Demonstrate** creation and importing of user defined package with suitable program.

## (CO2)

1. a) Do java support multiple inheritance? If yes, **explain** with suitable example. **(CO2)**
   1. **What** is an exception? With suitable program **explain** about exception handling machanism in java. **(CO3)**

# OPERATING SYSTEMS II YEAR I SEM

* + 1. a) **Define** Real Time System. **Explain** types of Real-Time Systems. **(CO1)**

b) **Explain** about the services of Operating System. **(CO1)**

* + 1. a) **What** is system call? **Discuss** major system calls of operating system. **(CO1)**

b) **Explain** in detail about Inter Process Communication Models. **(CO1)**

* + 1. a) **Explain** Round Robin Scheduling Algorithm with suitable example. **(CO2)**

b) Following is the snapshot of a CPU. **(CO2)**

|  |  |  |
| --- | --- | --- |
| **Process** | **Arival Time** | **Burst Time** |
| P1 | 0 | 8 |
| P2 | 1 | 4 |
| P3 | 2 | 9 |
| P4 | 3 | 5 |

Draw the Gantt chart and calculating the Turn Around Time and Waiting Time of the jobs for Shortest Remaining Time First (SRTF) Scheduling Algorithm.

* + 1. a) **How** to Recover from deadlock situations? **Discuss** in detail. **(CO2)**

b) **What** is Deadlock? **Explain** Deadlock avoidance process using resource allocation Graph? (CO2)

* + 1. **Define** Synchronization. Briefly **explain** the types of Synchronization. **(CO3)**

# DATABASE MANAGEMENT SYSTEMS II YEAR I SEM

1. **Explain** all the commands of following with examples. **(CO2)**

A. DDL B. DML

1. **Explain** about Database Architecture. **(CO1)**
2. a. **Explain** primary key and foreign key constraints with example? **(CO2)**

b. **Demonstrate** the methods of handling violations of key constraints. **(CO2)**

4. **Explain** following operators used in Relational algebra with examples.

* + 1. Selection ii. Projection iii. Rename Operator **(CO3)**

b. Consider the below schemas Sailors(sid, sname, age, rating) Boats(bid, bname, color) Reserves(sid,bid,day)

**Solve** the following relational algebra queries.

1. **Find** the names of sailors whose rating is above 7
2. **Find** the names of sailors who reserved red boat
3. **Find** the sid’s of sailors with age over 20 and who have not reserved a red boat. **(CO3)**

c. **Explain** the syntax and formulas used in Tuple Relational calculus and Domain Relational Calculus?

**Solve** the following queries using TRC

1. **Find** the names of sailors whose rating is above 7
2. **Find** the names of sailors who reserved boat 103
3. **Find** the names of sailors who reserved all boats
4. a. **Explain** the basic format of SQL query, and answer the below SQL queries using above tables. **(CO3)**
   1. **Find** the details of sailors whose rating is above 7.
   2. **Find** the names of sailors who reserved red or green boat using UNION operator.
   3. **Find** the names of sailors who reserved blue colour boat using nested queries

b. **Explain** following aggregate operators with examples i.COUNT ii.SUM iii.AVG iV.MAX V.MIN

# DISCRETE MATHEMATICS II YEAR I SEM

1. a. **Define** well-defined formula(WEF) with example. **Construct** the Truth table for the formula (PɅQ) V (Q Ʌ R) V (R Ʌ P) . **(CO1)**

b. **Show** the following Equivalences with and without truth table : (P⇔ Q)⇔(P V Q) Ʌ (PɅQ) **(CO1)**

1. a. **Explain** the types of Normal Forms. **Define** PDNF and PCNF. **(CO1)**

b. **Show** that R V S follows logically from the premises:

