22643

M. Tech. 2nd Semester (CSE)
CBCS Scheme
Examination – May, 2025

SOFT COMPUTING
Paper : MTCSE22C1

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. Write short notes on following :   20

     (i) Multilayer Perception Model.

     (ii) Fuzzy Set

     (iii) Fuzzy Qualifiers.

     (iv) Crisp Set

UNIT – I

2. Describe the following :   20

   (i) ANN architecture

   (ii) Gradient Descent Algorithm.

3. Explain the following :   20

   (i) Hopfield Networks.

   (ii) Back Propagation Algorithm

UNIT – II

4. Describe the following :   20

   (i) Fuzzy Rule Generation.

   (ii) Classical Sets

5. Describe the following operations on fuzzy sets :   20

   (i) Combination of operations

   (ii) Aggregation operation

UNIT – III

6. Explain the following :   20

   (i) Fuzzy equations

   (ii) Linguistic variables

7. Describe the following :   20

   (i) Fuzzy Qualifiers

   (ii) Fuzzy Propositions

UNIT – IV

8. What do you understand by uncertainty based information ?   20

9. Explain the following :   20

   (i) Crisp Set

   (ii) Fuzziness

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Roll No. ....

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M. Tech. 2nd Sem. (CSE) CBCS Scheme
Examination – May, 2024

SOFT COMPUTING

Paper : MTCSE22C1

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. Write short notes on the following :   20

   (i) Associative memories

   (ii) Fuzzy logic

   (iii) Fuzzy Propositions

   (iv) Crisp set

22643- 600 -(P-3)(Q-9)(24)   P. T. O.

UNIT – I

2. Explain the following : 20

   (i) Supervised, Unsupervised and Reinforcement Learning.

   (ii) Biological Neuro-system.

3. Describe the following : 20

   (i) Multilayer perceptron model

   (ii) Application of ANN

UNIT – II

4. Give a complete description about fuzzy logic. 20

5. Explain the following operations on fuzzy sets. 20

   (i) Union

   (ii) Complement

UNIT – III

6. Explain the following : 20

   (i) Fuzzy Lattice

   (ii) Arithmetic operations on intervals

7. Describe the following : 20

   (i) Multivalued logics

   (ii) Linguistic hedge

UNIT – IV

8. Explain the following : 20

   (i) Uncertainty and its types

   (ii) Crisp sets

9. Describe the concept of fuzziness in detail. 20

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22643

M. Tech. 2nd Semester (CSE)
CBCS Scheme
Examination – June, 2023

SOFT COMPUTING
Paper : MTCSE22C1

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. Write short notes on the following :

    (a) Difference between Adaline and Perceptron.   5

    (b) Explain Hebb's Learning Rule.   5

    (c) What do you mean by fuzzy sets ? Explain fuzzy set operations with example.   5

    (d) Differentiate between ANN and BNN.   5

UNIT – I

2. (a) Discuss Hebbian Learning rule and winner-take all learning rule.   10

   (b) What do you mean by Perceptron ? Explain Perceptron algorithm.   10

3. What do you mean by Hetro Associative memory network ? Explain its training algorithm and retrieval algorithm. Using Hebb rule to store the following vectors in an Hetro Associative Neural Net.   20

INPUT	OUTPUT
S1 = (1100)	T1 = (10)
S2 = (0100)	T2 = (10)
S3 = (0011)	T3 = (01)
S4 = (0010)	T4 = (01)

Also test the net with training input vector.

UNIT – II

4. (a) Define fuzzy set. How it is different from crisp set. Explain the following operations on fuzzy sets : Union, Intersection, Complement and Composition.   10

   (b) Define fuzzy sets to express water temperature (Chilled, cool, warm, hot, very hot) and draw membership diagram for it.   10

5. (a) Consider two fuzzy sets A and B as follows :   10

   $$A = \left\{ \frac{1}{2} + \frac{0.3}{4} + \frac{0.5}{6} + \frac{0.2}{8} \right\} \text{ and } B = \left\{ \frac{0.5}{2} + \frac{0.4}{4} + \frac{0.1}{6} + \frac{1}{8} \right\}$$

   Perform union, intersections, difference and complement over fuzzy set A and B.

