Total No. of Questions : 5]

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[6473]-31
S.Y.B.Sc. (Cyber & Digital Science)
CDS - 231 : BASICS OF ETHICAL HACKING
(2020 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagram wherever necessary.***

Q1) Attempt any Ten of the following. **[10×1=10]**

a) Define Reconnaissance.

b) What is vertical escalation?

c) What is network addressing?

d) What is enumeration?

e) What is SNMP?

f) What is OWASP?

g) Describe ethical hacking.

h) What is backdoor attack?

i) What is WPA?

j) What is Misconfigurations?

k) What is Metasploit?

l) What is cross site scripting?

Q2) Attempt any Five of the following. **[5×2=10]**

a) List various ports and protocols used in network.

b) What is OSINT?

c) What is Evil Twin Attack?

d) Explain Traffic and Packet Analyzing.

e) What is password spraying attack?

f) Describe Linux Privilege Escalation.

P.T.O.

Q3) Answer any Four of the following. **[4×5=20]**

a) What are the different types of hackers?

b) What is shell? Explain with its types.

c) What is CIA Triad?

d) Explain

i) Scripts

ii) Trojans

e) What are the different authentication issues in web application hacking?

Q4) Answer any Four of the following. **[4×5=20]**

a) Write a note on malware attacks.

b) Explain OWASP Top 10 Web Application Vulnerabilities.

c) What is active and passive Reconnaissance?

d) Discuss various types of 802.11 attacks.

e) Differentiate between Phishing and Vishing.

Q5) Answer any One of the following. **[1×10=10]**

a) Explain various injection techniques. **[5]**

b) What are the different tools used for ethical hacking? **[3]**

c) What is Impersonation? **[2]**

OR

a) What are different advantages and disadvantages of Ethical Hacking? **[5]**

b) Write a note on social engineering techniques. **[3]**

c) What is Nmap? **[2]**

Total No. of Questions : 5]

SEAT No. :

PD588

[Total No. of Pages : 3

[6473]-32
S.Y.B.Sc. (Cyber & Digital Science)
CDS-232 : DATABASE MANAGEMENT SYSTEMS
(2020 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data if necessary.***

Q1) Attempt any Ten of the following. **[10×1=10]**

a) What is data model?

b) What are the advantages of DBMS?

c) What do you mean by query processing?

d) Difference between trivial and non-trivial functional dependencies.

e) Define Second Normal Form (2NF).

f) List the properties of transaction.

g) What do you mean by object oriented databases?

h) Define timestamp.

i) What is an entity-relationship model?

j) Define normalization.

k) Define multimedia databases.

l) List different operations performed on file.

Q2) Attempt any five of the following. **[5×2=10]**

a) What do you mean by functional dependency.

b) Write a short note on BCNF.

c) Difference between file system and database system.

d) What do you mean by dirty read.

e) Explain Lost update problem.

f) What do you mean by decomposition.

P.T.O.

Q3) Attempt any four of the following. **[4×5=20]**

a) Explain different types of model in detail.

b) Write a difference between inner joins and outer joins.

c) Consider the following relation:
R(A,B,C,D,E) and the set of FD's defined on R as:
$F=\{A\rightarrow B,\ CD\rightarrow E,\ A\rightarrow C,\ B\rightarrow D,\ E\rightarrow A\}$
Compute the closure of F ie. F^{+}.

d) What is serializability? Explain conflict serializability.

e) Explain deadlock recovery techniques.

Q4) Attempt any four of the following. **[4×5=20]**

a) What is shadow paging? state advantages and disadvantages of shadow paging.

b) Define distributed databases. Explain types of distributed databases.

c) Explain two phase locking protocol with example.

d) What is cardinality in data modeling?

e) What is schema in database? Explain types of schema.

Q5) Attempt any one of the following (A or B) **[1×10=10]**

A) a) Consider the following transactions. Give two non-serial schedule that are serializable. **[5]**

T1	T2
Read(Y)	Read(X)
Read(A)	Read(A)
Y=Y+A	X=X+A
Write(Y)	Write (X)
	Read(Y)
	Y=Y+A
	Write(Y)

b) Car insurance company has a set of customers each of whom owns one or more cars. Each car is associated with zero to any number of recorded accidents: Draw Entity Relationship diagram. **[3]**

c) Difference between data mining and data warehouse. **[2]**

OR

B) a) Consider the following relation: **[5]**

Machine (m-no, m-name, m-type, m-cost)

Part(p-no, p-name, description)

Machine and Part are related with l : M relationship.

