Time: 3 Hrs   Max Marks: 75

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1. a. Explain the characteristics of an AI technique.   (7M)
    b. Explain the role of cognitive science in modeling human behavior.   (8M)
            (OR)
    c. Explain the role of state space approach in solving AI problem.   (7M)
    d. With suitable example explain the characteristics of monotonic and partially
    commutative production systems.   (8M)
2. a. Prove each of the following statements: (7M)
    i.   Breadth first search is a special case of uniform cost search.
    ii.   Breadth first, depth first and uniform cost search are special cases of best-
            first search.
    iii.   Uniform cost search is a special case of A* search.
    b. Explain the role of difference tables in Means – Ends analysis.   (8M)
            (OR)
    c. With suitable examples, explain the steps needed to convert a WFF in
       predicate logic to its equivalent clause form.   (7M)
    d. Explain the operation of unification algorithm.   (8M)
3   a. Discuss the use of Frames for default reasoning.   (7M)
    b. With suitable examples explain inferential and inheritable knowledge. (8M)
            (OR)
    c. Discuss different models for non monotonic reasoning.   (15M)
4.a) Write short notes on.   (15M)
    i.   Bayes rule
    ii.   Scripts.
    iii.   Forward and backward chaining.
                (OR)
    b) Explain the different types of expert systems with examples .   (15M)

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5.
    a. Physical symbol system hypothesis
    b. Turing test.
    c. Heuristic Search.
    d. Computable functions and predicates.
    e. Representing is-a relationship.
    f. Rule based systems
    g.   Hierarchical Planning
    h. Role of knowledge in language understanding.

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.2: OBJECT ORIENTED SOFTWARE ENGINEERING
MODEL QUESTION PAPER

Time: 3 Hrs   **Max Marks: 75**

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1. a) Explain Software Process Models and their
                                        applicability. (OR)
   b) Explain the components of an SRS.

2. a) Explain RUP.
                              (OR)
   b) Draw UML diagrams for online quiz system.

3. a) Explain design principles with relevant
                                    examples. (OR)
   b) Explain different design patterns with suitable examples.

4. a) Explain different testing strategies.
                                (OR)
   b) Explain the activities of software project management.

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5.
a) Conventional vs Object oriented software engineering.

b) Scope of a problem.

c) Usability principles.

d) Write two disadvantages of the water fall model

e) Cohesion vs Coupling

f) Explain about project scheduling

g) Write about user interface design

h) write short notes on alpha and beta testing.

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.3: NETWORK SECURITY AND CRYPTOGRAPHY
MODEL QUESTION PAPER

Time: 3 Hrs   **Max Marks: 75**

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1. a) Explain the DES Algorithm   (7M)
   b) Describe the cipher block modes operation   (8M)
                   (OR)
   c) What are the various approaches to message authentication.   (7M)

   d) Describe the SHA algorithm for message authentication   (8M)
2a) Describe Electronic mail security using PGP   (15M)

                   (OR)
   b) What is Cryptography? Explain the key elements of a Cryptographic system. Write about
      Conventional and Public-key cryptographic methods available.   (15M)
3a) What are web security requirements? Explain   (8M)

   b) Describe the SSL architecture and Record protocol.   (7M)
                   (OR)
   c) What is SNMP? Explain how it is useful in Network management?   (15M)

4a) What is intrusion detection? Describe two approaches for intrusion detection   (15M)

                   (OR)

   b) What is an Authentication Service? Write about Kerberos and X.509 Authentication   Services.
      (15M)

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5.
        a)   Types of attacks
        b)   Issues in Key distribution
        c)   Digital signature
        d)   Viruses
        e)   Authentication
        f)   Firewalls
        g)   MD5
        h)   Trojan Horse

Time: 3 Hrs   **Max Marks: 75**

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1(a) Define the drivers for Big Data-Velocity, Variety, and Veracity.   [7M]
 (b)Write at least four Big Data Analytics Applications in detail.   [8M]
            (OR)
 (c) Explain Massively Parallel Processing (MPP) Platforms architecture in detail.[7M]
 (d)Define Unstructured Data Analytics. Elaborate on Context-Sensitive and
     Domain-Specific Searches.   [8M]
2 (a) Explain Real-Time Architecture for Conversations in detail.   [7M]
 (b) Elaborate on Orchestration and Synthesis used in Analytics Engines.   [8M]
              (OR)
 (c) How Big Data Analytics is Implemented? Explain.   [7M]
 (d)Explain about Big Data Governance. How Big Data can be integrated with MDM. [8M]
3(a)Define HDFS. Explain HDFS in detail.   [15M]
            (OR)
 (b) What is Complexity Theory for Map-Reduce? What is Reducer Size and Replication Rate?[7M] 4
(a)Elaborate on Graph Model and Mapping Schemas. What do you mean by Lower Bounds on
     Replication Rate?   [8M]
 (b) Explain Stream Data Model and Stream Queries and issues.   [7M]
              (OR)
 (c) Write about Page Ranking in web search engine   [8M]