   (b) What is Defuzzification ? Explain the following methods of Defuzzification :   10

   (i) Centroid method

   (ii) Mean Max Method

   (iii) Centre of Sum

UNIT – III

6. Explain the following :   20

   (a) Multi-Valued logic

   (b) Fuzzy Propositions

   (c) Fuzzy Qualifiers

7. Compute A(+)B and A(–)B, where   20

$$\mu_A(x) = \begin{cases} 0 & x \le -6 \\ (x+6)/4 & -6 < x \le -2 \\ (-x+3)/5 & -2 < x \le 3 \\ 0 & x > 3 \end{cases}$$

$$\mu_B(x) = \begin{cases} 0 & x \le -1 \\ (x+1)/5 & -1 < x \le 4 \\ (-x+10)/6 & 4 < x \le 10 \\ 0 & x > 10 \end{cases}$$

8. Describe the terms non specificity and fuzziness. Differentiate between these two terms and for the following fuzzy set compute both fuzziness and non-specificity. 20

$$A(x) = \begin{cases} 0 & x < 0 \ \& \ x > 10 \\ x/5 & 0 \le x \le 5 \\ (10-x)/5 & 5 \le x \le 10 \end{cases}$$

9. Write a short note on the following : 20

(a) Fuzziness of fuzzy sets

(b) Uncertainty Based Information

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M. Tech. 2nd Semester (CSE) CBCS Scheme Examination – May, 2025

ALGORITHM DESIGN

Paper : MTCSE22C2

Time : Three hours]　　　　　　　　[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : All questions carry equal marks. Question No. 1 is *compulsory*. In addition to the compulsory question, students will have to attempt four more questions, selecting *one* question from each Unit.

1. *Compulsory Question* :

   (a) Mention the basic elements of a data structure.

   (b) Write the difference between stacks and queues

   (c) Define flow shop scheduling.

   (d) What is the general method of backtracking ?

   (e) Differentiate between NP-hard and NP-complete problems.

(f) Write a short note on NP-hard scheduling problems.

(g) Write a short note on federated cloud in approximation algorithms.

(h) What is a fully polynomial time approximation scheme ?

UNIT – I

2. Discuss dynamic sets and searching techniques including array doubling and amortized time analysis.

3. Explain graph traversals in detail, covering DFS, strongly connected components, and bi-connected components.

UNIT – II

4. Explain the backtracking technique and solve the sum of subsets problem using it.

5. Discuss branch and bound methods with an example of the travelling salesperson problem.

UNIT – III

6. Explain the working of the Knuth-Morris-Pratt (KMP) string matching algorithm with an example.

7. Describe the Boyer-Moore algorithm for string matching and its efficiency considerations.

UNIT – IV

8. Explain merge and sorting in parallel algorithms and finding connected components.

9. Describe approximation algorithms and explain polynomial time approximation schemes with examples.

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Roll No. ....

22644

M. Tech. 2nd Semester (CSE) CBCS Scheme Examination – May, 2024

ALGORITHM DESIGN

Paper : MTCSE22C2

Time : Three hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. Write short notes on the following :

   (a) What is Link List ? Explain various operation performed by Link List.   5

   (b) Explain the difference between greedy and dynamic programming.   5

   (c) Discuss Sum of subset problem using backtracking briefly.   5

22644-**550**-(P-4)(Q-9)(24)   P. T. O.

(d) Solve the following recurrence by using recursion tree. 5

$$T(n) = 2T(n/2) + n^2.$$

UNIT – I

2. (a) What is Divide and Conquer strategy ? Explain control abstraction for Divide & Conquer. 10

(b) Write the algorithm of Binary Search tree with the help of example. 10

3. (a) Write short notes on : 10

(i) Sets

(ii) Operations on sets

(iii) Algorithms for Union and Find Operation

(b) What is the use of Stack and Queue in data structures ? Explain various operations performed by Stack and Queue in detail. 10

UNIT – II

4. (a) What is minimum spanning tree ? Explain Kruskal's Algorithm in details with the help of example. 10

(b) Solve the below problem of Job Sequencing with Deadlines using Greedy method : 10

n=4, (pl , p2, p3, p4) = (100, 10, 15, 27) and (d1, d2, d3, d4) = (2,1,2,1).