Create a relational database in 3NF and solve the following queries:-

i) Increase the cost of machine by 35%.

ii) List all machine whose cost > 25000.

iii) Display machine name and cost having parts gear box and stearing.

b) Difference between indexed and hashed file organisation. **[3]**

c) Write a short note on tuple in relational database. **[2]**

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Total No. of Questions : 5]

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[6473]-33
B.Sc.
CYBER AND DIGITAL SCIENCE
CDS-233 : Data Structures Using Python
(2019 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any eight of the following. **[8×2=16]**

a) Define : Space complexity & Time complexity.

b) Give best case and worst case time complexity of quick sort.

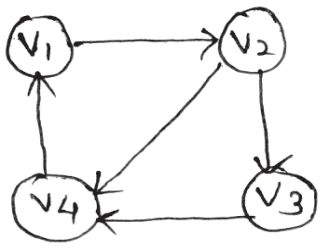
c) List the four types of queue.

d) State any two applications of stack.

e) List one in-place & one out-of-place sorting algorithm.

f) Define : Spanning Tree & AOV Network.

g) Represent the following graph statically & dynamically.



h) Write equivalent prefix & postfox expression for following infix expression. a + b * c/d –e

i) What is data structure? State the types of data sturcture along with example.

j) Define linked list and state the different types of linked lists.

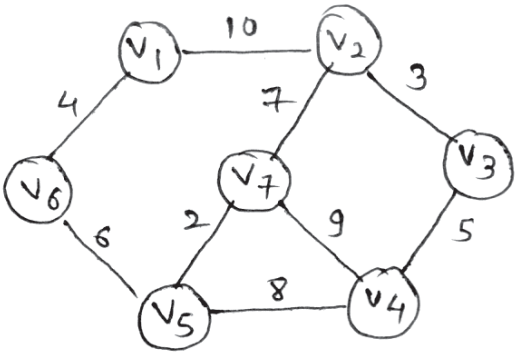
P.T.O.

Q2) Attempt any Four of the following: **[4×4=16]**

a) List four representation methods of graph and explain any one dynamic representation method in detail.

b) Construct an AVL tree for the following data:
70, 50, 30, 90, 80, 130, 120

c) Construct minimum spanning using Kruskal's algorithm.



d) Sort the following data using insertion sort:
41, 13, 9, 22, 37, 56, 28

e) Sort the following data using heap sort.
53, 21, 19, 87, 93, 65

Q3) Attempt any Four of the following. **[4×4=16]**

a) Write a function to search an element in array using binary search method.

b) Write a function to sort n elements in an array using bubble sort method.

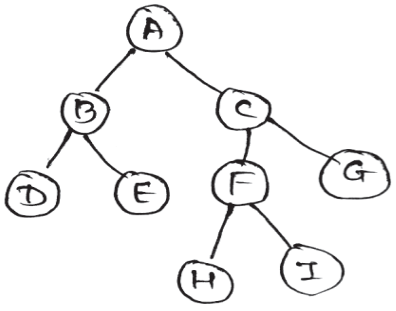
c) Write a function to reverse a string using stack.

d) Write a function to delete a node from singly linked list from beginning position.

e) Write a function to insert a node at beginning in doubly linked list.

Q4) Attempt any Four of the following : **[4×4=16]**

a) Give inorder preorder, postorder and breadth first traversal for the following.



b) Explain sequential search with the help of algorithm and example. Also mention best case & worst case time complexity.

c) Write a function to delete node from middle position in singly linked list.

d) Differentiate between orrays and linked lists.

e) Write a function to insert a node at last position in doubly circular linked list.

Q5) Attempt any Two of the following. **[2×3=6]**

a) Write a short note on asymptotic notations used in algorithm analysis.

b) Write a function to sort n elements using insertion sort.

c) Differentiate between Depth First search and Breadth first search.

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Total No. of Questions : 5] **SEAT No. :**

PD590 **[Total No. of Pages : 3**

[6473]-41
S.Y.B.Sc. (Cyber & Digital Science)
CDS - 241 : PRINCIPLES OF OPERATING SYSTEMS
(2020 Pattern) (Semester - IV) (24101)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagram wherever necessary.***

Q1) Attempt any ten of the following. **[10×1=10]**

a) Define Logical Address.

b) "Round Robin Algorithm is preemptive". Comment and Justify.

c) What is page fault?

d) What do you mean by I/O bound process?

e) What is Context Switching?

f) Define Operating Systems.

g) What is system call?

h) Give major function of MMU.

i) Define throughput.

j) What is safe state?

k) What is request edge?

l) Define Critical Section.

Q2) Attempt any five of the following. **[5×2=10]**

a) Write short note on multilevel queue scheduling.

b) Write difference between preemptive and non-preemptive scheduling.

c) Explain paging in brief.

d) List the types of schedulers and also explain short term schedulers in detail.

e) Define independent and dependent processes.

f) List down any four functions of operating system.

P.T.O.