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5. Explain the Following
        a) Big Data
        b) Ontology
        c) Data Privacy Protection
        d) Decision Engines
        e) Discovery Using Data at Rest
        f) Data Streams
        g) Knowledge hub and authority
        h) Evolving Maturity Level

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.4:ELECTIVE III: STATISTICAL QUALITY ASSURANCE TECHNIQUES
MODEL QUESTION PAPER

Time: 3 Hrs   Max Marks: 75

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1 (a) Explain Quality function deployment in detail.   [7]

(b) Explain the seven basic quality control tools in detail.   [8]
                    (OR)
(c) Explain how software quality assurance is ensured in a software firm.   [7]
(d) Explain the Probability distributions with an example.   [8]

2 (a) Briefly explain the group control chart? State the applications of group control chart.
                                                                             [8]
(b) Explain the Type-I & Type-II errors with an example.   [7]
                    (OR)
(c) Name the control charts used for 'off- line quality control'.   [7]
(d) Distinguish between Variables and Attributes.   [8]

3(a) What is an item by item sequential sampling plan? Explain stating its application.
                                                                             [8]
(b) Explain the Kanban systems with reference to quality control.   [7]
                    (OR)
(c) Explain the principles of Quality Assurance system.   [7]
(d) Explain the Quality Assurance method.   [8]

4(a) Write detail notes on ISO-9000 series of quality management standards.   [8]
(b) Explain JIT system with an example.   [7]
                    (OR)
(c) Distinguish between quality and reliability.   [7]
(d) Explain the Elements of reliability with an example.   [8]

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5 .
(a) Sum of Type-I and Type-II errors is equal to one. Do you agree or not? Why?
(b) What are appraisal costs?
(c) What is out-of-control run length?
(d) What is process capability ratio?
(e) How do you find ASN for a double sampling plan?
(f) Bathtub curve.
(g) Prevention costs.
(h) MTBF.

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.4:ELECTIVE III: GEO INFORMATICS
MODEL QUESTION PAPER

Time: 3 Hrs   **Max Marks: 75**

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1. a)Explain map projections. Classify data in GIS context and explain spatial data editing.
       (OR)
   b) Give the details of vector data structure and mention its merits and demerits in comparison with raster data.

2. a) Explain Digital Representation of Geographic Data-Database.   [7]
   b) Explain the Relationship between Data representation and Data Analysis in GIS Data Quality and Data Standards.   [8]
                      (OR)
   c) Explain the Raster and Vector -Based GIS Data Processing.   [7]
   d) Write about Data Quality-Components of Geographic.   [8]

3. a) Explain crop inventory using remote sensing.   [7]
   b) Give the details of the sensor requirements for forestry applications.   [8]
(OR)
   c) Which sensors are useful for land use/ land cover studies?   [7]

   d) How do you conduct crop inventory using remote sensing data? Explain.   [8]

4.a) Explain the importance of overlaying index methods in GIS.   [8]
   b) What is network analysis? Explain its uses.   [7]
                      (OR)
   c) Explain GIS Application Software.   [15]

SECTION- B (5 X 3 = 15 M)
Answer any FIVE of the following

5 Explain the following.

a)   What is active remote sensing?

b)   What is digital image processing?

c)   Define GIS.

d)   Define overlay function.

e)   Which sensors are useful for land use/ land cover studies?
f)   What are the GIS layers developed for ground water potential zoning mapping?
g)   List out the remote sensing requirements for forestry applications?
h)   What are the GIS layers developed for watershed characterization?

