1812E1568   Candidate's Seat No :_____

M.Tech.-3 (Web. Tech.) Examination
Web Data and Knowledge Management
December 2018

[Max. Marks : 100

Time : 3 Hours]

Instructions:
1. Write each section in separate answer sheet
2. Numbers to the right indicate full marks of the question.
3. Make appropriate assumptions whenever necessary.

Section - I   [16]

Q-1 Answer the following questions. [ANY FOUR]

1) Write down the significance of xml file as data transmission. Generate xml file of student personal and education data. Also provide definition of XML using XSD.
2) What is Semi-structured data model? Represent relational and object data as semi-structured data model with example.
3) Write down a note on DTD with its limitations.
4) Present ODMG schema and data for the relationship between year, month and day time.
5) Differentiate Well-formed and Valid xml documents with XML elements and attributes.
6) What is XSLT? Explain its purpose and steps of usage in detail.   [5]

Q-2 [A] Define the following terminologies
1) DOM
2) XPath
3) XLink
4) SAX
5) DCD   [5]

Q-2 [B] Provide extended form of the following XPAth abbreviations:
1) a//b
2) elenode1
3) .
4) @attr1
5) //a   [6]

Q-2 [C] List out impossible moves in XPath for the following:
1) When the context node is a document node
2) When the Context node is an attribute
3) When the context node is a text node.

P. T. O.

Q-3 [A] Explain the following XPath Axes

    1) parent::node() [10]

    2) parent::*

    3) attribute

    4) descendant::text()[1]

    5) ancestor-or-self

    6) preceding

    7) following-sibling

    8) child

    9) descendent::node()

    10) ancester:node()

Q-3 [B] Express the following queries using XQuery query language [ANY TWO]: [4]

    1) Show the movies, grouped by genre. Hint: function distinct-values() removes the duplicates from a sequence. It returns atomic values.

    2) Give the title of each movie, along with the name of its director.

    1) Give the title of each movie, and a nested element <actors> giving the list of actors with their role.

Q-3 [C] Express the following queries in XPath [ANY FOUR]:

    1) Titles of the movies published after 2002. [4]

    2) Which movies have a summary?

    3) What was the roles of clint Eastwood in Unforgiven movie?

    4) Who is the director of Heat?

