Roll No. ..... Total Pages : 4

43222

BT-3/D-24

INTRODUCTION TO CYBER SECURITY

Paper–PS-CS-CYS-201A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) Discuss the nature and scope of cyber-crime. Highlight different types of cyber-crime, providing examples of crimes against individuals, crimes against property, cyber-extortion, drug trafficking, and cyber-terrorism. (8)

   (b) Explain the need for information security in today's digital age. Discuss various threats to information systems and the measures that can be taken to safeguard against these threats. (7)

2. (a) Define information assurance and cyber security. Explain how these concepts are interrelated and discuss their importance in protecting digital information and infrastructure. (8)

(b) Describe the process of security risk analysis. Discuss its significance in identifying, assessing, and mitigating risks to information systems, providing examples of common risk assessment techniques. (7)

UNIT–II

3. (a) Discuss the different methods of unauthorized access to computers. Explain how computer intrusions and hacking are carried out, including the tools and techniques used by hackers to breach systems? (8)

(b) Explain the difference between viruses, worms, and other forms of malicious code. Describe their potential impact on computer systems and provide examples of real-world incidents where these types of malware have caused significant damage. (7)

4. (a) What is phishing and how does it differ from other forms of cyber attacks like SQL injection and buffer overflow? Discuss the techniques used in phishing attacks and the measures that can be taken to protect against them. (8)

(b) Describe the concept of steganography and its use in cyber crime. Compare and contrast it with other spying methods such as key loggers and spyware. Provide examples of how steganography can be used to conceal malicious activities. (7)

UNIT–III

5. (a) Differentiate between passive and active cyber-attacks. Provide examples of each type and discuss how they impact the security of information systems. (8)

   (b) Discuss various cyber-crime prevention methods. Explain the role of application security for databases, email systems, and internet applications in preventing cyber-crimes. (7)

6. (a) Explain the importance of data security considerations such as backups, archival storage, and disposal of data. Discuss how these practices contribute to overall information security. (8)

   (b) Describe the different security technologies, including firewalls, VPNs, and intrusion detection systems. How do these technologies work together to provide a comprehensive security solution for organizations? (7)

UNIT–IV

7. (a) Describe the historical background of digital forensics. How has the field evolved over the years, and what are some of the key milestones in its development? (8)

(b) Discuss the need for computer forensics science. What are some of the special tools and techniques used in the digital forensic life cycle, and what challenges are commonly faced by digital forensic investigators? (7)

8. (a) Examine the legal perspectives of cyber-crimes and cybersecurity. Why do we need cyber laws, and how do they help in tackling cyber-crimes on a global scale? (8)

(b) Analyze the Indian IT Act and its provisions related to cyber-crimes. Discuss the role of digital signatures within the Act and their importance in ensuring the security of digital transactions. (7)

Roll No. ..... Total Pages : 2

43223

BT-3/D-24

DATA STRUCTURE

Paper : PC-CS-CYS-203A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. What are different data types and explain built in data structure and user defined data structure. Explain worst case, average case and best case analysis of any algorithm. 15

2. Write an algorithm of selection sort and insertion sort with the help of an example. 15

UNIT–II

3. What are different application of Stack in data structure. Write an algorithm to evaluate postfix expression with the help of an example. 15

4. What is difference between circular Queue and priority Queue. write an algorithm to insert, delete and display from circular queue with the help of an example. 15

UNIT–III

5. What is use of Dynamic data structure. Also write an algorithm to insert and delete in circular linked list and explain it with the help of an example. 15

6. Write an algorithm to insert (at first, any position and last position), traversing and delete in double linked list and explain it with the help of an example. 15

UNIT–IV

7. What do you mean by binary tree. Write an algorithm to implement Inorder and Post order traversal of binary tree with the help of an example. 15

8. What is use of Minimum Spanning tree and write Warshall algorithm and explain it with the help of an example. 15

Roll No. ..... Total Pages : 2

43224

BT-3/D-24

COMPUTATIONAL THINKING WITH PHYTHON

Paper : PC-CS-CYS-205A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. Explain the advantages of Python programming. (15)

2. (a) Describe the Input/Output methods of Python. (8)

(b) Discuss Tokens. (7)