CVD, (CVD→ꓶH), ꓶH → (AɅꓶB) and (AɅꓶB) → (RVS). **(CO1)**

1. a. Let A,B be any two sets then **prove** that (AUB)c = AC∩BC **(CO2)**

b. **Explain** types of Relation with example.**(CO2)**

1. a. **Define** Composition Relation Let A={1,2,3} B={P,Q,R}, C={X,Y,Z} then relation R={(1,p)(1,r)((2,p)(2,q)} S={(p,q)(q,x)(q,y)(r,z)} then compute
   1. RUS ii) SUR iii) (RUS) UR iv)RUR **(CO2)**

b. Let A={2,3,6,12,24,36} and relation ≤ be such that x ≤y if x

divides y. Draw Hasse

Diagram.**(CO2)**

1. **Define** Function. **Explain** Semigroup and monoids. **(CO3)**

## AUTOMATA THEORY AND COMPILER DESIGN III YEAR I SEM

1. a)**Construct** DFA and NFA for the languages containing even no. of 0’s and even no. of 1’s. **(CO1)**

b) **What** are identify rules of regular expression. **(CO2)**

1. a)Convert the given regular expression into F.A (ab+aba)\*a. **(CO1)**

b)Is L={a2n | n≥1} Regular? **(CO2)**

3.a) **Show** that the grammar is ambiguous. **(CO2)**

S→aSbS|bSaS|e

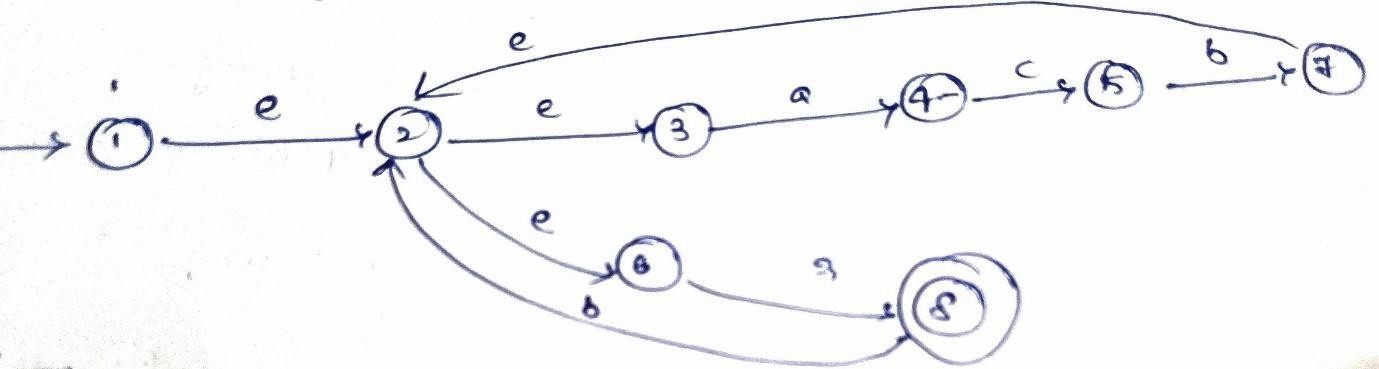
b) **Design** Push Down Automata for the language L={w|w ∈ (a,b)\*,n(a)(w)>n(b)(w)}. **(CO3)**

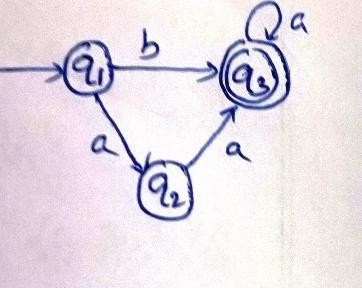
4. **Design** DFA for the following over {a,b}. **(CO2)**

* + 1. All strings containing not more than three a’s.
    2. All strings that has atleast two occurences of b between any two occurences of a.
    3. **Construct** a DFA accepting the set of all strings ending with 00.

1. For the following NFA with ∈-moves convert it into NFA without ∈-moves and

**show** that NFA with a-moves accept the same language as shown in figure. **(CO2)**



1. Convert the given FA into Regular expression. **(CO2)**

5. Given the grammar G as S→0B|1A

A→0|0s|1AA B→1|1S|0BB

**Find** a) Left-Most b) Right Most derivation for string 00110101,Construct derivation tree also. **(CO2)**

b) **Construct** a PDA for the following grammar. **(CO3)**

S→AA|a,A →SA|b

## CRYPTOGRAPHY & NETWORK SECURITY III YEAR I SEM

1. a. **Explain** the model of network security. [**CO1**]

b. **Explain**Knapsack Algorithm with example. [**CO1**]

1. **Explain** RC5 Algorithm with example. [**CO1**]
2. **Write** the ElGamal Algorithm. Further to Encrypt the message M=8, on primitive root= 2 of prime= 11. [**CO2**]
3. Briefly **discuss** about the concept of Diffie Hellman Key Exchange algorithm. [**CO2**]
4. Given two prime numbers p=5 and q=11, and encryption key e=7 derive the decryption key d. Let the message be x=24. Perform the encryption and decryption using R.S.A algorithm **[CO2]**