Q3) Attempt any four of the following. **[4×5=20]**

a) What is process? Explain the different types of process states.

b) What is deadlock? Explain deadlock prevention strategies.

c) Consider following snapshot of the system. A, B, C, D are the resource types. Answer the following questions using Banker's algorithm.

i) What are the contents of Need matrix/array?

ii) If the system is in the safe state, give the safe sequence.

	Allocation				Max				Total			
	A	B	C	D	A	B	C	D	A	B	C	D
P_0	0	0	1	2	0	0	1	2	1	5	2	0
P_1	1	0	0	0	1	7	5	0				
P_2	1	3	5	4	2	3	5	6				
P_3	0	6	3	2	0	6	5	2				
P_4	0	0	1	4	0	6	5	6				

d) Explain sequential access & direct access methods of files

e) Explain the different ways of message passing.

Q4) Answer any FOUR of the following. **[4×5=20]**

Consider the following page reference string 4, 7, 6, 1, 7, 6, 1, 2, 7, 2.

a) Howmany page faults would occur for the following page replacement algorithms assuming three frames.

i) LRU

ii) Optimal replacement

b) What is Semaphore? Explain Readers/writers problem.

c) Explain tree-structured directories along with its advantages and disadvantages.

d) What is demand paging? Give its advantages and disadvantages.

e) Explain different services provided by operating system.

Q5) Attempt any One of the following. **[1×10=10]**

a) Explain PCB with the help of diagram. **[5]**

b) With the help of diagram describe swapping. **[3]**

c) Explain Starvation. **[2]**

OR

a) Consider a system with four processes P_1, P_2, P_3, P_4 and four resource types A, B, C, D with one instance of each type. Resource ownership is as follows: **[5]**

P_1 holds A and wants C

P_2 holds B

P_3 holds D and wants B

P_4 holds C and wants D

Is system deadlock? Draw resource allocation graph and wait-for graph.

b) Explain different operations on process. **[3]**

c) List down different types of operating systems. **[2]**

Total No. of Questions : 5]

SEAT No. : ____

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[6473]-42
S.Y.B.Sc. (Cyber & Digital Science)
CDS-242 : WEB AND MOBILE APPLICATION
(2020 Pattern) (Semester - IV) (24103)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data if necessary.***

Q1) Attempt any EIGHT of the following. **[8×2=16]**

a) What is CSS? List different types of CSS.

b) Describe <a> tag with Attribute.

c) Define data types in JavaScript.

d) What is use of <style> and <script>.

e) What is regular expression?

f) Differentiate between var and val keyword.

g) Why HTML is called client side scripting language? Comment.

h) How to read clients data in PHP application?

i) What is innerHTML property?

j) Define Threat.

Q2) Attempt any FOUR of the following. **[4×4=16]**

a) What is Kotlin? Explain its features.

b) Explain various operators and data types available in PHP with examples.

c) What is String? Explain its any four functions with an example in JavaScript.

d) Write a Kotlin application to accept the details of EMP (Eno, Ename, Salary) and display it.

e) Write a HTML - CSS script to display image at the background of web page.

P.T.O.

Q3) Attempt any FOUR of the following. **[4×4=16]**

a) What is Encryption? Explain with an example.

b) Write a Java Script program to check whether given number is prime or not.

c) Explain constructor with an example in Kotlin.

d) Write a PHP program to validate PAN No. using regular expression.

e) What is Event? Explain any four events in javascript.

Q4) Attempt any FOUR of the following. **[4×4=16]**

a) Explain Activity Life Cycle of Kotlin.

b) Differentiate between HTTP and HTTPS in terms of security.

c) Write a HTML-PHP script to accept the details of Stud (RollNo, SName, Per) and display it in tabular form.

d) Write a Javascript Code to validate a given Mobile No.

e) Explain Variable function with an example.

Q5) Attempt any TWO of the following. **[2×3=6]**

a) Explain Type casting and type conversion in Kotlin variables.

b) Explain default parameters with an example.

c) Write a Javascript code to reverse a given number.

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Total No. of Questions : 5]

SEAT No. :

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[6473]-43
S.Y.B.Sc. (Cyber and Digital Science)
CDS-243 : NETWORK SECURITY AND CRYPTOGRAPHY
(2020 Pattern) (Semester - IV) (24105)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) Attempt any Ten of the following. **[10×1=10]**

a) What are the security attacks?

b) What is SSH in cyber security?

c) Define cryptanalysis.

d) What are the features of RC5?

e) What situations is elliptic curve cryptography used?

f) What is PKCS?

g) What is the method of XOR ciphering?

h) What is One Time Pad in cryptography?

i) What does a cryptography key size mean?

j) What are the hash function's security objectives?

k) What is the public key in ElGamal?

l) List the different algorithm modes in cryptography.