UNIT–II

3. (a) Explain Strings, lists and Dictionaries. (8)

(b) Discuss flow control statements in Python. (7)

4. Explain the while loop and for loop in Python. (15)

UNIT–III

5. (a) Explain fixed arguments and variable arguments. (8)

(b) Write a short note on recursion. (7)

6. (a) Discuss keyword arguments and keyword variable arguments. (8)

(b) Discuss Decorators and Generators. (7)

UNIT–IV

7. (a) Explain Exception Handling. (8)

(b) Write a short note on file input/output operations. (7)

8. Describe the Reading and writing in structured files. (15)

C

Roll No. ..... Total Pages : 3

43225

BT-3/D-24

SOFTWARE ENGINEERING

Paper–PC-CS-CYS-207A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt total *five* questions picking at least *one* question from each unit.

UNIT–I

1. (a) Give a brief overview of software engineering development process leading to full product. (7)

(b) What are the problems with waterfall model? Also give an example to illustrate your point of view. (8)

2. (a) Compare any *three* software development life cycle models. Illustrate strength and weakness of each approach. (7)

(b) With the help of figure clearly explain evolutionary development of software system. (8)

UNIT–II

3. (a) What is requirements engineering? How to specify a requirement? (5)

(b) What do you mean by software quality? (5)

(c) Explain some metrics related to software quality. (5)

4. (a) Define software quality assurance. What are different SQA activities? (7)

(b) How to measure software quality aspects using CMM model? Explain defined level and optimizing level of CMM. (8)

UNIT–III

5. (a) What do you mean by cyclomatic complexity? Discuss its importance. (4)

(b) How are function points derived? What are the manners in which information domain values are defined? (5)

(c) What are different types of coupling? Discuss their strength and weaknesses. (6)

6. (a) Explain object oriented systems design. (6)

(b) What is the difference between top down and bottom up design? (5)

(c) How do pseudo codes and design charts help software code development? (4)

UNIT–IV

7. (a) Describe software testing strategies for conventional and object oriented software. (7)

   (b) What are the general guidelines recommended for having compliance with the software design and coding standards? Discuss. (8)

8. (a) What are the unique characteristics of errors encountered in a successful application testing? Which type of testing and debugging process should be used here. (8)

   (b) What are different issues in software maintenance? Explain cost issues. (7)

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43226

BT-3/D-24

PRINCIPLES OF PROGRAMMING LANGUAGES

Paper– PC-CS-CYS-209A

Time : Three Hours] [Maximum Marks : 75

Note : Students are required to attempt *five* questions in all; selecting at least *one* question each from Unit- I to Unit-IV. All questions carry equal marks.

UNIT–I

1. (a) What are the characteristics of a good programming language? Differentiate between translator, compiler and interpreter.

(b) What are elementary and enumerated data types? Differentiate between static type checking and dynamic type checking and give their relative advantages. (8+7=15)

2. (a) What is attribute grammar and context-free grammar? Discuss the uses of attributec grammar in PPL.

(b) What are the general problems of describing syntax? Explain most widely approach for describing syntax. (8+7=15)

UNIT–II

3. (a) Write the steps involved in implementation of structured data types. Write the problems associated with type checking.
   (b) What are pointer operations? Explore the design issues pertaining to pointers.
   (c) What are the attributes of vectors? Explain vectors operations. (5+5+5=15)

4. (a) Define sub-program, overloaded sub-program and nested sub-program? Highlight the design issues for sub-programs.
   (b) Define abstraction, encapsulation and information hiding? State example. (8+7=15)

UNIT–III

5. (a) Explain the strategies used in programming languages for sequencing control between statements.
   (b) Mention the usage of CIP and CEP with a suitable illustration. (8+7=15)

6. (a) Explain the following implementation models for parameter passing with an example.
      (i) Pass-By-value.
      (ii) Pass-By-Value-Result.
      (iii) Pass-By-Reference.
      (iv) Pass-By-Name.
   (b) What do you mean by referencing environment of sub program? Discuss its several components? (8+7=15)

UNIT–IV

7. What are the major run time elements required for storage? Elaborate the major phases of storage management. Explain dynamic based and heap storage management techniques. (15)

8. Differentiate between :

   (a) Structured, Logical and Object-oriented programming languages.

