(2 ½ hrs) Max Marks: 60

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**

Q1		**Answer *any two* of the following:**	12
	a	Explain the following: i) Metrics ii) Convergence time iii) Neighbors iv) Hold-down timer v) Route invalidation timer	6
	b	What are sequence numbers? Explain Linear, Circular and Lollipop shaped sequence number spaces.	6
	c	Explain the difference between Interior Gateway Protocol and Exterior Gateway Protocol.	6
	d	Explain the problem of instability in RIP. How is it overcome?	6
Q2		**Answer *any two* of the following:**	12
	a	Compare partitioned and isolated areas.	6
	b	Explain the OSPF neighbour state machine.	6
	c	What are stubyy areas? What are the features of stubby area? What are types of stubby areas?	6
	d	What are the different challenges when OSPF uses multipoint Frame relay subinterfaces?	6
Q3		**Answer *any two* of the following:**	12
	a	How are public IP addresses assigned?	6
	b	Explain in detail the requirements for forming eBGPneighbourships.	6
	c	Explain the BGP best path algorithm.	6
	d	What are extension headers in IPv6? Explain.	6
Q4		**Answer *any two* of the following:**	12
	a	Explain the building blocks of enterprise campus infrastructure.	6
	b	What is the need for implementing spanning tree protocol? What are the features of spanning tree protocol?	6
	c	Explain: i) NAT in an Enterprise ii) NAT with external partners	6
	d	What is SLA? Enumerate the technical metrics included in good SLA.	6
Q5		**Answer *any two* of the following:**	12
	a	Enumerate the benefits and drawbacks of Layer 3 access layer designs.	6
	b	With the help of a neat diagram explain the architecture of data center.	6
	c	Explain the following SAN technologies: i) Fabric Shortest path first ii) Zoning	6
	d	Explain the SAN protocol stack.	6

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(6) Use of Non-programmable calculators is allowed

Q1		**Answer *any two* of the following:**	12
	a	Consider a social networking system where the user profiles, friend lists, group memberships and photo albums are linked with each other. Design an Extended ER diagram relating to the generalization and specialization categories.	6
	b	What is a disjoint constraint? What is an overlapping constraint? Explain each with example.	6
	c	Explain user defined abstract data types and Structured types. Discuss the constraints and characteristics of specialization and generalization.	6
	d	What are the different relationship types? Quote an example of degree greater than two with valid examples?	6
Q2		**Answer *any two* of the following:**	12
	a	Explain the following with respect to object query language: Views and Named Queries, Collection Operators, Grouping Operators.	6
	b	Discuss the concept of polymorphism and operator overloading.	6
	c	Explain type and class hierarchy with example	6
	d	Write the queries to perform the following operation Table customer	6

name	PERSON
varchar	PERSON_TY

PERSON_TY(ID NUMBER, ADDRESS ADDRESS_TY)
ADDRESS_TY(STREET ,CITY ,STATE,ZIP,COUNTRY)

Q3		**Answer *any two* of the following:**	12
	a	Write a short note on extensible datatypes.	6
	b	Give the comparison of RDBMS and ORDBMS	6
	c	Explain the concept of nested relation in ORDBMS with example.	6
	d	What are the nested tables and VARRAYS? When are they used? Explain with examples.	6
Q4		**Answer *any two* of the following:**	12
	a	Explain the concept of dataflow network of operators for parallel join	6
	b	What are the two joining methods used in query processing? Explain the differences between them.	6
	c	How is a vertical partitioning of a relation specified? How can a relation be put back together from a complete vertical partitioning?	6
	d	Give the comparison between parallel and distributed database. Explain the types of Data partitioning mechanisms in distributed database	6
Q5		**Answer *any two* of the following:**	12
	a	What is the deductive database? Compare active and deductive databases? Explain the different terminologies used in datalog.	6
	b	What is XPATH? What is XQUERY? What is FLWOR? Explain with examples.	6
	c	Difference between XML DTD and XML Schema with an example.	6
	d	What is temporal database? How is data stored in temporal databases? Explain with the help of an example.	6