Q2) Attempt any FIVE of the following: **[5×2=10]**

a) Define confidentiality and authentication.

b) What is the difference between HTTPS and SSH?

c) What is transposition technique? Enlist various transposition ciphers techniques.

d) What is the purpose of Blowfish encryption?

e) How to set Diffie-Hellman key exchange algorithm?

f) What is the use of digital certificate?

P.T.O.

Q3) Attempt any FOUR of the following. **[4×5=20]**

a) Write a note on Web Security.

b) What is steganography and explain the various stenography limits.

c) Differentiate between AES and IDEA.

d) Explain Knapsack Encryption Algorithm with example.

e) Explain Public Key Cryptography Standards with suitable example.

Q4) Attempt any FOUR of the following : **[4×5=20]**

a) Write brief note on Rotor Machines.

b) Explain symmetric and asymmetric encryption with suitable examples.

c) Explain the steps of DES algorithm.

d) What is RSA? Perform encryption and decryption using RSA Algorithm for the following: P = 7; q = 11; e = 17; M = 8.

e) What are the steps in creation of digital certificate.

Q5) Attempt any ONE of the following. (Out of TWO) **[1×10=10]**

a) i) What is the OSI architecture in cyber security and cryptography? **[5]**

ii) What is GSM in security and its important features of GSM security? **[3]**

iii) What is application of Internet Protocol Security? **[2]**

OR

b) i) What are the transformation functions and the structure of AES encryption? **[5]**

ii) What is the difference between a stream cipher and a block cipher? **[3]**

iii) What are the security features of a hash function? **[2]**

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Total No. of Questions : 5]

SEAT No. :

PD-593

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[6473]-51
T.Y. B.Sc.
CYBER & DIGITAL SCIENCE
CDS - 351 : Digital Forensics - 1
(2020 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) **Attempt any Ten of the following.** **[10 × 1 = 10]**

a) What is FAT?

b) Define Firewalls?

c) List out any two Digital Forensic users.

d) Who should collect Digital Evidence?

e) What is Cloning?

f) What is NTFS?

g) What is Network Forensic?

h) List any two Digital Forensic Software tools.

i) What is Distributed Computing environment?

j) What is DHCP?

k) Define Digital Forensic goals.

l) What do you mean by memory dump?

P.T.O.

Q2) **Attempt any Five of the following.** **[5 × 2 = 10]**

a) What is Cybercrime? Explain Cybercrime with one example.

b) Explain Timestamp decoder.

c) Define Intelligence and Counterintelligence.

d) Explain Memory types in detail.

e) What is the purpose of Law of Enforcement.

f) What is Hexadecimal number system?

Q3) **Attempt any Four of the following.** **[4 × 5 = 20]**

a) Explain in detail types of Computer Storage.

b) What should be the Computing Environment for Network Forensic explain in detail.

c) Explain First Responder Toolkit and First Responder Tasks.

d) Explain any two types of Digital Forensic Investigation

e) Write a short note on Order of Volatility (OOV).

Q4) **Attempt any Four of the following.** **[4 × 5 = 20]**

a) Explain Digital Forensic Examination Process?

b) How to calculate File Hash?

c) How to document a Digital Crime Scene.

d) Explain Live System Acquisition with its advantages and disadvantages.

e) Explain Digital Forensic Hardware Tools in detail.

Q5) **Attempt any One of the following:** **[1 × 10 = 10]**

a) Explain HPA and DCO in detail. **[5]**

b) Explain File Systems. **[3]**

c) Explain types of Conducting Interview. **[2]**

OR

a) Explain Digital Evidence in detail with its types. **[5]**

b) What is Digital File Metadata. **[3]**

c) What is Chain of Custody. **[2]**

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Total No. of Questions : 5]

SEAT No. : ____

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[6473]-52
T.Y. B.Sc.
CYBER & DIGITAL SCIENCE
CDS - 352 : Cyber Threat Intelligence
(2020 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Assure suitable data if necessary.***

Q1) **Attempt any Ten of the following.** **[10 × 1 = 10]**

a) What is cyber intelligence?

b) What is the primary goal of threat intelligence?

c) What is the full form of CII?

d) What is threat actor?

e) Define Emerging trends.

f) Define structure.

g) Define the term "indicators of compromise" (IOCs).

h) Define phishing.

i) What is the purpose of firewalls.

j) Name one common source of threat intelligence.

k) What is the main goal of threat hunting?

l) What does the term "malware" refer to?

P.T.O.

Q2) **Attempt any Five of the following.** **[5 × 2 = 10]**

a) Explain the difference between tactical and strategic threat intelligence.

b) Describe the importance of threat modeling in cyber security.

c) Explain the concept of "vulnerability management" and its relevance to threat intelligence.

d) What is a "kill chain" in the context of cyber threats, and why is it useful?

e) Explain the different types of Cyber Threat Intelligence and provide an example for each.

f) What is the relationship between situational awarness and crisis management?

g) Explain the importance of trust among participants in an information sharing network.