   (b) C and C++ programming languages. (8+7=15)

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43227

BT-3/D-24

COMPUTER ORGANIZATION AND ARCHITECTURE

Paper–ES-CS-CYS-211A

Time : Three Hours] [Maximum Marks : 75

Note : Students are required to attempt *five* question in all; selecting at least *one* question each from Unit- I to Unit-IV. All questions carry equal marks.

UNIT–I

1. (a) Discuss about architecture and organization of a computer system. What do you understand by fixed point representation of numbers?

(b) Explain the process of addition and subtraction of binary integers with Booth's algorithm. (8+7=15)

2. What are the IEEE standards for floating-point representation? Discuss about single-precision and double-precision format. Write the process to convert a 32-bit decimal number into floating point representation. (15)

UNIT–II

3. (a) What is an instruction cycle and write the phases of Instruction cycle? Explain how the control unit determines the instruction after decoding an instruction?

(b) Elaborate the steps involved in execution of Memory-Reference instructions with its timing signals. (8+7=15)

4. (a) Write about Interrupt and its types? Illustrate the phases of Interrupt Cycle with a neat diagram.

(b) Demonstrate the general configuration of Micro programmed Control unit with a neat block diagram. (8+7=15)

UNIT–III

5. (a) Elucidate modes of addressing used in assembly language instructions with examples.

(b) Differentiate between CISC and RISC.

(c) Write a note on stack operations. (5+5+5=15)

6. (a) Justify how parallel processing improves the performance of multiprocessing environment.

(b) With examples, Explain four segment CPU pipeline and Timing of instruction pipeline. (8+7=15)

UNIT–IV

7. (a) Explain in detail about strobe control method of asynchronous data transfer? What is the disadvantage of strobe method? Explain how handshake method solves the problem?

(b) Explain the connection of I/O bus to input-output devices and its mapping specifications. (8+7=15)

8. (a) Elaborate how DMA bypasses CPU and speeds up the memory operation? With a neat schematic, Explain about DMA controller and its mode of data transfer.

(b) Explain Daisy-Chaining priority and Parallel Priority Interrupt with its hardware diagram. (8+7=15)

CYS 5th/ Lib

Roll No. ..... Total Pages : 03

BT-5/D-24 45267

DESIGN AND ANALYSIS OF ALGORITHMS
PC-CS-CYS- 301A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Provide an example of an algorithm with a time complexity of O(nlogn) and explain how this time complexity arises.

   (b) What is a priority queue, and how does it differ from a regular queue ? Describe the primary operations of a priority queue.

2. (a) What is Strassen's algorithm ? Describe the conditions under which Strassen's algorithm is most effective.

   (b) What is the master theorem ? Describe the general form of recurrence relations that the Master Theorem can be applied to. What are the typical parameters involved ?

Unit II

3. (a) What is dynamic programming ? Describe the Longest Common Subsequence problem. How does dynamic programming help in finding the solution ?

   (b) What are the limitations of greedy algorithms ? Provide examples of problems where greedy algorithms do not yield optimal solutions.

4. (a) Describe the insertion operation in a red-black tree. What are the steps involved, and how do you ensure the tree remains balanced ?

   (b) Discuss Huffman Coding. How does the greedy approach lead to optimal prefix codes in this context ?

Unit III

5. (a) Compare and contrast DFS and BFS in terms of their traversal order, applications, and memory usage.

   (b) Provide examples of NP-hard problems that are not in NP-complete. Explore the trade-offs between exact algorithms and approximation algorithms for NP-complete problems.

6. (a) What is a Minimum Spanning Tree (MST). Describe Kruskal's algorithm for finding the minimum spanning tree.

(b) Outline the steps of the Bellman-Ford algorithm. What is the significance of the relaxation process in this algorithm ?

Unit IV

7. (a) Describe the Ford-Fulkerson algorithm for finding the maximum flow in a flow network. What are its key steps ?

(b) Define a bitonic sequence. What characteristics distinguish a bitonic sequence from other types of sequences ?

8. (a) What is a flow network ? Define its components, including nodes, edges, capacities, and flow. Explain the difference between a flow network and a general graph.