# COMPUTER NETWORKS III YEAR I SEM

1a. **Discuss** about the various transmission media available at the physical layer. **(CO1)**

1b. With a neat sketch, **explain** TCP/IP reference model.**(CO1)**

2a. **What** are the different types of error detection methods? **Explain** the CRC error detection technique using generator polynomial x4 +x3 +1 and data 11100011.**(CO1)**

2b. **Explain** about ALOHA Protocols **(CO2)**

3a. **Define** collision. **Explain** collision free protocols. Mention advantage of each protocol.

## (CO2)

3b. **Explain** various noisy channel protocols. **(CO2)**

4. **Explain** about Wireless LAN’s. **(CO2)**

5a. **Explain** shortest path routing Algorithm**(CO3)** 5b. **Discuss** Design issues of Network layer.**(CO3)**

# SOFTWARE METRICS AND MEASURES III YEAR I SEM

1. **What** is the need for software metrics? **Explain** briefly GQM paradigm and its implementation with an example. **(CO1)**

b) **Explain** the scope of software metrics? **(CO1)**

1. **What** are the different measurement scale types? **Explain** each of them with an illustrative example. **(CO2)**
2. a) **Explain** in detail various steps to carry out a Formal experiment with suitable example.

## (CO2)

b) **How** are statistical methods used in data collection and analysis? **Explain** in detail.**(CO2)**

1. a) **What** are empirical investigation techniques in data collection and analysis? **Explain**.

## (CO2)

b) i) **Write** short notes on fault types.

* + - 1. **Discuss** the content of failure report
      2. **Write** notes on box plot. **(CO2)**

1. **Explain** [p-0in detail various structural measures used for measuring internal product features of software. **(CO3)**

# DATA MINING III YEAR I SEM

1. a) **Explain** concept hierarchy generation for nominal data. **(CO1)**

b) **Describe** feature subset selection. **(CO1)**

1. a) **Explain** various data preprocessing techniques , **how** data reduction helps in data preprocessing. **(CO1)**

b) **Illustrate** Apriori algorithm for the following data set: **(CO2)**

Tid List

1 Milk ,Dal ,Sugar ,Bread 2 Dal ,Sugar ,Wheat ,Jam

3 Milk ,Bread ,Curd ,Paneer 4 Wheat ,Paneer ,Dal ,Sugar 5 Milk ,Paneer ,Bread

6 Wheat ,Dal ,Paneer ,Bread

1. **Explain how** can you improve the performance of Apriori Algorithm? **(CO2)**
2. Considering support threshold (50%) & Confidence(60%),**Illustrate** FP Growth Algorithm for the following transactional dataset. **(CO2)**

T1 I1 I2 I3 T2 I2 I3 I4 T3 I4 I5 T4 I1 I2 I4

T5 I1 I2 I3 I5 T6 I1 I2 I3 I4

1. **Discuss** about the classification of 2 step model and **discuss** about the issues regarding classification. **(CO3)**

# ARTIFICIAL INTELLIGENCE III YEAR I SEM

1. **Discuss** in detail about A\* algorithm with example. **(CO1)**
2. **Explain** in detail for the following technique Alpha-Beta pruning problem with example.

## (CO1)

1. **Define** agents and Environments with an Example. **(CO1)**
2. **Define** Hill Climbing Technique, 8-Queens and Wumpus in AI. **(CO2)**
3. **Discuss** inference engine.**Explain** Forward and Backward chaining. **(CO3)**

# INTERNET OF THINGS IV YEAR I SEM

1. a.**Brief** about IOT Communication models with diagrams?**(CO1)** b.**Define** IOT and list the characteristics of IOT ?**(CO1)**

2.a.**List** out about IOT Enabling Technology in detail.**(CO1)** b.**How** IOT used in Agriculture and Logistics domain?**(CO1)**