Q3) **Attempt any Four of the following.** **[4 × 5 = 20]**

a) Explain the key components of the Cyber Threat Intelligence lifecycle and describe the importance of each phase.

b) Define cybersecurity in a nutshell. Discuss its key components and explain it.

c) What are the risks associated with information sharing? Discuss how organizations can mitigate these risks while participating in information-sharing initiatives.

d) Explain the importance of threat modelling in the context of Cyber Threat Intelligence. How does threat modeling help organizations identify vulnerabilities and prioritize their defenses?

e) Describe the role of antivirus software in cyber security. How does it contribute to overall system protection?

Q4) **Attempt any Four of the following.** **[4 × 5 = 20]**

a) Describe the challenges associated with monitoring and logging in complex network environments. How can organizations overcome these challenges to enchance threat intelligence capabilities?

b) What do you mean by dimensions of Information Sharing. Explain five dimensions in brief.

c) Explain the importance of data normalization in processing raw monitoring data. How does it affect the analysis and insights derived from the data?

d) Identify and describe two types of CTI community structures that organizations can participate in. What are the benefits of each?

e) What is Command and Control (C2) in the context of cybersecurity? Explain its role in orchestrating cyber attacks.

Q5) **Attempt any One of the following:** **[1 × 10 = 10]**

a) How intellectual property issues can arise in the context of information sharing. What legal measures can organizations take to protect their propritary information during these exchanges? **[5]**

b) What is the role of machine learning in threat intelligence? Provide one example of how it can enhance threat detection. **[3]**

c) Define "attack vector" and give one example. **[2]**

OR

a) Consider a case where a threat intelligence report indicated an increase in phising attempts targeting a specific industry. What actions should organizations in that industry take to mitigate the risks? **[5]**

b) What are two significant challenges organizations face when sharing threat information? Explain them. **[3]**

c) Describe one common method used to collect threat intelligence. **[2]**

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Total No. of Questions : 5]

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[6473]-53

T.Y. B.Sc.

CYBER & DIGITAL SCIENCE

CDS - 353 : Information Security Policy and Audit

(2020 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) **Attempt any Ten of the following.** **[10 × 1 = 10]**

a) What is the primary objective of an IS audit?

b) Define disaster recovery.

c) What is a digital signature?

d) What does the term "Web of Trust" refer to in the context of cryptography?

e) What does COBIT stand for?

f) What is a rootkit?

g) Define auditing standards.

h) Name one key control objective in an information system.

i) What is the main goal of physical security controls?

j) What distinguishes a Trojan horse from other types of malware?

k) What is security auditing?

l) Why is user training important in personal security?

P.T.O.

Q2) **Attempt any Five of the following.** **[5 × 2 = 10]**

a) Describe the two main phases of an IS audit.

b) Differentiate between natural disasters and man-made disasters in the context of organisation security.

c) Which are the benefits of implementing a robust email security policy?

d) What are the advantages of using asymmetric encryption over symmetric encryption?

e) How does effective IT governance contribute to organisational performance?

f) Explain the role of firewalls in network defense.

Q3) **Attempt any Four of the following.** **[4 × 5 = 20]**

a) Discuss four key objectives of IS audit and control, providing a brief description for each.

b) Explain the disaster recovery process, including the phases of recovery and reconstruction.

c) Explain the importance of digital signatures in securing online communications and transactions.

d) Write a short note on COBIT framework.

e) Explain the importance of continuous monitoring and auditing in detecting and responding to security incidents effectively.

Q4) **Attempt any Four of the following.** **[4 × 5 = 20]**

a) Discuss the key components of user training and how it helps in minimizing security risks.

b) Explain domain-related security issues.

c) Explain the advanages and disadvantages of the Web of Trust model.

d) Discuss the objectives and dimensions of IT governance, providing examples of how they can be measured and assessed.

e) Examine the security features of IPv6 and how they address some of the vulenerabilities present in IPv4.

Q5) **Attempt any One of the following :** **[1 × 10 = 10]**

a) Discuss the importance of regular security updates and patches in preventing malware infections and network attacks. **[5]**

b) Discuss the implications of outsourcing on data security and privacy. **[3]**

c) Discuss the role of documentation in the auditing process. **[2]**

OR

a) Explain security auditing and incident handling, considering its advantages and limitations. **[5]**

b) Explain how blockchain technology enchances data integrity and security. **[3]**

c) Describe the types of host-based attacks and provide an example. **[2]**

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Total No. of Questions : 5]

SEAT No. :

PD-596

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[6473]-54

T.Y.B.Sc. (CDS)

CYBER & DIGITAL SCIENCE

CDS - 357A : Mobile Forensics

(2020 Pattern) (Semester - V) (Professional Elective - I)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) **Attempt any Eight of the following.** **[8 × 1 = 8]**

a) Define Cellular Network.

b) Define preservation.

c) Define Multimedia.

d) What is Chip-off acquisition.

e) What is Logical Acquisition.

f) Define USIM.

g) What are SMS Artefacts.

h) Define Mobile Forensics.

i) What is use of Sim Cards.

j) Define Extraction.