(b) Explain the process of merging two sorted sequences using a merging network. What steps are involved ?

Roll No. ..... Total Pages : 03

BT-5/D-24 45268

SECURITY THREATS AND TRENDS
PC-CS-CYS-303A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) With the help of suitable practical examples, explain in detail about the IP spoofing, ARP spoofing and Session hijacking. **8**

   (b) Differentiate between the following : **7**

   (i) Worms and virus

   (ii) Adware and spyware.

2. (a) Discuss various security threats and also give details of sources and motives of such security threats. **8**

   (b) Define active and passive security attacks. Explain in detail the different types of active and passive security attacks together with e-Mail threats and web threats. **7**

Unit II

3. (a) How to carry out the risk assessment and forensic analysis for managing security threats ? 8

   (b) Why to carry out threat analysis ? Explain the various vulnerability sources and assessment. 7

4. Critically analyzing threat awareness and threat correlation with some real-time practical examples. Explain in detail any two models for security planning. 15

Unit III

5. (a) Explain the various types, policies and techniques for authorization and authentication. 8

   (b) How to carry out security monitoring and auditing ? Also, explain the various security policies and procedure. 7

6. With the help of real-time practical examples, explain the working of Firewalls, IDS and Honey pots. 15

Unit IV

7. (a) With the help of real-time practical examples, explain the working of trusted computing and multilevel security. 8

(b) Explain the various e-Mmail and Internet use policies together with the software security issues. 7

8. How to carry out security monitoring and auditing ? Also, explain the various security policies and procedures. 15

Roll No. ..... Total Pages : 03

BT-5/D-24 45269

INFORMATION SECURITY AND DATA HIDING

ES-CS-CYS-305A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Provide a brief overview of digital signatures as a security mechanism. How do they ensure integrity, authentication, and non-repudiation in digital communication ? **7.5**

   (b) Differentiate between confidentiality, integrity, and availability in the context of security services. How do these services ensure data protection and system reliability ? **7.5**

2. (a) Explain the components of a model for internetwork security. Discuss, how these components interact to provide a secure networking environment and protect against various types of cyber threats. **7.5**

(b) Key distribution is a critical aspect of secure communication. Discuss the methods used for key distribution in symmetric and asymmetric cryptography. 7.5

Unit II

3. (a) Explain the Diffie-Hellman key exchange protocol. How does it enable two parties to securely establish a shared secret over an insecure channel ? 7.5

(b) How does a message authentication code (MAC) work ? Describe its structure and explain, how it verifies the integrity and authenticity of a message between sender and receiver. 7.5

4. (a) Discuss the importance of key management in IPSec. Describe some key management techniques used in IPSec to securely establish and distribute cryptographic keys. 7.5

(b) Describe the SHA-512 hashing algorithm. What are the key features that make SHA-512 suitable for secure hashing, and how does it provide data integrity ? 7.5

Unit III

5. Discuss the role of steganography in modern data hiding. Explain, how does it differ from encryption and describe scenarios where data-hiding techniques in digital media are preferable to traditional encryption. 15

6. Describe the process of a watermarking algorithm and its key components. Choose a specific watermarking algorithm (e.g., spatial domain or frequency domain techniques) and explain its workflow and how it protects against unauthorized copying ? 15

Unit IV

7. Choose a case study on DRM in a specific industry (such as music, video streaming, or publishing). Analyse the DRM strategy used, its effectiveness in protecting digital content, and any user experience or legal issues that arose. 15

8. Evaluate the use of data-hiding technology in e-Commerce. How does it contribute to secure digital transactions, watermarking of digital assets and customer data protection ? What are the challenges of implementing data hiding in e-Commerce platforms ? 15

Roll No. ..... Total Pages : 04

BT-5/D-24 **45270**

MICROPROCESSOR AND INTERFACING
ES-CS-CYS-307A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Section. All questions carry equal marks.