1. a.**Differentiate** between IOT and M2M with ten difference?**(CO2)**

b.**Explain** about Network function virtualization (NFV)with diagram? **(CO2)**

1. a.**Elaborate** SDN with neat Diagram?**(CO2)**

b.**Summarize** about SNMP Management with diagram **(CO2)**

1. **Explain** about Data Types in python with examples?**(CO3)**

# DISTRIBUTED SYSTEMS IV YEAR I SEM

1. **What** are the challenges of resource sharing and web? **(CO1)**
2. **Discuss** briefly about remote method invocation in distributed systems. **(CO1)**
3. **Differentiate** between process and threads.**(CO2)**
4. **Discuss** about file service architecture. **(CO2)**
5. **Write** about peer-to-peer systems. **What** are their characteristics? **(CO3)**

# SOFTWARE TESTING METHODOLOGIES IV YEAR I SEM

1. A)Briefly **discuss** about Dichotomies? **(CO1)**
   1. **Describe** briefly about a model for testing?**(CO1)**
2. Briefly **explain** about Taxonomy of bugs &**how** the bugs are going to occur? **(CO1)**
3. A)**Describe** about consequences of bugs? **(CO1)**
   1. **Explain** with an example of data flow graphs and data flow anomalies?**(CO2)**
4. A)**Describe** about data flow testing techniques? **(CO2)**
   1. **Discuss** in detail about Slicing and Dicing? **(CO2)**
5. A)**Explain** in detail about translation flow testing techniques. **(CO3)**
   1. **Define** domain testing, nice and ugly domains. **(CO2)**

**ELECTRONICS MEASUREMENTS & INSTRUMENTATION IV YEAR I SEM**

# SET 1

1. A 200ohm basic movement is to be used as an ohmmeter requiring full scale deflection of 1mA and internal battery voltage of 5V. A half scale deflection marking of 2Kom is desired. **Calculate**
2. The values of R1 and R2
3. Maximum value of R2 to compensate for a 3% drop in battery voltage. **(CO2)**
4. With a neat **sketch explain** the operation of series type ohmmeter. Also **explain how** it is calibrated.
5. Draw the block schematic of AF wave Analyzer and **explain**. **(CO2)**
6. With a neat diagram **explain** the working of Pulse and Square wave Generator. **(CO3)**
7. Draw the block diagram of CRT. **Explain** different types of deflections in a CRT. **(CO3) SET 2**
8. **Explain** the working of a True RMS voltmeter with the help of a suitable block diagram.

## (CO2)

1. The expected value of the current through a resistor is 20mA.However the measurement yields a current value of 18mA. **Calculate**

i)Absolute Error ii)Percentage of Error iii)Relative Accuracy

iv)Percentage Accuracy **(CO2)**

1. **Explain** about Spectrum Analyzer with a neat block diagram. **(CO3)**
2. **Explain** Function Generator with neat Diagram. **(CO3)**
3. **Explain** working principle operation of CRO with neat diagram. **(CO3)**

## SET 3

1. Draw the block diagram of Multimeter and **explain** its function detail. **(CO2)**
2. A 1mA meter movement having an internal resistance of 100ohm is used to convert into a multi range ammeter having the range 0-10mA, 0-20mA and 0-50mA. **Determine** the value of the shunt resistance required. **(CO2)**
3. **Explain** the working of Power Analyzer with a neat diagram. **(CO3)**
4. **Write** in detail about signal Generator with a neat **sketch**. **(CO3)**
5. **Discuss** the various features of the CRT. **(CO3)**

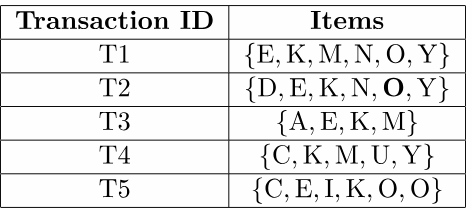
**DATA MINING IV YEAR I SEM**

1. **What** is KDD? **Explain** the KDD process of data mining?**Write** short notes on data mining task primitives? **(CO1)**
2. **Explain** the Dimensionality reduction and Feature subset selection **(CO1)**
3. a)**Apply** apriori algorithm to **find** frequent itemsets from the following transactional database. Let min\_sup = 30%. **(CO2)**

|  |  |
| --- | --- |
| TID | Items\_bought |
| 1 | Pen, notebook, ruler |
| 2 | Pencil, eraser, sharpener |
| 3 | Pen, ruler, chart, sharpener |
| 4 | Pencil, clip, eraser |
| 5 | Ruler, pin, story book, pen |

|  |  |
| --- | --- |
|  |  |
| 6 | Marker, chart, sketchpens |

b)**Explain** FP growth algorithm with an example? **(CO2)**



Minimum support be 3.