    5) All movie titles (i.e. the textual value of title elements)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<movies>
  <movie>
    <title>A History of Violence</title>
    <year>2005</year>
    <country>USA</country>
    <genre>Crime</genre>
    <summary>Tom Stall, a humble family man and owner of a ...</summary>
    <director>
      <last_name>Cronenberg</last_name>
      <first_name>David</first_name>
      <birth_date>1943</birth_date>
    </director>
    <actor>
      <first_name>Vigo</first_name>
      <last_name>Mortensen</last_name>
      <birth_date>1958</birth_date>
      <role>Tom Stall</role>
    </actor>
    <actor>
      <first_name>Maria</first_name>
      <last_name>Bello</last_name>
      <birth_date>1967</birth_date>
      <role>Eddie Stall</role>
    </actor>
    <actor>
      <first_name>Ed</first_name>
      <last_name>Harris</last_name>
      <birth_date>1950</birth_date>
      <role>Carl Fogarty</role>
    </actor>
  </movie>
</movies>
```
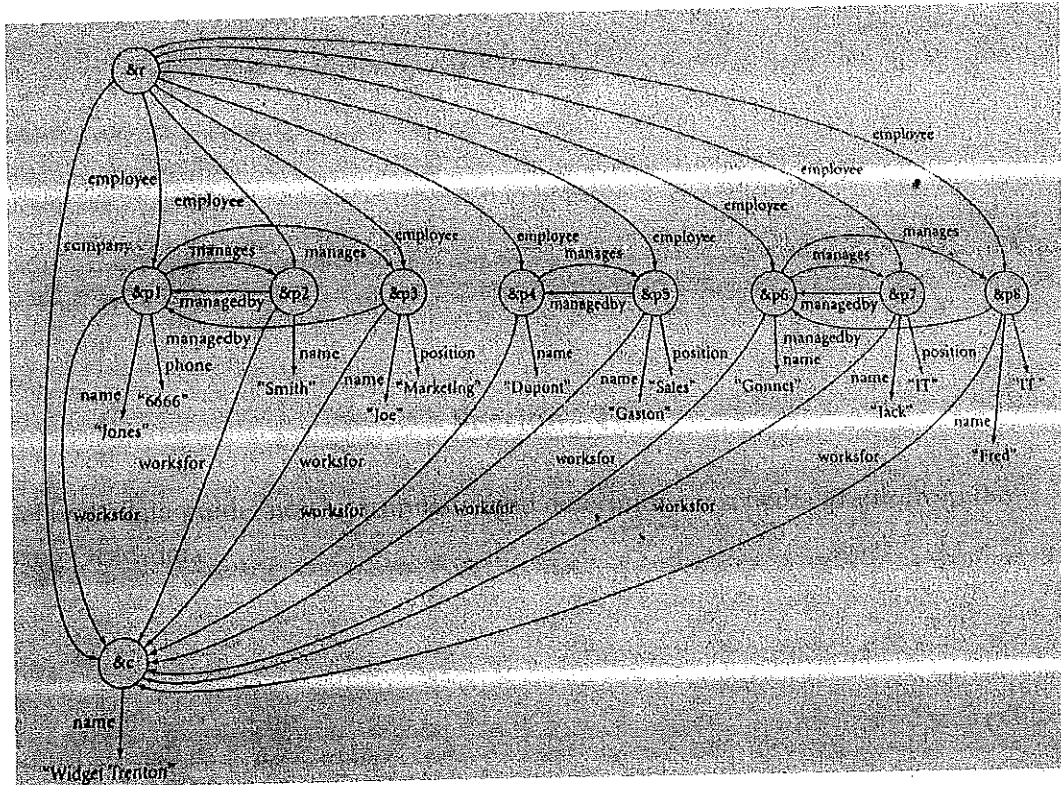
Section - II

Q-4 Generate data guide, nondeterministic and deterministic schema graph from the following OEM data [10]

Q-5 Answer the following questions. [ANY FOUR] [20]
1) Describe Comparison between Datalog rules and simulation.
2) Describe the Lore system architecture with query plan and indexes.
3) Describe the Strudel architecture with advantages of declarative website design.
4) Explain indexing for semi-structured data.
5) Explain distributed evaluation without schema knowledge of semi-structured web data.

Q-6 Write down a note on the following. [ANY FOUR] [20]
1) Datalog
2) Simulation
3) Data Fusion
4) Mediators for semi-structured data
5) Relax ng and Schematron

*****

1812E1567   Candidate's Seat No :_____
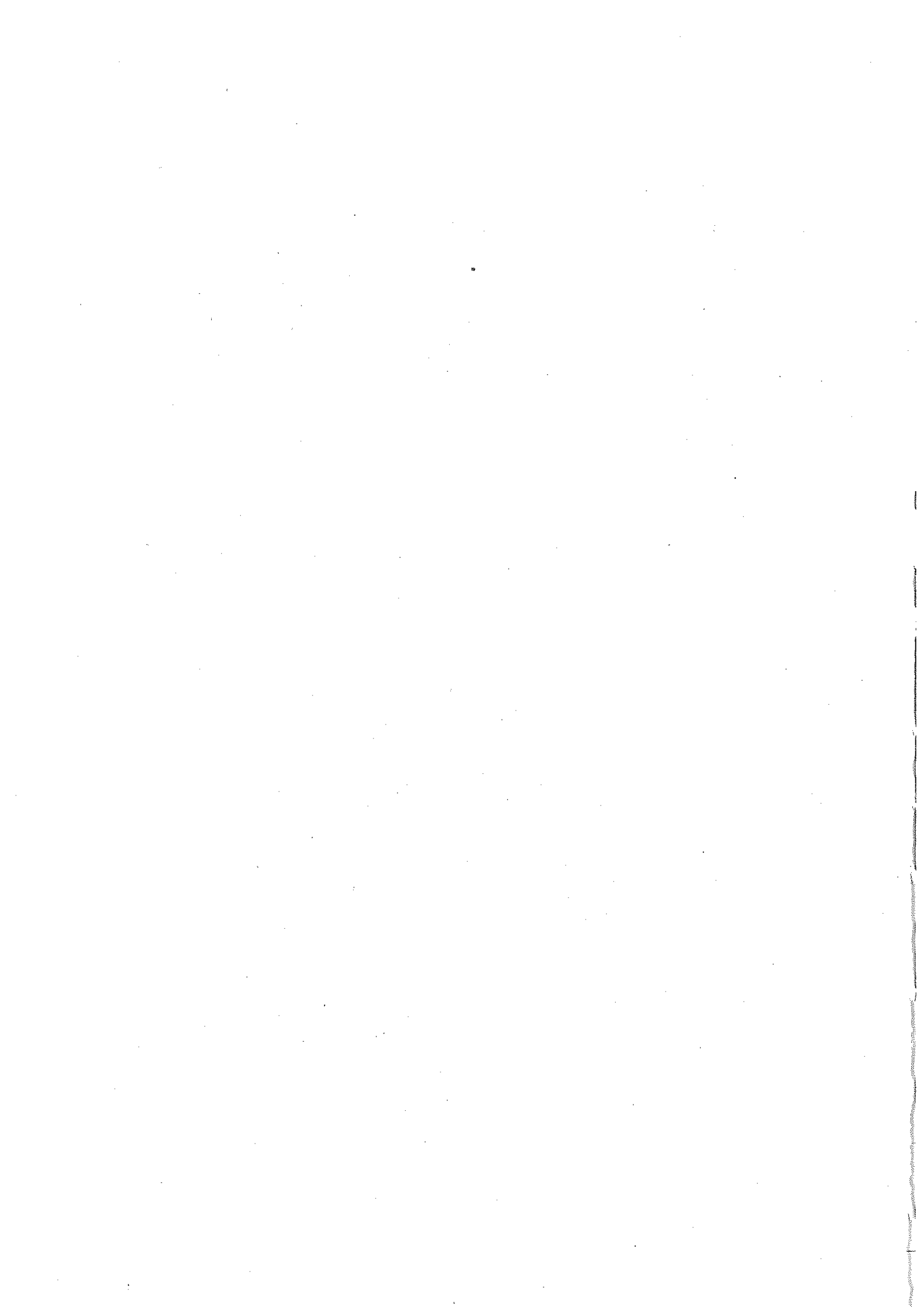
M.Tech.-3 (N. & C.) Examination
High Performance Computing

Time : 3 Hours]   December 2018   [Max. Marks : 100

SECTION - I

Q1   **Define/Explain the followings :**   [20]

   a)   Abstraction
   b)   Virtualization
   c)   Hybrid Cloud
   d)   Cloud Security Boundary
   e)   Ownership of Cloud
   f)   Composability in Cloud
   g)   Aggregation
   h)   Failover in Cloud
   i)   Identity in Cloud
   j)   SPML Provisioning Language

Q2   **Write Detailed Note on the followings (Any 4) :**   [24]

   a)   Cloud Deployment Models
   b)   Cloud Service Models
   c)   Advantages of Cloud Computing
   d)   Cloud computing Stack
   e)   Virtual Appliances for Cloud Computing

Q3   **Do as directed (Any 1) :**   [06]

   a)   Discuss any 3 different services of Amazon Web Services.
   b)   Discuss any 3 different services of Google Cloud Platform.

SECTION – II

Q4   **Write Detailed Note on the followings (Any 5) :**   [30]

   a)   Open Standards for IDaaS.
   b)   IDaaS interoperability
   c)   Compliance as a Service
   d)   Load Balancing and Virtualization in Cloud
   e)   Types of Hypervisors and their differences
   f)   Role of Dist. Management Task Force
   g)   Discuss cloud storage interoperability

P. T. O .

Q5 **Do as directed (Any 5) :**

a) Give name of any 3 different virtualization software.
b) List any 3 different SaaS providers and explain each of their services.