Section I

1. (a) Describe the internal architecture of 8086 microprocessor with neat block diagram. **10**

(b) Express, how the physical address generated in 8086. **5**

2. (a) Examine all the signals available in the 8086 processor. **10**

(b) How is the clock signal generated for 8086 ? Explain in detail. **5**

Section II

3. (a) For the given clock, draw the timing diagram for Read and write cycle in maximum mode operation and explain. **10**

(b) Explain the functioning of PROM and E^2PROM memories and draw their cell. **5**

4. (a) Interface the 8086 microprocessor with two 16 k × 8 EPROM chips and two 16 k × 8 RAM chips. Draw the necessary block diagram showing the interfacing of the memory with 8086. **10**

(b) Describe the minimum mode configuration of 8086 with a neat diagram. Mention the functions of various signals. **5**

Section III

5. (a) Write a 8086 ALP to convert a given binary number into its equivalent unpacked decimal and ASCII. **7**

(b) Compute the Physical address the following instructions will access If DS = 2000H, [BX] = 3000H and [SI] = 4000H, [BP] = 5000H and [DI] = 6000H. Also explain the addressing modes that are used by each instruction : **8**

(i) MOV BX, [3000H]

(ii) MOV DX, [2000H]

(iii) MOV AX, [CX]

(iv) MOV AX, [SP + SI]

(v) MOV BX, [DX + SI + 2000H]

(vi) MOV CX, [BP + SI + 1000H]

(vii) MOV BX, 1234H.

6. (a) Generate the HEX codes for the following instructions : **10**

(i) Mov AX, BX

(ii) Mov AX, [BX] [SI].

(b) Mention an example for the 8086 instructions : AAA, CWD, JNBE, LAHF, MOVS, RCL, ROL,SAHF, CMP, STC. **5**

Section IV

7. (a) Explain with a neat diagram the interfacing of stepper motor to 8086 using 8255 in detail. **8**

(b) Interface a typical 12-bit DAC with 8255 and write a program to generate a triangular waveform of period 12 ms. The CPU runs at 4 MHz clock frequency. **7**

8. (a) Interface ADC 0808 with 8086 using 8255 ports. Use port B of 8255 for transferring digital data output of ADC to the CPU and Port C for control signals. Assume that an analog input is present at I/P4 of the ADC and a clock input of suitable frequency. **8**

(b) Interface a 4*4 keyboard with 8086 using 8255 and write ALP for detecting a key closure and return the key code in AL. The debouncing period for key is 20 ms. **7**

Roll No. ..... Total Pages : 02

BT-5/D-24 45271

BUSINESS INTELLIGENCE AND ENTREPRENEURSHIP

HM-902

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. What are the major economic and non-economic factors that influence entrepreneurial growth ? Provide examples of how these factors impact new ventures.

2. Compare and contrast the roles of a manager and an entrepreneur. What challenges are unique to entrepreneurs, and how do they differ from those faced by managers ?

Unit II

3. Explain the process of entrepreneurial opportunity search and identification. What criteria should be considered when selecting a product ?

4. What are the methods of project appraisal and how do PERT/CPM techniques help in project planning and scheduling ?

Unit III

5. Discuss the process and requirements for the registration of Small Scale Industries (SSI) in India. Why is obtaining NOC from the Pollution Board necessary ?

6. Analyse the role of machinery and equipment selection in the success of small enterprises. How does it affect productivity and growth ?

Unit IV

7. Discuss the concept of venture capital and its significance for small businesses. What are the financing schemes offered by various financial institutions ?

8. How does Intellectual Property Rights (IPR) protect entrepreneurs ? Discuss the importance of patents, copyrights, and trademarks in entrepreneurial ventures.

Roll No. ..... Total Pages : 03

BT-5/D-24 45272

COMPUTER NETWORKS

PC-CS-CYS-311A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. All questions carry equal marks.

1. Answer the following questions in brief :

(a) Write about various classes of IP addresses. **3**

(b) What are the advantages of transport layer ? **3**

(c) How to establish flow control using sequence numbers ? **3**

(d) Describe Flow Control and Buffering in Transport Layer. **3**

(e) What are the different network security techniques ? **3**

2. (a) Why twisted pair cables are preferable over coaxial cables ? Explain. **7**

(b) Write the structure of TCP pseudo header and explain, how is it used in checksum calculation ? 8

3. (a) Explain briefly about the Persistent and Non-persistent CSMA protocols. 7

(b) Suppose you are designing a sliding window protocol for a 1-Mbps point-to-point link to the stationary satellite evolving around Earth at 3×10^4 km altitude. Assuming that each frame carries 1 KB of data, what is the minimum number of bits you need for the sequence number in the following cases ? Assume the speed of light is 3×10^8 meters per second.