P.T.O.

Q2) **Attempt any FOUR of the following.** **[4 × 2 = 8]**

a) Explain any two types of mobile operating system and one example each

b) Explain Cellebrite.

c) Explain Features of Paraben iRecovery Stick.

d) What are the Emerging Techniques in Mobile Forensics.

e) Explain SIM/USIM File Management.

Q3) **Attempt any TWO of the following.** **[2 × 4 = 8]**

a) Explain different types of acquisition process.

b) Explain Data and File Carving in detail.

c) What are the Emerging Techniques in Mobile Forensics.

Q4) **Attempt any TWO of the following.** **[2 × 4 = 8]**

a) Write down an evolution of Cellular Network and its History in detail.

b) Explain Mobile Forensics and its challenges.

c) What is Artefacts Extraction and what is it types?

Q5) **Attempt any ONE of the following:** **[1 × 3 = 3]**

a) **Write Short note on :** Mobile Forensics Process.

b) **Write Short note on :** Cellular Network Architecture.

▽▽▽▽

Total No. of Questions : 5]

SEAT No. : ____

PD-597

[Total No. of Pages : 2

[6473]-55

T.Y. B.Sc.

CYBER & DIGITAL SCIENCE

CDS - 357B : Cloud Security (Professional)

(2020 Pattern) (Semester - V) (Elective - I)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) **Attempt any Eight of the following.** **[8 × 1 = 8]**

a) Define Cloud Computing.

b) What is Virtualization.

c) Define Data identification.

d) What is tokenization

e) Define Cloud Assets

f) What is Processing Leaks.

g) What is scalability.

h) What is Authentication.

i) What is the purpose of **IAM** in cloud computing.

j) What is Authorization.

P.T.O.

Q2) **Attempt any Four of the following.** **[4 × 2 = 8]**

a) What is Data Classification.

b) How Tagging Cloud Resources is beneficial.

c) What is Encryption - In Motion, In Use, At Rest.

d) Explain the process of Finding Leaks.

e) Explain the significance of GRANT and REVOKE in IAM.

Q3) **Attempt any Two of the following.** **[2 × 4 = 8]**

a) What are the characteristics of cloud computing?

b) What are the Cloud Services Delivery Model?

c) What are Storage assets and its Types?

Q4) **Attempt any Two of the following.** **[2 × 4 = 8]**

a) Write a note on types of cloud

b) Explain Data Classification Levels

c) Explain the process of Authorization

Q5) **Attempt any One of the following:** **[1 × 3 = 3]**

a) Explain Tagging Cloud Assets

OR

b) Explain Life Cycle for Identity and Access Management.

▽▽▽▽

Total No. of Questions : 5]

SEAT No. :

PD1580

[Total No. of Pages : 2

[6473]-61
T.Y. B.Sc. (Cyber & Digital Science)
CDS - 361 : DIGITAL FORENSICS - II
(2020 Pattern) (Semester-VI)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) Attempt any Ten of the following : **[10×1=10]**

a) What are Windows Prefetch Artifacts?

b) Define Vector Graphics.

c) Define Service Level Agreements.

d) What is file carving?

e) Define - Metafile graphic.

f) What is Steganography?

g) What is logical data extraction?

h) What is email investigation?

i) List some forensic tools used for social media investigations.

j) Give one example of a Type 2 Hypervisor.

k) Define Virtual Network.

l) Enlist any two raster graphic file formats.

Q2) Attempt any Five of the following : **[5×2=10]**

a) Describe the process of extracting evidence from a mobile phone.

b) Explain the differences between bitmap and raster images.

c) Why is examining email headers important in email forensics?

d) Name two tools used for cloud forensics.

e) What is the primary goal of securing a network?

f) List any two key responsibilities of Incident First Responders in cloud forensics.

P.T.O.

Q3) Attempt any Four of the following : **[4×5=20]**

a) What factors should be considered while investigating Cloud Service Providers (CSPs)?

b) Explain the difference between Lossless and Lossy Compression.

c) What are Type 2 Hypervisors, and how do they differ from Type 1 Hypervisors?

d) Explain different Android data extraction techniques with examples.

e) Which are two methods of email message tracing?

