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Total No. of Pages :03

Total No. of Questions : 09

MCA (Sem.–02)

LINUX ADMINISTRATION

Subject Code : PGCA-1956

M.Code :79618

Date of Examination: 26-05-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. **Write short notes on:**

   a. How do you create and edit files using the 'vi' editor in Linux?

   b. What are the common file permissions in Linux and how do you set them?

   c. Explain the role of the bootloader in the Linux boot process.

   d. What is the primary purpose of the BIND database file in DNS configuration?

   e. Describe the main configuration steps for setting up an Apache web server.

   f. Why is SMTP important in email communication, and how does it work?

   g. Differentiate between POP and IMAP in email protocols.

   h. How can you install and configure the Dovecot IMAP and POP3 server in Linux?

   i. Discuss the basics of the Samba server and its administration.

   j. What tasks are involved in creating a share using Samba?

SECTION - B

2. Describe the process of managing packages and users in a Linux system. Explain the steps involved in getting, unpacking, configuring, compiling and installing a package. Discuss the challenges and best practices in package management.

3. Discuss the role of user and group commands in Linux. Explain how to create, modify and manage users and groups. Provide examples of common user and group management tasks and the associated command-line tools.

4. Explore the vi text editor in-depth. Explain its various modes, common commands, and advantages in text editing. Provide practical examples of using vi for file editing and manipulation and discuss how it compares to other text editors.

5. Explain the process of file permissions management and manipulation in Linux. Discuss the various permission types (read, write, execute) and how they are assigned to files and directories. Provide practical examples of changing and managing file permissions for different scenarios.

SECTION - C

6. Describe the process of setting up a DNS server, including the installation, configuration, and use of the BIND database file. Explain the importance of DNS in internet communication and the role it plays in resolving domain names. Provide practical examples of DNS configuration.

7. Discuss the fundamentals of the HTTP protocol in web communication. Explain the key concepts behind HTTP requests and responses. Provide insights into how the Apache HTTP server works, along with detailed steps for its installation, startup and shutdown.

8. What are the mechanics of SMB and how does it facilitate file and print sharing between computers?

9. Explore the basics of POP and IMAP in email protocols. Explain their differences and how they affect email retrieval. Describe the installation and configuration of the UWIMAP and POP3 servers in a Linux environment. Discuss the importance of email servers in managing messages.

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Total No. of Pages :02

Total No. of Questions : 09

MCA (Sem–2)

INFORMATION SECURITY AND CYBER LAW

Subject Code :PGCA1932

M.Code : 79619

Date of Examination :29-05-2025

Time : 3 Hrs.

Max. Marks :70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B &C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B& C carrying TEN marks each.
4. Select atleastTWO questions from SECTION - B &C.

SECTION-A

1. **Write short notes on :**

   a) What is information system availability?

   b) Define computer worm.

   c) What is a cryptographic algorithm?

   d) Explain token authentication.

   e) What is a zombie?

   f) What is a firewall?

   g) Define E-Governance.

   h) What is network-based IDS?

   i) What is phishing?

   j) Significance of cyber laws.

SECTION-B

2. Analyze the structure and strategic importance of Information Systems.

3. Evaluate the user authentication techniques and their security implications.

4. Examine access control models and their role in information security.

5. Investigate database security challenges and malware protection strategies.

SECTION-C

6. Describe the functioning of Intrusion Detection Systems in cybersecurity.

7. Discuss firewall technologies and their network defense capabilities.

8. Explore cryptographic algorithms and their practical applications.

9. Analyze internet security protocols and the framework of cyber laws.

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Total No. of Pages : 02

Total No. of Questions : 09

MCA (Sem.–2)

ADVANCED JAVA

Subject Code : PGCA-1918

M.Code : 79617

Date of Examination : 22-05-2025

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. **Define Briefly :**

   a. Servlet

   b. JDK

   c. Cookies

   d. Applet

   e. Struts

   f. Hibernate

   g. Entity Bean

   h. JAR files

   i. RMI

   j. Deployment

SECTION - B

2. Explain the process of reading the servlet parameters.

3. Define JSP. Explain its life cycle.

4. Write a note on implicit objects, object scope and session management.

5. Describe the struts framework in detail.

SECTION - C

6. Explain in detail the basic architecture model of Hibernate.

7. Discuss in detail the Java Beans API and use of JAR files.

8. Write a note on compiling and executing server and the client in RMI.

9. Explain the architecture of CORBA and its services.

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MCA (Sem–2)

DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code : PGCA-1920

M.Code : 79616

Date of Examination : 05-05-2025

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write briefly :

a. Are the sub solutions overlapping in dynamic programming approach?

b. What is asymptotic analysis? Why are asymptotic notations important?

c. Draw a graph with a cycle but with no Hamiltonian cycle.

d. What are P and NP problems?

e. What is the basic principle of divide-and-conquer?

f. State the general principle of greedy algorithm.

g. What are the two classes of non-polynomial algorithms?

h. What do you mean by the running time of an algorithm?

i. What are the deterministic algorithms?

j. How is the time complexity measured?

SECTION - B

2. Order the following functions by growth rate: N, $N^{1.5}$, N^{2}, N log log N, N $\log^2$ N, N log (N^2), 2/N, 2^{N}, $2^{N/2}$, 37, N^2 log N, N^3. Indicate which functions grow at the same rate.

3. Prove that $f(n) = a_m n^m + a_{m-1} n^{m-1} + ... + a_1 n + a_0$ then $f(n) = O(n^m)$.

4. Consider 5 items along with their respective values and weights: I = <I1,12,13,14,15> , w = <5,10,20,30,40> , v= <30,20,100,90,160>

   The capacity of the knapsack W = 60. Find the solution for the fractional knapsack problem.

5. Explain the Big -Oh computation for each of the following control structures:

   a) Sequencing b) If-then-else c) "for" loop

   d) "While" loop e) Recursion.

SECTION - C

6. What is the working principle of Quicksort? What is the significance of the Pivot element? Explain the implementation of the Quicksort algorithm step-by-step using a suitable illustrative example.

7. What is NP Completeness? Is P = NP? Explain.

8. If we are given a directed graph G with n vertices. Explain how you will find out the length of the shortest path between any pair of vertices in G? Justify your answer with an example.

9. Define depth-first search. Write algorithm for DFS, discussing its time complexity. Also, illustrate with some example.

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M.C.A. (Sem.–2)

WEB TECHNOLOGIES

Subject Code : PGCA1909

M.Code : 79615

Date of Examination : 19-05-2025

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write briefly :

   a) HTML

   b) Footer tag

   c) Table tag

   d) Color coding

   e) Ordered list

   f) Align attributes

   g) BGCOLOR

   h) COLSPAN

   i) Frame

   J) Testing and Debugging

SECTION-B

2. Write a note on Internet Domains and Internet Server Identities.

3. Explain with example any 5 text formatting tags.

4. Define list. Differentiate between ordered and unordered lists.

5. Discuss the use of alt, width, height and border attributes.

SECTION-C

6. Explain in detail various ways of linking a document.

7. What is JavaScript? List its advantages. How it is used in web pages?

8. Explain the use of JavaScript in platform independence, testing and debugging.

9. Discuss with example the select and option element and multi choice list element in a form.

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