

Roll No.

Total Pages : 03

BCA/M-22

1898

COMPUTER NETWORKS

BCA-CTIS-201

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Discuss the services provided by network layer in OSI reference model.
- (b) Distinguish between persistent and non-persistent CSMA.
- (c) What is the Denial Of Service (DOS) attack ? Discuss.
- (d) What are the different uses of ping command ?

Unit I

2. (a) What is the significance of layered architecture ? Explain the OSI layered architecture with a neat sketch.
- (b) What are the key differences between synchronous and asynchronous communication ? Discuss.

(3-24/1) L-1898

P.T.O.

3. (a) With a neat sketch, explain Coaxial cable, Standards of Coaxial cable and Connectors of coaxial cables.
- (b) What are the different layers in TCP/IP model ? Discuss.

Unit II

4. (a) What is Network Interface Card (NIC) ? Discuss in brief the different types of it.
- (b) What is the difference between WEP and WPA ? Discuss.
5. (a) What is a LAN ? Explain the IEEE standard 802.3 for LAN.
- (b) Differentiate among switch, bridge and gateway.

Unit III

6. (a) What do you understand by Internet Group Management Protocol (IGMP) ? What is the use of it ? Discuss.
- (b) Distinguish between VLSM and CIDR. Use suitable examples.
7. (a) Differentiate between static and dynamic routing with their merits and demerits.
- (b) What do you understand by switching ? What are the different types of it ? Discuss.

Unit IV

8. (a) What do you understand by symmetric and asymmetric transcription ? Discuss the RSA encryption algorithm.
- (b) What is authentication ? Write a note on different techniques used in authentication attack.
9. (a) Discuss the use of ping and tracert in Network trouble-shooting.
- (b) What do you understand by Cryptography ? What is the difference between symmetric and asymmetric encryption ? Discuss.

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DATA STRUCTURES

BCA-CTIS-202

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (a) What is the difference between single-dimensional and multi-dimensional arrays ? 3
- (b) What are the advantages of using linked list over arrays ? 3
- (c) What is a balanced tree ? 3
- (d) Differentiate between undirected and directed graphs. 3

Unit I

2. (a) What is data structure ? Discuss the classification of data structures. 8
- (b) What are asymptotic notations ? How are these useful in algorithm handling ? 4

-20/9) L-1899

P.T.O.

3. (a) What is an Array ? Describe various applications of arrays. 6
- (b) Write down the algorithm for inserting an element at k th position in an array. 6

Unit II

4. (a) Write an algorithm to delete an element with given item of information from a given linked list. 6
- (b) What is a string ? Explain the operations that can be performed on strings. 6
5. What do you mean by Stack ? Explain push and pop operations on a stack and write a recursive algorithm to find factorial of a number. 12

Unit III

6. What are the applications of queues ? Also explain the algorithms for insertion and deletion in circular queues. 12
7. (a) How do you create a Binary Search Tree ? Also explain how to delete an element from a BST. 6
- (b) Explain K-way merge sort and balanced merge sort using suitable examples. 6

Unit IV

8. (a) Write an algorithm for traversing a Graph using Breadth-first search and explain it with the help of a suitable example. 8
- (b) Prove that in a depth-first spanning forest of a directed graph, all cross edges go from right to left. 4
9. Write Warshall's algorithm for finding the shortest path in a graph and explain the algorithm with the help of a suitable example. 12

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1900

INTRODUCTION TO CLOUD COMPUTING

BCA-CTIS-204

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory.
Attempt *four* more questions selecting *one* question
from each Unit.

1. Answer the following questions in brief :

- (a) Explain any *three* characteristics of cloud computing. 3
- (b) Differentiate among SaaS, PaaS and IaaS. 3
- (c) Explain risk mitigation methodology for cloud computing. 2
- (d) Explain vendor roles and capabilities in the context of cloud computing. 2
- (e) What are do's and don'ts of cloud computing ? 2

Unit I

2. (a) What is Cloud Computing ? Discuss the historical evolution of cloud computing. 5

(3-06/14)L-1900

P.T.O.