5. (a) Explain graph coloring problem with the help of dynamic programmmg. 10

(b) What are Hamiltonian cycles ? How Hamiltonian cycle problem can be solved using backtracking ? 10

UNIT – III

6. (a) What is NP hard graph and NP scheduling problems ? Explain in detail. 10

(b) Explain Node Cover Decision NP hard Problem also describe Flow Shop Scheduling problem of NP scheduling problem. 10

7. (a) Describe The Boyer-Moore algorithm for pattern searching in details. 10

(b) Describe The naive string-matching algorithm in detail with the help of example. 10

UNIT – IV

8. (a) Explain ε-approximations. Also solve bin packing problem with ε-approximation. 10

(b) Describe Parallel algorithms for finding connected components using linear algebra. 10

9. (a) What is difference between Fully Polynomial Time Approximations and Polynomial Time Approximation ? Briefly Explain.　　10

(b) Write down the algorithm for Odd-Even Merge. Also explain Preparata's algorithm for sorting with algorithm.　　10

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M. Tech. 2nd Semester (CSE) CBCS
Scheme Examination – June, 2023

ALGORITHM DESIGN

Paper : MTCSE22C2

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. **1** is *compulsory.* Attempt total *five* questions by selecting at least *one* question from each Section.

1. Explain the following : $4 \times 5 = 20$

   (a) Array doubling.

   (b) NP-complete problems.

   (c) 0/1 Knapsack problem.

   (d) PRAM model

SECTION – A

2. Explain Divide & Conquer method also write mid-point algorithm. Give the best case and worst case complexity of it. 20

3. Explain Trees in data structure. Describe Red Black algorithm with example. 20

SECTION – B

4. What is dynamic programming ? Explain 0/1 Knapsack problem using greedy method and also solve it n=3, m=50, wi =(10,20,30), Pi=(60,100, 120). 20

5. (a) What is backtracking method to find a solution of a problem ? Solve 8-Queens problem with example. 10

   (b) Explain Hamiltonian cycles with example. 10

SECTION – C

6. Explain NP-Hard and NP-complete problems with example. Explain Cook's theorem. 20

7. Explain string matching technique to find solution of a problem. Explain Beyer-Moore algorithm with example. 20

SECTION – D

8. What is parallel algorithm ? Explain PRAM Models and Merge Sort algorithm for handling conflicts. 20

9. What is approximation algorithm ? Explain absolute and fully approximation schemes. 20

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22645

M. Tech. 2nd Semester (CSE)
CBCS Scheme (Elective - I)
Examination – May, 2025

MOBILE AND WIRELESS COMMUNICATION

Paper : MTCSE22D1

Time : Three hours]　　　　[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : All questions carry equal marks. Question No. 1 is *compulsory*. In addition to the *compulsory* question, students will have to attempt four more questions, selecting *one* question from each Unit.

1. *Compulsory Question* :

   (a) Define spread spectrum and its significance in wireless communication.

   (b) What is collision avoidance in MAC protocols ?

   (c) Differentiate between GEO and LEO satellites.

   (d) What are the applications of digital video broadcasting ?

22645- 250 -(P-3)(Q-9)(25)　　　　　　　　P. T. O.

(e) Define tunneling and encapsulation in Mobile IP.

(f) What is reserve tunneling and when is it used ?

(g) What is the difference between traditional TCP and Mobile TCP ?

(h) Define fast retransmission in TCP for mobile networks.

UNIT – I

2. Explain the wireless transmission fundamentals including frequencies, signals, antenna types, and signal propagation.

3. Describe different multiplexing techniques and compare modulation methods used in wireless transmission.

UNIT – II

4. Explain the GEO, LEO, and MEO satellite systems with routing, localization, and handover in satellite systems.

5. Describe the history and applications of satellite communication and digital audio/video broadcasting.

UNIT – III

6. Explain Mobile IP, its goals, requirements, entities involved, and IP packet delivery process.

7. Discuss agent advertisement, discovery, registration, tunneling, encapsulation, and optimization in mobile IP.

UNIT – IV

8. Explain traditional TCP and its limitations in mobile environments.

9. Describe Indirect TCP, Snooping TCP and Mobile TCP with fast retransmission.

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Roll No. ....