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.4:ELECTIVE III: SEMANTIC WEB
MODEL QUESTION PAPER

Time: 3 Hrs   **Max Marks: 75**

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1. a) What is Semantic Web Structure?   [7M]
   b) Explain the process of Multi Information Retrieving.   [8M]
   (OR)
   c) Explain the process of Syntactic Reasoning with Deduction Rules   [7M]
   d) What are the Syntactic Limits of RDFs   [8M]
2. (a) Explain OWL Formal Semantics and Description Logics.   [7M]
   (b) What is SWRL? Explain Semantic Web Rules and Syntax of SWRL   [8M]
   (OR)
   (c) Definition of a Rule. Explain how one can combine rules With OWDL.[7M]
   (d) Explain Rule Interchanging Formats RIF. Briefly explain Modular Ontologism.[8M]
3. (a) Give a brief explanation of Semantic Web Query Languages-ROPS, SWOPS and SPAROL   [7M]
   (b) Explain Conjunctive Queries for OWLDL in detail.   [8M]
   (OR)
   (c) What is the purpose of agents in Web Data Mining? Explain how Semantic Web can be used as a Data Base.   [7M]
   (d) Compare and contrast Web Mining and Semantic Web Mining. [8M]
4. (a)Explain about Semantic WIKI's and Semantic Portals.   [7M]
   (b)Explain the Semantic Web in Life Sciences.   [8M]
   (OR)
   (c)Write about RIF Applications   [7M]
   (d) Ontologies for Standardizations WMO and SWMO Applications [8M]

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5 ..
   a) URI
   b) RDF
   c) Ontologies
   d) Inferences
   e) DAML
   f) Semantic Web Languages
   g) Semantic Annotation
   h) Semantic Web Tools

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.5:ELECTIVE IV: CLOUD COMPUTING
MODEL QUESTION PAPER

Time: 3 Hrs   Max Marks: 75

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1 a) What is virtualization? How virtualization is useful in Grid Computing?   [7M]
   b) Differentiate between traditional way of computing and on demand computing. [8M]
                         (OR)

   c) Explain how collaborative computing lead to the development of cloud computing. [7M]
   d) With respect to cost of computing how managed outsourcing services and cloud
      services differ?   [8M]
2 a) What is capacity planning? How to estimate load for capacity planning?   [7M]
   b) Explain about Dynamic, Proactive and Reactive capacity scaling.   [8M]
                         (OR)
   c) What are the challenges in cloud services with respect to software licenses?   [7M]
   d) What is the criteria and procedure to estimate cloud service availability?   [8M]
3 a) What is reliability of a cloud service? How it is related to availability?   [7M]

   b) Draw and explain the basic architecture of web applications.   [8M]
                         (OR)
   c) Write about the following cloud service models:
      1. Storage – as – a – service
      2. Governance – as – a – service
      3. Testing – as – a – service   [15M]
4 a) What is a machine image? What are the steps involved in establishing a
      machine image?   [7M]
   b) What are clustering and replication? What is their role in cloud database design? [8M]
                         (OR)
   c) What is geographic redundancy? How are operations across regions depends on the
      nature of the web application & the redundancy needs?   [7M]
   d) What is organizational redundancy? What are the issues related to organizational
      redundancy?   [8M]
SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5.
      a) What are the different types of cloud computing?
      b) What are the features need to be considered for cloud database services?
      c) Describe about Xen's Hardware level Virtualization.
      d) Explain about geographic redundancy.
      e) What is meant by host intrusion detection system (HIDS)?
      f) What are the benefits of PaaS? Mention some PaaS resources.
      g) What is meant by cloud scaling?
      h) What benefits are achieved with clusters when compared with
            independent nodes

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.5: ELECTIVE IV:PERVASIVE COMPUTING
MODEL QUESTION PAPER

Time: 3 Hrs   Max Marks: 75

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1. (a) Explain Pervasive Computing Principles - Decentralization, Diversification, Connectivity,

   Simplicity.   [7M]
   (b) Define Pervasive Information Technology. Explain   [8M]
                   (OR)
   (c) Explain Pervasive Architecture in detail.   [7M]
   (b)   (d)Give Pervasive Web Application Architecture. Explain in detail.   [8M]
2. (a) Give all the Pervasive Devices Categories. Write their Characteristics.   [7M]
   (b) Explain Software Components in the Pervasive Devices. Define Smart Identification and
        Embedded Controls.   [8M]
                   (OR)
    (c) What are the protocols for Pervasive Connectivity?   [7M]
   (d)What is Mobile Internet? Explain Short Range Wireless Communication mechanisms-
        DECT, Bluetooth, IRDA.   [8M]
2. (a) Give a brief account of Home Automation systems, Energy and Security Services and Remote
    Home Health Care Services   [7M]
   (b) Explain about Interactive Advertisement, Shopping, Payment Services.   [8M]
                   (OR)
   (c) Define Pervasive Synchronization. Give various Models of Synchronization.[7M]
   (d)Give a brief account of Industry Data Synchronization Standards- Infrared
    Mobile Communications, WAP and Syncml.   [8M]
4 (a) Explain the Web Services Security   [7M]
   (b)Explain the Security in Pervasive computing.   [8M]
                   (OR)
   (c)Light Weight Symmetric Algorithms and Applications   [7M]
   (d)Light Weight Asymmetric Cryptographic Algorithms   [8M]