1. **Explain** partition algorithm for the following dataset ? **(CO2)**

|  |  |
| --- | --- |
| Transaction | Itemset |
| T1 | I1,I5 |
| T2 | I2,I4, |
| T3 | I4,I5 |
| T4 | I2,I3 |
| T5 | I5 |
| T6 | I2,I3,I4 |

1. a)**Write** the general approaches to solve a classification problem . **(CO3)**

b)**Discuss** about classifiers. **Explain** Problem definition and Classification Techniques.

## (CO3)

**INFORMATION SECURITY AND RISK MANAGEMENT IV YEAR I SEM**

1.a) **Define** information security.

b) Given two prime numbers p=5 and q=11 and Encryption key e=7 derive the decryption key d. Let the message be x=24.Perform the decryption and encryption using RSA algorithm.

2.a) **What** are the types of security attacks?

1. Consider a Diffie-hellman scheme with a common prime q=11, and primitive root α=2.
   1. If user “A” has public key YA=9,**what** is A’s private key XA.
   2. If user “B” has public key YB=3,**what** is shared secret key K.

3. **Explain** X.509 authentication services.

4.a)**List** three approaches to message authentication.

b) **Explain** DES algorithm with suitable examples. **Discuss** its advantages and limitations.

5.a) **Compare** transposition ciphers with substitution cipher.

b) Consider the following plaintext: ‘PROTOCOL” Secret key:”NETWORK”

**What** is the corresponding cipher text using play fair cipher method.

## OBJECT ORIENTED MODELING AND DESIGNIV YEAR I SEM

1. **Explain** the concept of constraints with the help of an example. **(CO1)**

2. **Elaborate** the concept of derived data. **(CO1)**

3. **Demonstrate** the concept of Packages with the help of a diagram. **(CO2)**

4. **Explain** the concept of state chart diagram . **(CO2)**

5. **Write** in detail about integrated Object Oriented Models. **(CO2)**



# ACADEMIC YEAR: 2024-25 SEM: I ASSIGNMENT-2

## COMPUTER ORGANIZATION AND ARCHITECTURE II YEAR I SEM

1. **Explain** about Multiplication Algorithm with example? **(CO3)**
2. **Explain** about I/O Interface with Diagram? **(CO4)**
3. **Explain** about Asynchronous Data Transfer with Methods? **(CO4)**
4. **Explain** about Memory Hierarchy with Diagram. **(CO5)**

5.a) **Differentiate** between RISC & CISC ? **(CO5)**

1. **Explain** about Pipeline with types? **(CO4)**

## OBJECT-ORIENTED PROGRAMMING THROUGH JAVA II YEAR I SEM

* 1. A) **Write** Short note on thread life cycle? **[CO3]**

B) **Explainhow** many ways a thread can be created with suitable example? **[CO3]**

2. A) **Describe** producer-consumer pattern using inter-thread communication.**[CO3]**

B) Does Java support thread priorities? **Justify** your answer with suitable example.**[CO3]**

1. A)**Explain** any Three Layout managers with program and output. **[CO4]**

B) Write about Delegation Event model. **[CO4]**

1. A) **Write** a java program to demonstrate the handling mouse events? **[CO4]**

B) **What** is the advantage of adaptor classes? **Write** about any Adaptor class with example program. **[CO4]**

1. A)**Explain** differences between i)AWT and Swing components ii) Application and Applet. **[CO5]**

B) Briefly **explain** about the following: a) JRadio Button b) JCheckBox **[CO5]**

# OPERATING SYSTEMS II YEAR I SEM

**1. Explain** about the following IPC Mechanisms: **(CO3)**

* + 1. Shared Memory ii) Message Queue

b) **What** is Dining Philosophers problem? **Discuss** the solution to Dining philosophers problem using process synchronization. **(CO3)**

Q2.a) **Explain** about Contiguous Memory Allocation. **(CO4)**

b) **Differentiate** between paging and segmentation. **(CO4)**

Q3. **What** is the need of page replacement? Consider the following reference string 1,7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. **How** many page faults would occur for the FIFO page replacement algorithm? Assuming four frames size and all frames are initially empty. **(CO4)**

Q4. **Discuss** about free space management. **(CO5)**

Q5. a) **Explain** contiguous and linked file allocation methods. **(CO5)**

b) **Discuss** various protection methods in brief. **(CO5)**

# DATABASE MANAGEMENT SYSTEMS II YEAR I SEM

1. **Define** the normalization? **Explain** the 1NF ,2NF ,3NF and BCNF with an example ?