c) Explain how does programming on cloud differ from conventional programming.
d) What is the role of Communication Protocols in cloud.
e) Discuss PaaS framework and explain how it differs from SaaS?
f) Discuss how cloud computing is cost-effective for a huge organization.
g) What are the different aspects to secure cloud environment?

Q6 Discuss how search engines like Google would use Cloud?   **[05]**

OR

Explain how Machine Learning can be implement on Cloud.

1712E1558   Candidate's Seat No : _____

M.Tech.-3 (Web. & Tech.) Examination
Service Oriented Architecture
Time : 3 Hours]   December 2018   [Max. Marks : 100

Instructions: Figure to the right indicates full marks.
Assume suitable data if necessary.
All questions are compulsory.

SECTION I

Q-1   Answer the following questions.   20

1. How Intermediaries help in implementing SOA in real world scenarios.
2. How Object-orientation differs from Service-orientation? Give 5 comparison points.
3. List common misperceptions about SOA and elaborate any two.
4. What is the role of W3C? How XML has contributed to the evolution of SOA?
5. Why we say "Loose Coupling is King" in SOA? Justify the statement.

Q-2   Answer the following questions.   (Any Three)   30

1. What is atomic transaction? Describe Atomic transaction protocols and process using a real-world example in detail.
2. Explain SOA v/s Hybrid Internet Architecture based on consideration parameters of Application Logic, Processing, Technology, Security and Administration.
3. List the base of contemporary SOA characteristics and explain any five principles with an appropriate example.
4. Discuss SOAP with its envelope constituents and their significance in SOA. Explain how SOAP works?
5. What is Notification and Eventing in SOA and how it's been implemented?

SECTION II

Q-3   Answer the following questions.   16

1. Write a note on Service Roles and explain them.
2. Describe SOA Security aspects in detail.
3. What is Correlation? Describe its various types.
4. How Metadata exchange is controlled in SOA?

P. T. O.

Q-4 Answer the following questions.　　(Any Three)　　24

1. Discuss Choreography w. r. to reusability, modularity and composability. Prove that Choreography promotes collaboration.
2. Explain WSDL with respect to service endpoints and types of service descriptions.
3. What is Orchestration? Show it's working with respect to sequence, flow and links in process and partner services.
4. What is reliable messaging? How acknowledgements and delivery assurances are maintained in SOA environment?
5. How new services can be implemented in existing multi-tier distributed Internet Architecture if it is on SOA framework? Show it using real word scenario like Insurance or Consumer Goods company scenario.

Q-5　　Write short notes on following topics.　　(Any Two)　　10

1. Write a note on coordination composition.
2. Write a note on Single-Sign-On implementation in SOA.
3. How Publish & Subscribe MEP gets implemented?
4. What are MI headers provided by WS-Addressing?

*****

1712E1557   Candidate's Seat No :_____

M.Tech.-3 (N. & C.) Examination
Routing Technology