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5.Explain the Following
   (a) Ubiquitous Computing
   (b) Smart Cards and Smart Appliances
   (c) Home Networks.
   (d) WAP
   (e) Digital Signatures
   (f) Wireless Markup Language
   (g) Bluetooth
   (h)Web services for home portals

Time: 3 Hrs   Max Marks: 75

SECTION- A(4 X 15 = 60 M)
Answer ALL Questions

1.a) Explain the characteristics of LP model.   (5M)

b) Solve the following LP problem by using Simplex method: (10M)
   Minimize : $Z = 2x_1 + 4x_2 + x_3$
   Subject to
$$4x_1 + 8x_2 + 2x_3 = 40$$
$$x + 2x + x = 24$$
$$x_1, x_2, x_3 = 0$$
   (OR)

   c) Explain the algorithm of BIG-M Method with an example

2. a) Explain the reasons for analyzing a primal linear programming problem in terms of dual
   form.   (7M)
   b) Given the following linear programming problem   (8M)
   Minimize $z = 4x_1 + 3x_2$
      Subject to :
$$2x_1 + x_2 = 10$$
$$-3x_1 + 2x_2 = 6$$
$$x_1 + x_2 = 6$$
$$x_1, x_2 = 0$$
   Solve using the dual simplex method.
               (OR)
   c) Explain Assignment problem with an example.

3 a) Explain the Transportation problems with an
                                    example (OR)
   b) Given the following Transportation problem:

To \ From	A	B	C	D	Supply
1	5	12	7	10	30
2	4	6	7	6	30
3	2	8	5	3	60
Demand	40	20	30	70	

Find the initial solution by VAM method and optimum solution by MODI method.

4. a) Explain the Travelling Salesman problem.   (7M)
   b)A dispatcher presently has six taxicabs at different locations and five customers
   call for service. The mileage from each taxi's present location to each customer

Customer \ Cab	1	2	3	4	5
A	7	2	4	10	7
B	5	1	5	6	6
C	8	7	6	5	5
D	2	5	2	4	5
E	3	3	5	8	4
F	6	2	4	3	4

Determine the optional assignment that will minimize the total mileage.

(OR)

c) Explain the Graphical Method for solving a Game. (7M)

d) Find the Optimal solution for the following game using Graphical method; (8M)

Playr   B

	1	2	3	4	5
Player A	4	2	5	- 6	6
	7	- 9	7	4	8

SECTION- B (5 X 3 = 15 M)
Answer any five of the following

5.

a) Explain Integer Programming problem.

b) Explain the Branch and Bound Technique for solving and Integer Programming Problem

c) Graphical Method for solving a Linear Programming Problem.

d) Explain the Duality in linear programming.

e) Zero sum Game.

f) Economic order Quantity (EOQ).

g) Min-Max Method.

h) Explain CPM

ADIKAVI NANNAYA UNIVERSITY - RAJAMAHENDRAVARAM
M.Sc (Computer Science) III-Semester
MCS 3.5: ELECTIVE IV: PARALLEL COMPUTING
MODEL QUESTION PAPER

Time: 3 Hrs   **Max Marks: 75**

SECTION- A (4 X 15 = 60 M)
Answer ALL Questions

1.a).Explain the parallel programming models.   (15M)
       (OR)
  b).what are the types of parallel computers? What are their futures? Explain.   (15M)

2. a)State & Explain Amdahl's Law for measuring Speed up performance of parallel systems.
   Also list the outcomes of analysis of the Amdahl's law..   (7M)
  b) what is the diameter of 16-space hypercube   (8M)
       (OR)
  c) write an algorithm for sorting a given set of numbers using parallel programming.   (15M)

3. a) what is the PRAM model? Which PRAM model can be used to execute any other PRAM
      algorithm and how?   (15M)
     (OR)
  b) Compare the distributed memory model for parallel programming in terms of various
parameters.   (15M)

4. a) Compare & Contrast the shared memory and distributed memory programs approaches.
                                                                                              (15M)
     (OR)
  b) Explain in detail the scheduling and parallelization techniques for parallel programming.
                                                                                              (15M)

SECTION- B (5 X 3 = 15 M)
Answer any FIVE of the following

5.
   a) Flynn's classification

   b) Handler's classification

   c) Kung's taxonomy

   d) SPMD

   e) Distributed memory networks

   f) Dynamic interconnections

   g) Control parallelism\

   h) Distinguish between SPMD and SIMD