## (CO3)

1. **Explain** the ACID properties of transaction and states of transaction. **(CO4)**
2. **Describe** the following

I) Two Phase Lock II) Multiple Granularity. **(CO4)**

* 1. **Explain** ISAM in detail with example.**(CO5)**

b **Explain** B+ Tree index structure with an example. **(CO5)**

5. **Describe** the extendable hashing technique with an example. **(CO5)**

# DISCRETE MATHEMATICS II YEAR I SEM

1. **Define** Abelian Group? **Prove** that the set G={1,2,3,4,5,6} is a finite abelian group of order 6 with respect to Multiplication Modulo 7?**[CO3]**
2. a. **How** many different arrangements of letter MISSISSIPPI? The number of arrangements

of the given letters that begin with S and end with I. **[CO4]**

b. **State** and **Prove** Multinomial Theorem?[CO4]

1. a. **Explain** Semigroups and Monoids.**[CO3]**

b. **Discuss** about Euler Graph? **[CO4]**

1. **Explain** with the following? **[CO5]**

a Planar graph b Euler graph

c Hamiltonian graph

d Chromatic graph and chromatic number

1. a. **Write** about Isomorphism in graph with Example. **[CO5]**

b. **Explain** about Depth First Search and Breadth First Search. **[CO5]**

## AUTOMATA THEORY AND COMPILER DESIGN III YEAR I SEM

1. **Define** compiler.Explain the phases of compiler with neat diagram. **[CO4]**
2. **Construct** CLR,LALR parser for the following grammar **[CO4]**

S -&gt; cC

C -&gt; ac | d

1. **Explain** the predictive parser for the following grammar **[CO4]**

E -&gt; E+T | T T -&gt; T\*F | F F -&gt; (E) | id

Also check whether the grammar is L(1) or not?

1. A) **Discuss** in detail about syntax directed definition. **[CO5]**

B) **Write** the different forms of Intermediate code generator.**[CO5]** Also **write** the forms of three address code.

1. **Define** a turing machine for the language **[CO3]**

L = {| n&gt;=1}

## CRYPTOGRAPHY & NETWORK SECURITY III YEAR I SEM

1a) **Explain** Message Authentication Requirements and **what** are the attacks related to message communication. **(CO3)**

1. **Discuss** the different servers used in Kerberos in detail. **Explain** the role of each one.

## (CO3)

1. **Describe** signing and verification in Digital Signature Algorithm. **What** are two levels of functionality that comprise a message authentication or digital signature mechanism? **(CO3)**

2a) Is it possible in SSL for the receiver to recorder SSL record blocks that arrive out of order? If so, **explain how** it can be done. If not, **why** not? **(CO4)**

b) **Discuss** the IEEE 802.11i Wireless LAN Security. **(CO4)**

3a) **What** protocols comprise SSL? **What** is the difference between an SSL connection and an SSL session? **(CO4)**

b) **Explain** about SSL Handshake protocol. **(CO4)**

4a) Briefly **discuss** about the scenario of IP security and its Policy. **(CO5)**

b) **Explain** IP security architecture and also **explain** basic combinations of security associations with a neat diagram. **(CO5)**

5a) **List** and **explain** the PGP services and **explain how** PGP message generation is done with a neat diagram. **(CO5)**

1. **Discuss** about the S/MIME in detail. **(CO5)**
2. **Explain** secure interbranch payment transactions in detail**. (CO5)**

# COMPUTER NETWORKS III YEAR I SEM

1. **Write** the concept of distance vector routing and illustrate with example. The major problem with distance vector routing algorithm is ‘count to infinity’. **How** exchange complete path form router to destination instead of delay, helps in solving count to infinity problem. **(CO3)**
2. **Explain** congestion control algorithms. **(CO3)**
3. a. **Discuss** the transport layer service primitives. **What** do you understand three way handshake method Technique? And also discuss the TCP connection management.