(a) RWS = 1

(b) RWS = SWS. 8

4. (a) Explain different error detection and correction mechanisms with examples. 7

(b) What is public key encryption algorithm ? Explain the working of digital signature in detail. 8

5. (a) What is IPV6 addressing ? Describe the unicast and multicast routing protocol with example. 7

(b) What is congestion ? Explain Leaky bucket algorithm and token bucket algorithm for congestion control. Also write its steps. 8

6. (a) Describe the techniques to improve QoS in the working of internet. 8

(b) What is the difference between symmetric key and asymmetric key cryptography ? Explain it with example. 7

7. (a) What are responsibilities of data link layer ? Explain selective repeat ARQ technique in detail. 8

(b) Explain multiple access protocols and differentiate between Pure Aloha and Slotted Aloha. 7

8. (a) What is Firewall ? Describe firewall services in details with examples. 7

(b) What is ISO-OSI reference model ? Also differentiate ISO-OSI reference model with TCP/IP architecture. 8

CYS 7th/ web.

Roll No. ..... Total Pages : 2

BT–7/D-24 **47407**

CYBER ATTACKS- OWASP FRAMEWORK

Paper–PC–CS–CYS401A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. What is Purpose of Open Web Application Security Project (OWASP)? Also write top 10 application security risk. 15

2. What are different reasons for risk in any Web application? Explain Cryptographic failures and how it can be avoided? 15

UNIT–II

3. How Open Web Application Security Project (OWASP) handles user identification and authentication failure in Web application? 15

4. What do you mean by Data Access Control? Explain the role of Open Web Application Security Project (OWASP) in data access control step by step. 15

UNIT–III

5. What do you mean by Cross-Site Scripting? Explain the different ways to handle Software and data integrity failures in a Software. 15

6. What is Server-Side request forgery. Explain how Security logging and monitoring failures is managed in any Software by using Open Web Application Security Project? 15

UNIT–IV

7. What do you mean by Configuration error? Also explain the side effect and disadvantages of Outdated components and Vulnerable components 15

8. What is Session hijacking? Explain local File inclusion and Remote file inclusion in detail with the help of an example. 15

Roll No. ..... Total Pages : 2

BT–7/D-24 **47410**

ETHICAL HACKING

Paper–OE–CS–CYS–403

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. What do you mean Ethical Hacking? What are the different steps to hack windows and linux OS ? 15

2. Explain the working of TroZan, Virus and Worms with the help of an example. 15

UNIT–II

3. What are the different functions of Security Operations Center(SOC)? And also explain its framework with the help of an diagram. 15

4. What do you mean by QRadar? Explain the steps of Incident detection and investigation with the help of Q-Radar. 15

UNIT–III

5. (a) What is Firewall and Honey Pots with the help of an example? 10

   (b) What are different to way to hack web-server? 5

6. (a) What do you mean by Snort and Write steps to implement Snort? 10

   (b) Explain SQL injection and also write example to prove SQL injection. 5

UNIT–IV

7. What are different Ethical Hacking Tool? Explain Bluetooth Hacking and Mobile Phone Hacking with the help of an example. 15

8. What do you mean by Legal, Professional and Ethical issues that are faced by Ethical hacker? Also explain E-mail hacking with the help of an example. 15

Roll No. ..... Total Pages : 2

BT–7/D-24 **47414**

INTRODUCTION TO CYBER LAWS

Paper–PE–CS–CYS–415A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) What are different categories and kinds of Cyber crime? 8

   (b) Write short notes on Evolution of IT Act. 7

2. (a) What is IT act 2000? Discuss its important sections. 7

   (b) Define offence. Discuss different types of offence and its important sections. 8

UNIT–II

3. (a) Discuss various case laws on Cyber space jurisdiction issues under IT Act. 7

   (b) Define with example : 2×4=8

   (i) Cyber Extortion. (ii) Cyber stalking.