- (b) Explain different deployment models of cloud computing. 7
- 3. (a) What is data center ? Explain different components of a data center. 5
- (b) Explain the applications of cloud computing in business. 7

Unit II

- 4. (a) What is virtualization ? Explain different types of virtualization. 4
- (b) What is Service Level Agreement (SLA) ? Explain. 4
- (c) What is Virtual Private Cloud (VPC) ? Explain. 4
- 5. (a) Explain data protection and security issues in IaaS. 5
- (b) Explain benefits and risks of SaaS. 7

Unit III

- 6. (a) Explain the features of Google cloud platform. 7
- (b) What is Private Cloud Platform ? Explain features of AWS Greengrass. 5
- 7. (a) Explain different approaches to migrating into cloud. 7

- (b) How can you measure and assess risks in migrating to cloud ? Explain. 5

Unit IV

8. Write short notes on the following :

- (a) Impact of cloud on IT service management 5
- (b) Designing a cloud proof of concept. 7
9. (a) Discuss legal and compliance issues in cloud computing. 7
- (b) How can you manage and secure cloud services ? Explain. 5

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BCA/M-22

1901

WEB DESIGNING—II

BCA-CTIS-205

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Differentiate server side programming and client side programming.
- (b) Discuss the use of 'typeof' operator.
- (c) What does a special set of tags `<?=
>` do in PHP ?
- (d) How many ways can a session data be stored ?

4×3=12

Unit I

2. (a) What are the selectors in jQuery ? How many types of selectors in jQuery ? 6
- (b) Explain the events in jQuery. 6

(3-24/11)L-1901

P.T.O.

3. (a) Write the steps to insert header/footer in HTML using jQuery. 6
- (b) Explain jQuery effects. 6

Unit II

4. (a) Discuss the scope of PHP variables. 6
- (b) Discuss comparison operator and string operators with example. 6
5. (a) How to save a state using static function in PHP ? 6
- (b) What is anonymous function ? Discuss with example. 6

Unit III

6. What is a cookie ? How to store and retrieves values in cookie in php ? 12
7. Explain the concept of form validation. Write a code to store form data in database and also describe the importance of POST method. 12

Unit IV

8. (a) List three advantages and disadvantages of MySQL. 6
- (b) Write the steps to connect a PHP application with MySQL database server. Explain. 6
9. Design a form and explain how to update data in database using update command. 12

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BCA/M-22

1902

**INTRODUCTION TO INFORMATION
SECURITY**

BCA-CTIS-207

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory.
Attempt *four* more questions, selecting *one* question
from each Unit. All questions carry equal marks.

(Compulsory Question)

1. Answer any *six* of the following questions in brief :
- (i) What is meant by unauthorized access ?
 - (ii) What do you mean by confidentiality ?
 - (iii) What is Asymmetric cryptography ?
 - (iv) Distinguish between public and private keys.
 - (v) Describe any *one* password cracking technique.
 - (vi) What is the purpose of a key logger ?
 - (vii) Give *one* solution/recommendation to give security to your organizations LAN.
 - (viii) What is the prime focus of cyber laws in India ?

Unit I

2. (a) What is the meaning and purpose of Information Security ?

(5-07/15)L-1902

P.T.O.

- (b) Define the terms threat, vulnerability and attack. What are information security vulnerabilities ?
- 3. (a) Give a brief overview of current trends and statistics related to information security.
- (b) What is the interdependency between security, functionality and ease of use ?

Unit II

- 4. (a) Why is Authentication necessary in the context of information security ? What are the various techniques that can be used for authentication ?
- (b) What is an access control matrix and what is its utility ? Explain using an example.
- 5. (a) What is the purpose of encryption in security ? Distinguish between substitution and transposition methods of encryption.
- (b) Define a cryptographic hash function and explain its use in security.

Unit III

- 6. (a) What is the purpose of Firewalls ? Describe any *one* type of Firewall.
- (b) What is the difference between malware and spyware ?

7. What is a Computer Virus ? Distinguish between the terms Virus and Worms ? How do these malicious codes work ? What are the characteristics of viruses and how can we detect a computer error to be from a virus ? Can we defend against them ?

Unit IV

8. (a) Describe, how PGP can provide security services for e-Mail.
(b) Describe the vulnerability issues related to the Internet Security.
9. What is a Hacking attack ? What are the common types of Hacking attacks ? Give a brief description of any *four* of them along with their preventive measures.