## (CO4)

b. **Explain** the various fields of the TCP header with the help of a neat diagram. **(CO4)**

1. a. **Illustrate** the TCP connections, TCP releases with state transition diagram. **(CO4)**

b. **Define** Internetworking. Explain IPv4 Header format. **(CO4)**

1. a. Elucidate the importance of client / server architecture. **What** are the functions of user agent, message transfer agent and message access agent in e-mail system. **(CO5)**

b.**Write** short notes on the following: **(CO5)**

(a) MIME (b) Audio compression (c) DNS (d) Voice over IP (e) HTTP (f) FTP

(g) WWW

# SOFTWARE METRICS AND MEASURES III YEAR I SEM

1. **Explain** Halstead’s Software Metrics with example. **(CO3)**
2. A) Briefly **explain** McCabe’s Cyclomatic complexity measure.**(CO3)**

B) **Define** COCOMO MODEL with advantages and disadvantages. **Explain** types of COCOMO model.**(CO3)**

3.A) **Define** In-Process Quality Metrics?and **explain** any 2 metrics. **(CO4)**

B) **Explain** the case study metric program used in HP Software Company. **(CO4)**

1. **Explain** any four software quality metrics for process and products. **How** these values will be helpful for software engineers? **(CO4)**
2. A. **Write** brief notes on: **(CO5)**

(1) Orthogonal defect classification.

(ii) PT report.

B. **Explain** in detail Reyleigh model for quality management. **(CO5)**

# DATA MINING III YEAR I SEM

1. a. **What** is a decision tree? **Explain** decision tree induction algorithm. **(CO3)**

b. **How** to solve a classification problem using k-nearest neighbour algorithm? **(CO3)**

1. **Explain** the Naive Bayesian Classification algorithm. **(CO3)**
2. a. **Describe** the different types of hierarchical methods? **(CO4)**

b. **Explain** the key issues, strengths and weaknesses of hierarchical clustering algorithms. **(CO4)**

1. **Explain** Partitioning Clustering - K -Means Algorithm with an example. **(CO4)**
2. a. Give a brief note on PageRank algorithm used in web structure mining?

## (CO5)

b. **Compare** and **contrast** text mining with web content mining using lucid examples.

**(CO5)**

# ARTIFICIAL INTELLIGENCE III YEAR I SEM

1. **Explain** about the first-order logic representation and inference. **(CO3)**
2. **Describe** forward chaining and backward chaining resolution in FOL. **(CO3)**
3. **Illustrate** knowledge representation categories and ontological engineering? **(CO4)**
4. **Discuss** classical planning with state-space Search and planning approaches? **(CO4)**
5. A) **Explain** about Baye’s rules and its uses. Semantics of Bayesian networks. **(CO5)**

B) **Write** about probability reasoning and Dempster Shafer theory. **(CO5)**

# INTERNET OF THINGS IV YEAR I SEM

1.a. **Explain** about JSON and XML packages used for IOT? **(CO3)**

b. **Describe** the file handling capabilities in Python. **What** are the different modes available for opening a file, and **how** can you perform read and write operations? **(CO3)**

1. a. **Test** a python program for switching LED/Light based on reading LDR reading with schematic diagram ? **(CO4)**

b. **Outline** raspberry pi board and **explain** each parts? **(CO4)**

1. **Explain** about web services a) Amazon s3 b) Amazon RDS. **(CO5)**
2. a. Provide an overview of the Raspberry Pi and its role in IoT applications. **Describe** the different interfaces (serial, SPI, I2C) supported by Raspberry Pi, and **explain how** these interfaces can be used to communicate with external devices? **(CO4)**

b. **Explain** the importance of modules and packaging in Python. **How** do they contribute to code organization and reusability? Provide an example of creating a module and packaging it for distribution?**(CO3)**

1. a. **Explain** python web application framework-Django?**(CO5)**

b. **Elaborate** WAMP session between client and router with neat diagrams? **(CO5)**

# DISTRIBUTED SYSTEMS IV YEAR I SEM

1. **Explain** about clocks, events and process states. **(CO3)**
2. **Discuss** in brief about ACID properties of transaction. **(CO4)**
3. **Discuss** the concurrency control in distributed transactions. **(CO4)**
4. **What** are the difference between message passing and distributed shared memory. **(CO5)**
5. **Explain how** primary-backup model of replication is fault tolerance. **(CO5)**