4. (a) What is E-commerce? Discuss various laws related to E–commerce. 7

(b) Discuss various Cryptographic algorithm is used in Digital signature. 8

UNIT–III

5. (a) Differentiate Patent and Copyright with example. What are various steps involved in Patent application process ? 7

(b) Discuss various disputes related to Domain name. 8

6. (a) How the sensitive Information is classified? Discuss various laws related to sensitive Information. 8

(b) Write short notes on "Cyber Law: An International Perspective". 7

UNIT–IV

7. Write short notes on the following :

(a) Net neutrality. 7½

(b) Free speech. 7½

8. (a) What are the types of Intellectual property? List various activities which are covered by the intellectual property rights. 7

(b) Discuss the right to privacy under surveillance in India. What are the types of Privacy? 8

Roll No. ..... Total Pages : 2

BT-7/D-24 **47419**

CLOUD SECURITY

Paper–PE-CS-CYS-425A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. Explain Amazon Web Service(AWS) key management service. Explain AWS security incident response with the help of an example. 15

2. What are different AWS encryption services and explain its working with the help of an example ? 15

UNIT–II

3. What are different measures to Protect Cloud Infrastructure ? Also explain data loss and leakage with the help of an example. 15

4. Explain Denial of Service (DOS) and Distributed Denial of Service (DDOS). Also explain data privacy and confidentiality in reference to the AWS data. 15

UNIT–III

5. Explain the Cloud based information life cycle and also explain all the phases of life cycle in detail. 15

6. What is Data Protection Strategy and how an Effective Strategy is implemented in Data Protection ? Explain common attack vector and threats in detail. 15

UNIT–IV

7. What is proactive activity monitoring in cloud security and also explain the difference between alert and event with the help of an example ? 15

8. What is unauthorized access and malicious traffic ? Also write about the intrusion detection system in detail. 15

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BT–7/D-24 47394

UNIVERSAL HUMAN VALUES II : UNDERSTANDING HARMONY

Paper–HSS–403A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. Discuss the concept of Self exploration in detail. Discuss the one proposal which you have Self explored in your life during this course. Define continuous happiness and prosperity. 5,5,5

2. Discuss and prioritize the basic requirements for fulfillment of Human aspirations. Discuss the value education and its guidelines. 7,8

UNIT–II

3. Discuss the concept of Co-existence of Self and Body. Discuss the concept of Body as instrument of the Self. Discuss the Harmony of Self. 5,5,5

4. Discuss the Harmony of self with the body. Discuss the program of self regulation to ensure health of the body. 6,9

UNIT–III

5. Discuss the feeling of Trust and Respect in detail between Huma-Human Relationships. 15

6. Discuss the concept of Harmony in society. Discuss various systems of Human order in Society. 5,10

UNIT–IV

7. Discuss the various orders in nature. Discuss the interconnectedness between them. Discuss Harmony in nature in detail. 5,5,5

8. Discuss the concept of Coexistence in detail. Discuss the concept of Universal Human order in detail. 8,7

CYS 8th/ LLB.

Roll No. ..... Total Pages : 03

BT-8/D-24 48413

BLOCK CHAIN IN CYBER SECURITY
PC-CS-CYS-402A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Discuss the principles of blockchain technology. 6

   (b) Elaborate the role of cryptography, hashing and digital signatures in ensuring the security of blockchain systems. 9

2. (a) Elaborate the decision tree in blockchain and explain how consensus mechanisms like Proof of Work and Proof of Stake work within this context. 7

   (b) Discuss the characteristics of hash functions and their importance in blockchain security. What are the challenges associated with Denial of Service (DoS) and Man-in-the-Middle attacks in blockchain ? 8

Unit II

3. (a) Differentiate Proof of Work (PoW) and Proof of Stake (PoS) consensus protocols in blockchain. **7**

   (b) Discuss the vulnerabilities and security issues associated with blockchain networks. How do centralization and consensus security issues impact the security of blockchain systems ? **8**

4. (a) Explain the different types of attacks on blockchain systems. What strategies can be employed to mitigate these attacks ? **8**

   (b) Discuss the importance of user security in blockchain systems. Elaborate the measures that can be taken to prevent user-side vulnerabilities and breaches. **7**

Unit III

5. (a) Discuss the CIA triad (Confidentiality, Integrity, Availability) and its application to blockchain technology. How does blockchain achieve AAA (Authentication, Authorization, Accounting) of security ? **9**

