

sub: cloud computing

3. (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.

Answer any two of the following:

- a Explain High-performance computing and High-throughput computing. What are the design objectives to achieve High-performance computing and High-throughput computing? 12 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

Answer any two of the following:

- a Explain the different levels of virtualization implementation along with relative merits of each level. 12 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

Answer any two of the following:

- a Explain the architecture, functional modules and applications of Google App Engine. 12 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

Answer any two of the following:

- a With the help of a neat diagram, explain Google File System. 12 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

Answer any two of the following:

- a Compare the programmer's perspective of Data-intensive scalable computing and conventional super computer. 12 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

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1. Attempt any two of the following:

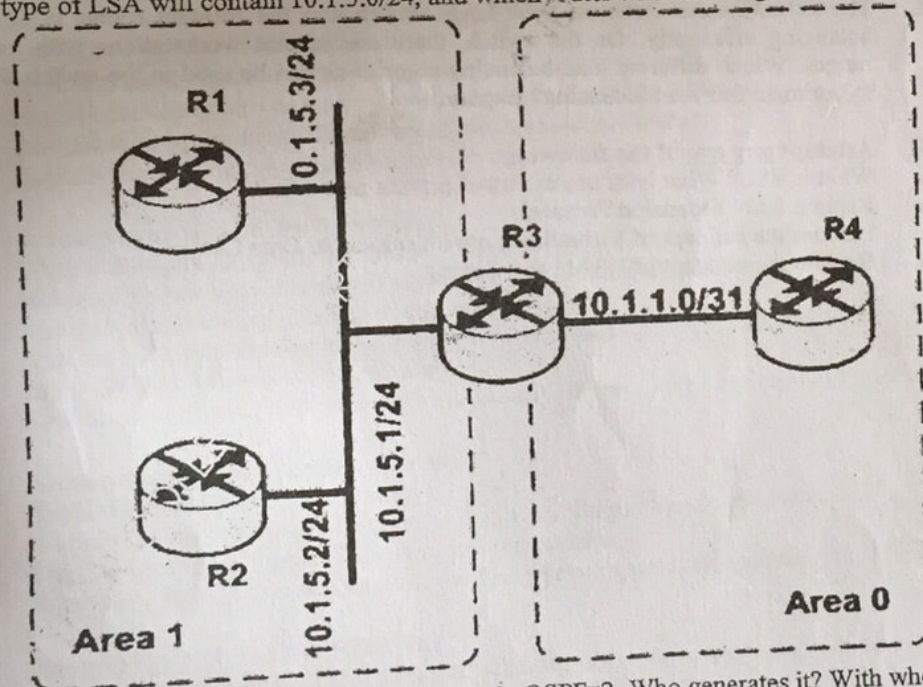
12

- When static routes are configured to reference an exit interface instead of a next-hop address, how will the route table be different? Explain with example
- What is load balancing? Explain in detail types of load balancing.
- Explain in detail the difference between a RIP Request message and a RIP Response message
- Explain how an SPF algorithm works.

2. Attempt any two of the following:

12

- Explain OSPF neighbor state machine mechanism.
- Based on the network provided in the exhibit, in these two areas, all routers are performing OSPF on all interfaces. After examining the OSPF database on R4, which type of LSA will contain 10.1.5.0/24, and which router will have originated it?



- Explain the role of LSA 3, LSA 4, LSA 5 in OSPFv2. Who generates it? With whom are they shared? Why?
- Which three factors have the biggest influence on OSPF scalability? Why?

Contd...

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- Q1** Answer any two of the following: 12
- a Explain the following: 6
- Metrics
 - Convergence time
 - Neighbors
 - Hold-down timer
 - Route invalidation timer
- 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 stubby 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: 6
- NAT in an Enterprise
 - NAT with external partners
- 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: 6
- Fabric Shortest path first
 - Zoning
- d Explain the SAN protocol stack. 6

MSc

M. Sc. IT / part - I.

Sem II

27/4/15

APR

2014-15

Advanced Database Management Systems
(REVISED COURSE)

QP Code : 24671

(2½ hours)

Total Marks: 60

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Q1 Attempt any two of the following:

12

- a. Consider a two and three wheeler insurance company whose customers own one or more vehicles each. Each vehicle has associated with it zero to any number of recorded accidents.
i) Design an EER schema, stating any assumptions you make.
ii) Show mapping of EER schema to relational schema.
b. Explain User defined abstract data types and Structured types.
c. Define specialization and generalization. Discuss the constraints and characteristics of Specialization and Generalization.
d. Explain the super class sub class relationships. What are the degrees of relationships? Explain with examples.

Q2 Attempt any two of the following:

12

- a. Give the specifications of type hierarchies and inheritance.
b. What is complex object? Explain its structure.
c. Explain the architecture of object oriented database management system.
d. Explain objectives of persistent and transient objects. How they are implemented?

Q3 Attempt any two of the following:

12

- a. What are extended types? Discuss the implementation issues for extended types.
b. Give comparison between OODBMS and ORDBMS.
c. Write a note on optimization.
d. Explain the mechanism of ORDBMS query processing.

Q4 Attempt any two of the following:

12

- a. Describe steps used to perform joins in parallel databases.
b. Give the comparison between parallel and distributed database processing.
c. What is data transparency? Explain types of transparencies that distributed data should achieve.
d. Explain the concept of fragmentation with an example.

Q5 Attempt any two of the following:

12

- a. What is DTD? Explain syntactical definition of DTD.
b. Explain the general architecture of Web Database.
c. What type of spatial analysis is possible with Geographic Information System? Explain.
d. What is Active Database? Explain factors that affect Active Database.

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Answer any two of the following:

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- 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

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 6

Table customer

name	PERSON
varchar	PERSON_TY

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

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

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

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