# SOFTWARE TESTING METHODOLOGIES IV YEAR I SEM

1. **Explain** the push/pop arithmetic with an example? And **explain** the get/return arithmetic with an example? **(CO4)**
2. **Explain** about the mean processing time of a routine with an example? **(CO3)**
3. **Discuss** in detail about lower path count arithmetic and structured flow graph? **(CO3)**

4.a) **Explain** about decision table as a basis for test case design and also give an example ofimmaterial cases? **(CO3)**

b) **Explain** good and bad state graphs? **(CO4)**

5. **Explain** about Node reduction algorithm with an example? **(CO5)**

## ELECTRONICS MEASUREMENTS & INSTRUMENTATION IV YEAR I SEM SET 1

1. **Explain** the operation of a Digital Storage Oscilloscope with its block diagram.**(CO2)**
2. **List** any three classifications of transducers? **(CO3)**
3. **Explain** about Displacement Transducer. **(CO2)**
4. An unbalanced wheat stone bridge has the following resistances with R1=200 KΩ, R2=400 KΩ, R3=100 KΩ, R4=30 KΩ with a battery voltage of 1.5V and a galvanometer resistance of Rg=100 Ω. Calculate the current through the galvanometer?**(CO3)**
5. **Why** the Kelvin’s Double Bridge is preferred? Derive the bridge balancing equation for the Kelvin’s double Bridge. **(CO3)**

## SET 2

1. **Explain** the working of dual-beam CRO with relevant diagrams. **(CO2)**
2. **Explain** the principle of operation of strain gauges with the help of neat diagrams

## (CO3)

1. Briefly **discuss** the working of LVDT with neat block Diagram**(**.**CO2)**
2. **Explain** the operation of Maxwell Bridge. **(CO3)**
3. Wheat stone’s bridge has the following parameters R1=10K, R2=15K and R3=40K. **Find**

the unknown resistance Rx. **(CO3) SET 3**

1. **Explain** the working of dual-trace CRO with relevant diagrams. **(CO2)**
2. **Explain** the operation of Sampling Oscilloscope with its block diagram. **(CO2)**

3.A Maxwell bridge is used to measure an inductive impedance. The bridge constants at balance are C1 = 0.01μF, R1 = 470 KΩ, R2 = 5.1 KΩ and R3 = 100 Ω. **Find** the series equivalent of the unknown impedance. **(CO3)**

1. With a neat **sketchexplain** the Wheat Stone Bridge. **(CO3)**
2. **How** Humidity can be measured using transducers? **(CO3)**

**DATA MINING IV YEAR I SEM**

* 1. a)**Write** the methods for expressing attribute test conditions and measure the selecting Best split. **(CO3)**

b)**Explain** about Naive-Bayes Classifier. **(CO3)**

2. **Explain** K- Nearest neighbor classification-Algorithm and Characteristics. **(CO3)**

1. a) **Define** Hierarchical clustering using Agglomerative Methods and divisive methods. **(CO4)**

b)**What** are the advantages of PAM algorithm over k-means algorithm? **(CO4)**

1. a)**Describe** Partitioning Clustering-K-Means Algorithm and K-Mediods Algorithm.**(CO4)**

b) **Define** Density based and Grid based methods and **Explain** about Outlier

Detection? **(CO4)**

1. a) **Explain** about web mining and Text mining? **(CO5)**

b) **Write** about hierarchy of categories, text clustering. **(CO5)**

## INFORMATION SECURITY AND RISK MANAGEMENT IV YEAR I SEM

1. a) **Explain** about Key Performance Indicators (KPI). **(CO3)**

b) **What** is the different between transport mode and tunnel mode? **(CO1)**

1. **What** is SSL Record Protocol? **Explain** two services provided for SSL connections by this protocol. **(CO3)**
2. **What** do you mean by a secured electronic transaction? **Discuss** briefly about the various components of SET system? **(CO1)**
3. **Write** about Information Security Management? **Explai**n the Roles and Responsibilities.

## (CO5)

1. **Explain** Encapsulation Security Payload of IPSec. **(CO4)**

## OBJECT ORIENTED MODELING AND DESIGN IV YEAR I SEM

1. **What** is the purpose of system conception in software development? **(CO3)**

2. **Define** domain analysis in the context of software development.**(CO4)**

3. **Explain** the significance of use case realization in object oriented design. **(CO3)**

4. **What** is the role of a class diagram in system design. **(CO4)**

5. **What** is the singleton design pattern and when it is typically used. **(CO5)**