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1903

DATABASE MANAGEMENT SYSTEM

Paper : BCA-CTIS-208

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all, selecting *one* question from each Unit I to Unit IV. Q. No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Define database schema, sub-schema and database instance.
- (b) Differentiate between logical and physical data independence.
- (c) Differentiate between full and partial functional dependency.
- (d) Write a note on domain key normal form.
- (e) Write a note on strong entity and composite attribute.
- (f) What is meant by candidate key and domain constraint ?
- (g) Write the purpose, syntax and example of SQL views ?
- (h) What are PL/SQL arrays ? 8×1½=12

(6-05/10)L-1903

P.T.O.

Unit I

2. (a) Define Database Management System (DBMS). What are its important properties ? Elaborate the advantages of DBMS over traditional file based approach.
- (b) How database interfaces help user to interact with ? Explain database functions and component modules. **6+6=12**
3. (a) Write about naïve users, casual users, application developers and Database Administrator (DBA). Discuss the role and responsibilities of DBA.
- (b) Outline a neat sketch and explain the component of three-tier architecture of DBMS as proposed by ANSI-SPARC. **6+6=12**

Unit II

4. (a) Write a note on closure dependency. Discuss Inference rules for functional dependency.
- (b) What is meant by Data Model ? Discuss network data model along with database anomaly. **6+6=12**
5. What is meant by normalization ? Write the properties of Normalization. Discuss the similarities between 3NF and BCNF. How BCNF is considered to be stronger than 3NF ? **12**

Unit III

6. Draw an ER diagram of flight management system stating the following : 6+6=12
- (a) Relation among entities, degree of relationship and cardinality ratios
 - (b) Reduction of ER diagram into relational tables.
7. (a) What is relational algebra ? How do you perform set oriented operations ? Give specimen examples.
- (b) Differentiate between tuple relational and domain relational calculus. 6+6=12

Unit IV

8. Distinguish between the following : 3×4=12
- (i) Alter and Update Statement
 - (ii) Left join and right join
 - (iii) SQL queries and sub-queries.
9. How PL/SQL is different from SQL ? Write notes on the following : 3×4=12
- (i) PL/SQL control statements
 - (ii) PL/SQL cursors
 - (iii) PL/SQL user defined subtypes.

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1904

ENVIRONMENTAL STUDIES

BCA-CTIS-210

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

प्रत्येक इकाई से एक प्रश्न चुनते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 1 अनिवार्य है ।

Compulsory Question (अनिवार्य प्रश्न)

1. Write in short about the following : 4×2=8

- (a) Land degradation
- (b) Environment and Public Awareness
- (c) Biodiversity
- (d) Greenhouse gases.

निम्नलिखित के बारे में संक्षेप में लिखिए :

- (अ) भूमि-क्षरण
- (ब) पर्यावरण और जन-जागरूकता
- (स) जैव विविधता
- (द) ग्रीनहाउस गैसों ।

(2-05/7) L-1904

P.T.O.

Unit I (इकाई I)

2. Give a detailed description of the functions of an ecosystem. 8

पारिस्थितिक तंत्र के कार्यों का विस्तृत विवरण दीजिए ।

3. Write short notes on the following : 4×2=8

(a) Food chain

(b) Ecological Succession.

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

(अ) आहार शृंखला

(ब) पारिस्थितिक अनुक्रम ।

Unit II (इकाई II)

4. Explain the adverse effects of deforestation on tribal people. 8

जनजातीय लोगों पर वनों की कटाई के प्रतिकूल प्रभावों की व्याख्या कीजिए ।

5. Give a detailed description on the renewable energy sources. 8

नवीकरणीय ऊर्जा स्रोतों का विस्तृत विवरण दीजिए ।

Unit III (इकाई III)

6. Describe the effects of water pollution on our environment. 8

हमारे पर्यावरण पर जल प्रदूषण के प्रभावों का वर्णन कीजिए ।

7. Describe the adverse impacts of nuclear pollution on human health. 8

मानव स्वास्थ्य पर नाभिकीय प्रदूषण के प्रतिकूल प्रभावों का वर्णन कीजिए ।

Unit IV (इकाई IV)

8. Give an account of impacts of rapidly growing human population on our environment. 8

हमारे पर्यावरण पर तेजी से बढ़ती मानव आबादी के प्रभावों का विवरण दीजिए ।

9. Explain the following : 4×2=8

- (a) Impact of landslide on our environment
(b) Environmental movement by Vishnois of Rajasthan.

निम्नलिखित की व्याख्या कीजिए :

- (अ) हमारे पर्यावरण पर भूस्खलन का प्रभाव
(ब) राजस्थान के विश्नोई द्वारा पर्यावरण आंदोलन ।