Q4) Attempt any Four of the following : **[4×5=20]**

a) What is live acquisition? Why is it important in digital forensics?

b) What are the basic concepts of cloud forensics?

c) How does the SQLite database help in recovering deleted data from mobile devices?

d) Explain the role of email headers in investigating email crimes.

e) Describe the use of the Steganalysis Tool.

Q5) Attempt any One of the following : **[1×10=10]**

a) Explore the role of email investigation. **[5]**

b) Which tools are commonly used for viewing forensic images? **[3]**

c) Differentiate between email client and email server. **[2]**

OR

a) What is the need for Mobile Forensics? List down challenges in Mobile Forensic. **[5]**

b) List some major cloud vendors and their key features. **[3]**

c) What is the Honeynet Project? **[2]**

Total No. of Questions : 5]

SEAT No. :

PD1581

[Total No. of Pages : 2

[6473]-62
T.Y. B.Sc. (Cyber & Digital Science)
CDS-362: CYBER LAW (INFORMATION SECURITY POLICIES AND STRATEGIES)
(2020 Pattern) (Semester - VI)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) Attempt any TEN of the following: **[10×1=10]**

a) What is Cybercrime?

b) What is Password Sniffing?

c) What is meant by Email Bombing?

d) What is Password Sniffing?

e) What is the primary purpose of the Indian IT Act 2000?

f) Define Cyber Defamation.

g) What is the punishment for cyber terrorism under the Indian IT Act 2000?

h) What are harmful acts in Cyber Security?

i) What is the full form of the Indian IT Act 2000?

j) List the different threats that affects the information Security?

k) What does Section 43 of the Indian IT Act 2000 address?

l) What are the penalties for cyber fraud under the Indian IT Act 2000?

Q2) Attempt any FIVE of the following: **[5×2=10]**

a) What is a Salami Attack? Explain how it works with an example.

b) What is Cybercrime punishment under the Indian IT Act, and what are its provisions?

c) How does the IT Act 2000 regulate electronic contracts?

d) What are the benefits and challenges of using social media marketing for organizations, especially in terms of cyber security risks?

e) Explain the importance of milestones in the process of developing cyber security policies.

f) What are the main domains of a Cyber Security Policy?

P.T.O.

Q3) Attempt any FOUR of the following: **[4×5=20]**

a) Explain what is the CIA Triad? Its importance in the field of Cyber Security.

b) Explain the concept of Cyber law and Technology in India.

c) Why is an information security policy the cornerstone of cyber security? What are the key elements of an effective policy?

d) How does the IT Act 2000 address cyber pornography?

e) Explain the need for Cyber laws in India. How does the Indian IT Act 2000 help in the regulation of Cybercrimes?

Q4) Attempt any FOUR of the following: **[4×5=20]**

a) Explain the classification of Cybercrimes, including hacking, identity theft, credit card frauds, and cyber defamation. Provide real-world examples for each.

b) Describe the amendments to the Indian IT Act. How do these amendments improve the legal framework for handling Cybercrimes?

c) What are Corporate Policies in cyber security? Explain the role and importance of these policies in securing organizational data and resources.

d) Short note on Forgery Crime.

e) Explain the role of Cyber Security in protecting against Cybercrimes. What are the major vulnerabilities and threats in Cyber Security?

Q5) Attempt any One of the following: **[1×10=10]**

a) Explain the various types of cybercrimes and the corresponding punishments under the law. **[5]**

b) How does the legal framework address issues like hacking, identity theft, and cyber defamation? **[3]**

c) How does cyber law help to stop the cybercrime? **[2]**

OR

a) How does Indian Cyber Law deal with online financial frauds like phishing scams? **[5]**

b) What is the punishment for phishing attack? **[3]**

c) What is the risk of phishing scam? **[2]**

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Total No. of Questions : 5]

SEAT No. :

PD1582

[Total No. of Pages : 2

[6473]-63
T.Y.B.Sc. (Cyber & Digital Science)
CDS-363 : WEB SCIENCE
(2020 Pattern) (Semester -VI)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) Attempt any Ten of the following **[10×1=10]**

a) Explain the purpose of a web cache in a browser.

b) List any two advantages of PHP

c) Define XML? What are the advantages of XML

d) Define SAX Parser.

e) What is URL

f) List common types of web attack

g) Define DOM

h) What is the difference between GET and POST methods?

i) List different HTML form elements.

j) List types of XML parser.

k) Define role of API in web development.

l) What SOAP stands for.

Q2) Attempt any five of the following: **[5×2=10]**

a) Define template approaches in web application development and highlight their key characteristics.

b) Define Form tag in detail.

c) Explain briefly the AGILE SDLC model?

d) What is SQL Injection, and how does it pose a threat to server-side web security?

e) What is Access Control in the context of information security?

f) What is SAX? Write Advantages, Disadvantages of SAX parser.

