Q.P. Code: 39315

Time 3 hours **Marks 80**

Note: Question No. 1 is Compulsory
Attempt any 3 Questions from the Remaining Questions.

Q.1 **20**
a) Explain Capability Maturity Model.
b) Explain layered structured of software Engineering? How quality of software can be affected by wrong selection of Process, method and tool
c) What is agility? How agile development help develop quality software
d) What are the different design principles?

Q.2
a) Explain Spiral model. How protyping is used in spiral model **10**
b) Explain Scrum agile development model **10**

Q. 3
a) Defference between Alpha and Beta Testing, Verification and Validation, White box and Black Box testing **10**
b) Draw CFG and calculate cyclomatic complexity for the given PDL **10**
if(c1 or c2 and c3) s1;
else while (c4) s2;
s3;

Q.4
a) What are the different requirement engineering tasks? Why identifying software requirements is difficult? **10**
b) Explain includes and extends in use case diagram with example **05**
c) An application for performing arithmetic operations is to be developed (addition, subtraction, multiplication, division) on two digit numbers. Draw context diagram and DFD level 1. **05**

Q.5.
a) Explain risk management process. Prepare RMMM plan for the identified risk "Team members will leave the project in between the schedule" **10**
b) What is the need of SCM in software engineering? Explain change control **10**

Q.6.
a) Estimate minimum time required for the given project

Task	T1	T2	T3	T4	T5	T6	T7
Dependency	--	T1	T6	T2	T1,T4	-	T1,T6
Duration in weeks	4	2	4	4	2	4	2

b) Explain quality attributes in deatail

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Time – 3 hrs.   **Marks 80**

N.B.   1. Question no.1 is compulsory.
2. Attempt any 3 questions out of remaining 5 questions.
3. Figures to the right indicate full marks.
4. Assume suitable data wherever necessary.

Q.1	a	Compare NOS and DOS	5 M
	b	What are various kind of message buffering techniques used in IPC.	5 M
	c	What are Roles in EJB?	5 M
	d	Explain Service Oriented Architecture (SOA) lifecycle with a diagram.	5 M
Q.2	a	Describe the need for coordinator in distributed system. Demonstrate the working of Election algorithm.	10 M
	b	What are the components of CORBA? List the advantages of CORBA.	10 M
Q.3	a	Describe desirable features of a good message passing system.	10 M
	b	Explain client centric consistency model in distributed system.	10 M
Q.4	a	Explain migration in Heterogeneous system.	10 M
	b	Describe different distributed computing models.	10 M
Q.5	a	Describe various transparencies in distributed system.	10 M
	b	Explain need of deadlock detection algorithm. Explain probe based distributed deadlock detection algorithm.	10 M
Q.6		Write short note on (Any two)	20 M
	a	Group communication	
	b	. NET architecture	
	c	RPC communication protocol	

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Time: 3 hours **Marks: 80**

N.B. 1. Question 1 is compulsory

2. Attempt any three questions out of the remaining five questions

Q.1 (a) Demonstrate with a diagram the process of KDD. **(5)**

(b) Describe the different types of attributes one may come across **(5)**
in data mining with two examples of each.

(c) Use k means clustering to cluster the following data into 2 **(5)**
clusters. 2,3,4,10,11,12,20,25,30.

(d) Find Mean, median, mode for a given data. Show box plot. **(5)**
11,13,13,15,15,16,19,20,20,21,21,22,23,24,30,40,45,45,45

Q.2 (a) Illustrate any one classification technique for the following **(10)**
dataset. Show how we can classify new
tuple(HOMEOWNER=Yes, Status= Employed,
Income=Average)

ID	Homeowner	Status	Income	Defaulted
1	Yes	Employed	High	No
2	No	Business	Average	No
3	No	Employed	Low	No
4	Yes	Business	High	No
5	No	UnEmployed	Average	Yes
6	No	Business	Low	No
7	Yes	UnEmployed	High	No
8	No	Employed	Average	Yes
9	No	Business	Low	No
10	No	Employed	Average	Yes

(b) Explain different methods that can be used to evaluate and **(10)**
compare the accuracy of different classification algorithms.

Q.3 (a) Explain multilevel and multi dimensional association rules **(10)**
with examples.

(b) What is market basket analysis? Give Apriori algorithm **(10)**

Q.4 (a) Discuss Supervised, Semi supervised and Unsupervised outlier **(10)**
detection methods.

(b) What is the need of pre-processing. Explain the different steps **(10)**
involved in data pre-processing.

Q.5 (a) Explain simple linear regression with example **(10)**

(b) Define BI and give its architecture. Explain any business **(10)**
application where data mining can be used.

Q.6 (a) Use any hierarchical clustering algorithm to cluster the **(10)**
following into 3 clusters. a1=(2,10),
a2=(2,5),a3=(8,4),a4=(5,8),a5=(7,5),a6=(6,4),a7=(1,2),a8=(4,9)

(b) Explain DBSCAN algorithm with example. **(10)**

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(3 Hours)   **[Total Marks: 80]**

N.B.: (1) Question No. **1** is **compulsory.**

(2) Solve any **three** questions out of remaining **five.**

(3) Figures to **right** indicate **full** marks.

(4)Assume suitable **data** where **necessary.**

1. a) Explain Biometric authentication. [5]
   b) Explain Vulnerability, Threat and Attack. [5]
   c) What is Distributed Denial of Service Attack? [5]
   d) Describe TCP Syn Flood attack. [5]

2. a) Explain different types of Firewalls that can be used to secure a network. [10]
   b) Explain RSA algorithm for public key encryption. Given modulus N = 143 and public key = 7, find the values of p, q, phi(n), and pivate key d. Can we choose value of e = 5? Justify. [10]

3. a) What is Digital Signature? Explain how it is created by sender and verified by receiver. [10]

   b) What is session hijacking? Give two ways to prevent a session hijacking attack. [10]

4. a) What are the different approaches to Software Reverse Engineering? [10]
   b) Explain the need of Intrusion Detection System (IDS)? Differentiate between signature based and anomaly based IDS. [10]

5. a) What are the file system vulnerabilities for a Linux system? [10]
   b) What is SSO? Explain the working of Kerberos Authentication Protocol (KAP) [10]

6. Write short notes on: (Any Four)
   a) Honey Pots [5]
   b) Secure email [5]
   c) Federated Identity Management [5]
   d) CIA Security goals [5]
   e) Incomplete Mediation [5]

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