Time : 3 Hours]   **December 2018**   [Max. Marks : 100

Section - I

Q. A   **Answer the following questions (Any Four).**   **Marks**

1   Draw TCP header and Explain fields of TCP header in detail.   **7**

2   What is widest path routing? Explain in detail.   **7**

3   Explain Distance Vector routing protocol in detail.   **7**

4   Draw the packet header for RIP 1 and RIP 2. Explain in detail.   **7**

5   Explain the following messages of BGP: **7**

- OPEN
- UPDATE
- KEEPALIVE
- NOTIFICATION
- ROUTE-REFRESH

Q. B   **Answer the following questions (Any Two).**   **Marks**

1   Explain Dijkstra's Shortest path algorithm with example. Assume Centralized approach.   **6**

2   What is external and internal BGP? Explain the significance of internal BGP.   **6**

3   Write a note on OSPF link state advertisement types.   **6**

Q. C   **Answer the following questions (Any Two).**   **Marks**

1   What is OSPF? Explain OSPF header.   **5**

2   Consider the network example presented in the figure and assume the Distance Vector Routing approach. Do the followings: **5**

P. T. O.

- Construct the routing table information at Node 1 (Routing table should have following fields: *Destination Node, Cost and Outgoing Link*).
- Construct the routing table information at Node 1 after receiving following distance vector from node 2:

$j=1, \overline{D}=1$	$j=2, \overline{D}=0$	$j=3, \overline{D}=2$	$j=4, \overline{D}=1$	$j=5, \overline{D}=3$	$j=6, \overline{D}=3$

- Construct the routing table information at Node 1 after receiving following distance vector from node 4:

$j=1, \overline{D}=1$	$j=2, \overline{D}=1$	$j=3, \overline{D}=1$	$j=4, \overline{D}=0$	$j=5, \overline{D}=2$	$j=6, \overline{D}=2$
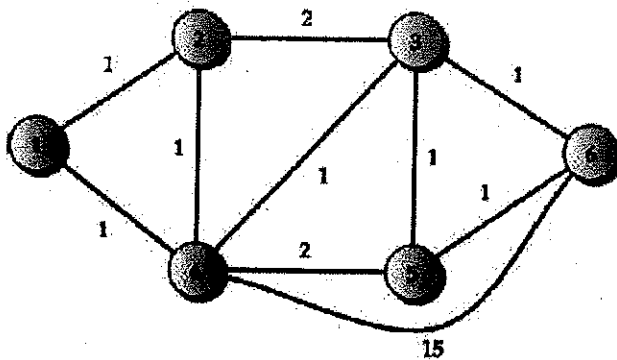
3   Explain centralized bellman ford algorithm with example.   5

Section - II

Q. A   Answer the following questions (Any Four).   **Marks**

1   Explain Ingress packet processing and Egress packet processing in detail.   7

2   Construct hierarchical trie and set pruning trie for the following network prefixes.   7

	F1	F2
R1	11*	11*
R2	1*	1*
R3	00*	01*
R4	1*	10*
R5	*	00*
R6	00*	00*

R7   1*   01*

R8   01*   01*

3   What is MPLS? Explain the working of it.   7

4   Explain Destination Sequenced Distance Vector (AODV) routing algorithm for ad   7
     hoc networks.

5   List packet classification algorithms and explain the naïve solution.   7

Q. B   Answer the following questions (Any Two).   **Marks**

1   Write the basic and complex forwarding functions of the router.   6

2   Explain how multibit tries algorithm for IP address lookup works? Also Explain   6
     Search and update operations.

3   Explain DSR routing algorithm in ad hoc networks with its advantages and   6
     disadvantages.

Q. C   Answer the following questions (Any Two).   **Marks**

1   Explain the elements of router in terms of functional point of view.   5

2   What is QoS. Explain QoS routing and QoS routing classification.   5

3   Write a note on AdHoc networks. Explain the classification of routing protocols in   5
     Ad Hoc networks.

***********************ALL THE BEST***********************