   (b) Discuss the importance of blockchain governance in ensuring secure and decentralized networks. **6**

6. Explain the role of smart contracts in cybersecurity. What are the security challenges involved in implementing smart contracts within blockchain networks ? **15**

Unit IV

7. (a) Elaborate Solidity programming language. Explain its key features and how is it used to compile and deploy smart contracts on the Ethereum Virtual Machine (EVM) ? **7**

   (b) Discuss the storage, memory and call data functions in Solidity. How do they play a critical role in smart contract operations and what are the security implications ? **8**

8. (a) Elaborate the various security issues related to smart contracts. What are the common vulnerabilities and attacks on Ethereum-based smart contracts ? **8**

   (b) Discuss major security hacks in blockchain history, including The DAO hack and the Poly-Network hack. **7**

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BT-8/D-24 48414

ENTREPRENEURSHIP AND START-UPS

HSS-404A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. What is the evolution of entrepreneurship development in India ? Which are different myths about entrepreneurs ?
2. Which are salient features of entrepreneurship ? Write on the different types of entrepreneurs.

Unit II

3. Which skills/traits required to be a successful entrepreneur ? Write examples of few successful entrepreneurs in India.
4. Which are different steps taken for entrepreneurial decision process ? How creative and design thinking is significant ?

Unit III

5. How business models and lean start-ups are crafted ? Write in detail.

6. Which are different business models ? How business models are made and analyzed ?

Unit IV

7. Which different central and state level institutions are made to support small business enterprises ? How these institutions support the MSMEs ?

8. Which government schemes support the entrepreneurship and MSMEs to run their business effectively ?

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BT-8/D-24 48419

DATA INJECTION

OE-CS-CYS-410

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Explain Cyber warfare and Cyber terrorism. 15

2. (a) Discuss SQL Injection attacks. 8

   (b) Write a short note on Web attack forensics. 7

Unit II

3. (a) Explain Blind injection detection. 8

   (b) Write a short note on Broken authentication and session management. 7

4. Describe in detail Remote code execution. 15

Unit III

5. (a) Discuss types of Web Server Vulnerabilities. 8

   (b) What do you understand by Patch Management Techniques ? 7

6. (a) Discuss Web Server Hardening Methods. **8**

(b) Explain the objectives of Web application hacking. **7**

Unit IV

7. (a) Explain the steps to conduct SQL injections. **8**

(b) Write a short note on Countermeasures Buffer Overflows. **7**

8. Describe Stack-based Buffer Overflow Mutation techniques. **15**

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BT-8/D-24 48423

INTRUSION DETECTION AND PREVENTION

PE-CS-CYS-422A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Discuss the role of Intrusion Detection and Prevention Systems (IDPS) in securing modern network infrastructures. Elaborate the key functions and components. **15**

2. (a) Explain the various network and hardware layer attacks. **7**

   (b) Examine the significance of port security and the use of encrypted protocols in preventing cyber threats. **8**

Unit II

3. Elaborate the architecture of network behavior analysis in the context of IDPS. How do sensor locations impact intrusion detection accuracy ? **15**

4. (a) Discuss the different generations of Honeynets and their role in detecting attacks. **7**

   (b) Evaluate the importance of capturing network traffic and monitoring in detecting sophisticated cyber-attacks. **8**

Unit III

5. (a) Discuss the functionalities of Snort in IDS. How do rule headers and rule options enhance Snort's effectiveness ? **8**

   (b) Analyse the configuration of Snort with MySQL for efficient monitoring of network traffic. **7**

6. Explain the need for multiple IDPS technologies in a layered security environment. What are the differences between direct and indirect technologies such as firewalls, routers and honeypots ? **15**

Unit IV

7. Elaborate the key threats against WLAN networks, WEP attacks, Wireless Client Attacks and Bluetooth attacks. How do Wireless IDPS technologies address these challenges ? **15**

8. (a) Explain the importance of 802.11 Wireless Infrastructure in modern enterprise networks. How do IDPS technologies enhance the security of wireless networks ? **9**

   (b) Examine, how IP traceback and marking technologies are used in wireless intrusion detection. **6**