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(2 ½ hrs) Max Marks: 60

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(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**

Q1		**Answer *any two* of the following:**	**12**
	a	Explain multipath propagation.	**6**
	b	Discuss Frequency hopping spread Spectrum and Direct Sequence Spread Spectrum	**6**
	c	Explain Multiple Access Collision Avoidance.	**6**
	d	What are benefits of reservation schemes? How are collisions avoided during Data transmission? What are disadvantages of reservation schemes?	**6**
Q2		**Answer *any two* of the following:**	**12**
	a	Explain the components and their operations in GSM Radio Sub System	**6**
	b	On the basis of orbit discuss in detail classification of satellite system	**6**
	c	Explain different Types of handover in GSM	**6**
	d	Explain DECT system architecture.	**6**
Q3		**Answer *any two* of the following:**	**12**
	a	Explain multimedia object transfer protocol.	**6**
	b	How can location based services and broadcast systems work together?	**6**
	c	Explain the Bluetooth networking architecture.	**6**
	d	Write a note on IEEE 802.11 system architecture.	**6**
Q4		**Answer *any two* of the following:**	**12**
	a	Discuss WATM reference model access scenario.	**6**
	b	Explain IP packet delivery to and from mobile node and the entities involved in the network formation.	**6**
	c	Explain tunneling and encapsulation in mobile IP.	**6**
	d	How client initialization via DHCP happens in Mobile IP?	**6**
Q5		**Answer *any two* of the following:**	**12**
	a	Explain concept and operation of Indirect TCP	**6**
	b	Explain the architecture and components of WAP.	**6**
	c	Explain the features of WML and structure of WML script with example.	**6**
	d	How TCP snooping maintains end-to-end TCP semantic?	**6**

Con. 7339-14.

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(5) Draw neat labeled diagrams wherever necessary.
(6) Use of Non-programmable calculators is allowed

Q1		**Answer *any two* of the following:**	**12**
	a	Explain High-performance computing and High-throughput computing. What are the design objectives to achieve High-performance computing and High-throughput computing?	6
	b	What is Internet of Things? What is Cyber physical system? Explain.	6
	c	Discuss the evolution of service oriented architecture.	6
	d	Explain the different programming models for parallel and distributed computing.	6
Q2		**Answer *any two* of the following:**	**12**
	a	Explain the different levels of virtualization implementation along with relative merits of each level.	6
	b	Explain public, private and hybrid clouds.	6
	c	What are cloud ecosystems? Explain the cloud ecosystem for building private clouds.	6
	d	What is hardware virtualization? Discuss the virtualization support in Windows Azure, Amazon Web Service and Google App Engine.	6
Q3		**Answer *any two* of the following:**	**12**
	a	Explain the architecture, functional modules and applications of Google App Engine.	6
	b	Enumerate the steps by which an intergrid gateway (IGG) allocates resources from a local cluster to deploy applications. Explain with the help of diagram.	6
	c	With the help of a diagram, explain the interactions between the components of Intergrid.	6
	d	What are the traditional features of cluster, grid and parallel computing environments? Explain.	6
Q4		**Answer *any two* of the following:**	**12**
	a	With the help of a neat diagram, explain Google File System.	6
	b	Explain the different types of Amazon Machine Images. Explain the execution environment of Amazon Elastic Compute Cloud.	6
	c	What are the main components of OpenNebula architecture? Explain.	6
	d	With the help of a neat diagram, explain the components and architecture of Aneka.	6
Q5		**Answer *any two* of the following:**	**12**
	a	Compare the programmer's perspective of Data-intensive scalable computing and conventional supper computer.	6
	b	What are the different performance attributes for HTP/HTC computing?	6
	c	What are online social networks? Enumerate the ideas for providing online social networking services. What are the benefits of social networks?	6
	d	Explain the functionality of different Facebook features.	6