P.T.O.

Q3) Attempt any Four of the following: **[4×5=20]**

a) What is a hybrid approach in the context of web application development, and why might developers choose this approach?

b) Explain the top down approach in detail.

c) Describe the structure of an HTTP request and an HTTP response.

d) Describe MVC architecture with a diagram.

e) What is a Stored Procedure, and how can it be vulnerable to security attacks?

Q4) Attempt any Four of the following: **[4×5=20]**

a) Explain the <textarea> tag, with all attributes and give one example.

b) What is URL redirect. Explain with example.

c) What do you mean by XML namespace? Explain in detail.

d) What defines a strong and complex password in terms of security?

e) What tools or platforms are commonly used for deploying and hosting web services in a real-world scenario?

Q5) Attempt any one of the following: **[1×10=10]**

a) Explain the basic mechanics of a SQL Injection attack and its potential impact on a web application? **[5]**

b) Explain the building block of the web. **[3]**

c) Define web Accessibility **[2]**

OR

a) Explain difference between Server side and client side scripting. **[5]**

b) Explain Web architecture approaches **[3]**

c) Define web Mining **[2]**

Total No. of Questions : 5]

SEAT No. :

PD1583

[Total No. of Pages : 2

[6473]-64

T.Y. B.Sc. (Cyber & Digital Science)

CDS - 367A : MALWARE ANALYSIS - I

(2020 Pattern) (Semester-VI) (Professional Elective - III)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) Attempt any Eight of the following : **[8×1=8]**

a) What is patching?

b) Define Malware.

c) Define CPU registers.

d) What do you mean by Cybercrime?

e) What is IDA?

f) Define DLL.

g) Define Dynamic analysis.

h) What is the concept of Code analysis?

i) Define obfuscation.

j) What are arrays in Assembly Language?

P.T.O.

Q2) Attempt any Four of the following : **[4×2=8]**

a) Explain general debugging concepts.

b) Write a short note on types of Malwares.

c) Explain Malware analysis and its types.

d) Explain the difference between arithmetic and bitwise operators in Assembly Language.

e) What are loops and functions?

Q3) Attempt any Two of the following : **[2×4=8]**

a) Explain dynamic analysis in detail.

b) Classify the different types of Windows, Linux and Mac Malwares.

c) A banking Trojan was detected on an employee's system. which captured keystrokes and sent them to an unknown server. How would you determine its functionality?

Q4) Attempt any Two of the following : **[2×4=8]**

a) Describe in detail Code analysis tools.

b) What is the concept of packers & cryptors. Explain in detail.

c) Explain Malware functionalities, and problems due to Malwares.

Q5) Attempt any One of the following : **[1×3=3]**

a) Write Short note on : PE header information.

b) Write Short Note on : Sandbox and its Technique.

Total No. of Questions : 5]

SEAT No. :

PD1584

[Total No. of Pages : 2

[6473]-65

T.Y. B.Sc. (Cyber & Digital Science)

CDS - 367B : FIN TECH - CYBERSECURITY

(2020 Pattern) (Semester-VI) (Professional Elective - III)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw diagrams wherever necessary.***

Q1) Attempt any Eight of the following : **[8×1=8]**

a) What is the primary objective of financial cybersecurity?

b) What is Threat Intelligence?

c) Name one key category of threats for financial organizations.

d) Which county is considered a future FinTech hub

e) What is blockchain technology primarily used for in FinTech?

f) What are smart contracts?

g) How does FinTech help unbanked populations?

h) What is one major social impact of FinTech in Nigeria?

i) What is one advantage of using Big Data in regulatory compliance?

j) What are predictive algorithms used for in online banking?

P.T.O.

Q2) Attempt any Four of the following : **[4×2=8]**

a) Explain the importance of threat modeling in financial cybersecurity.

b) What is the 'E-Book Moment' in banking, and why is it significant?

c) How does cryptocurrency differ from traditional digital payments?

d) Why is an integrated FinTech ecosystem important for financial innovation?

e) Why are performance objectives important in cybersecurity risk management?

Q3) Attempt any Two of the following : **[2×4=8]**

a) What are the major categories of cyber threats faced by financial organizations?

b) What are the key benefits of blockchain technology in FinTech?

c) Describe the impact of Big Data on regulatory compliance in financial institutions.

Q4) Attempt any Two of the following : **[2×4=8]**

a) Explain the importance of technology vulnerability management in FinTech.

b) Describe the role of cryptocurrencies in modern financial systems.

c) Explain the role of risk treatment in financial cybersecurity.

Q5) Attempt any One of the following : **[1×3=3]**

a) What are the main advantages of using digital wallets for financial transactions?

b) Explain cybersecurity challenges faced by FinTech companies?