22645

M. Tech. 2nd Semester (CSE) CBCS Scheme (Elective-I) Examination – May, 2024

MOBILE AND WIRELESS COMMUNICATION

Paper : MTCSE22D1

Time : Three hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Explain the following : $5 \times 4 = 20$

   (a) Mobile Ad-hoc networks

   (b) Explain cellular system

   (c) Differentiate classical ALOHA & slotted ALOHA

   (d) Explain satellite system

SECTION – A

2. (a) What are main problems of signal propagation ? Why do radio waves not always follow a straight line ? Why is reflection both useful & harmful ? 10

   (b) Explain CSMA. How collisions are avoid during transmission ? 10

3. (a) Give reasons for handover in GSM and the problem associated with it. What are the typical steps for handover ? What types of handover can occur ? Which resources need to be allocated ? 10

   (b) What multiplexing schemes used in GSM. Explain purpose of each. 10

SECTION – B

4. Describe protocol architecture of IEEE-802 11 with all its layers. Also explain the role of MAC sublayer. 20

5. (a) Explain digital audio & video broadcasting. 10

   (b) Explain bluetooth security and link management. 10

SECTION – C

6. Explain mobile network layer. Write its complete architecture of IPv6. 20

7. Define tunneling and encapsulation in mobile IP ? Explain methods of reverse tunneling. 20

SECTION – D

8. (a) Compare I-TCP and snooping TCP. 10

   (b) HTML system architecture. 10

9. Explain WAP architecture with transport layer security and transmission protocol. 20

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22645

M. Tech 2nd Semester (CSE) CBCS Scheme
(Elective-I) Examination – June, 2023

MOBILE AND WIRELESS COMMUNICATION

Paper : MTCSE22D1

Time : Three hours]   [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. **1** is *compulsory*. Attempt total *five*

            questions by selecting *one* question from each

            Section. All questions carry equal marks.

1.   Explain the following : $4 \times 5 = 20$

    (a) IPv6

    (b) CSMA

    (c) Bluetooth Security

    (d) Signal propagation

22645-2&0-(P-3)(Q-9)(23)   **P. T. O.**

SECTION – A

2. (a) Draw a reference model of mobile radio system. 10

    (b) What multiplex schemes used in GSM ? 10

3. Explain PKMA & TDMA. What are the benefits of reservation schemes ? How collisions avoided during data transmission. 20

SECTION – B

4. Who perform MAC algorithms for SDMA what could be the possible roles of mobile stations, base stations and planning from network provider? 20

5. (a) What are the general problem of satellite signals travelling from a satellite to a receiver ? 10

    (b) Explain CSM mobile services. Write steps required for a handover from one foreign agent to another including layer 2 & layer 3. 10

SECTION – C

6. What is mobile IP ? Explain packet delivery, Agent advertisement & discovery in IP. 20

7. (a) Explain DHCP, its purpose & basic entities of it. 10

    (b) Reverse tunneling & optimization. 10

SECTION – D

8. Explain the role of Mobile transport layer. Discuss the role of Indirect TCP, snooping TCP & mobile TCP. 20

9. (a) HTML architecture 10

    (b) Wireless session protocol 10

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12030

P. G. Open Elective/Foundation Course
2nd Semester Examination – May, 2025

ENTREPRENEURSHIP DEVELOPMENT

Paper : 16IMSF1

Time : Three hours]   *[Maximum Marks : 40*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : All questions of section-**A** are *compulsory*. Attempt four questions from section-**B** selecting *one* question from each Unit. All questions carry equal marks.

SECTION – A

1. Answer the following in brief : $1 \times 8 = 8$

   (a) Describe entrepreneurial personality.

   (b) Define Intrapreneur.

     P. T. O.

(c) What do you know about business plan ?

(d) Write a short note on creativity.

(e) What do you mean by unique selling proposition ?

(f) What is marketing research ?

(g) Differentiate between trademarks and copyrights.

(h) Define patents.

SECTION – B

UNIT – I

2. Define entrepreneurship. State the various types of entrepreneurship. Discuss the characteristics of a successful entrepreneur. 8

3. Discuss in detail the factors contributing for entrepreneurship development. Give a brief picture about growth of entrepreneurship in India. 8

UNIT – II

4. Describe in detail the process of generation of business ideas. What is the role of environmental scanning and industry analysis in evaluating these ideas ? 8

5. What are the various steps involved in preparation of feasibility report for the new venture ? State the relevance of feasibility plan. 8

UNIT – III

6. What is meant by marketing plan ? What are the various stages involved in designing of marketing plan ? 8

7. Define organizational structure. What are its types ? Describe the role of manpower planning in designing the organizational structure. 8

UNIT – IV

8. Explain the relative advantages and disadvantages of debt financing and equity financing. Which of them is commonly more popular among entrepreneurs and why ? 8

9. Give a detailed picture of financial institutions supporting entrepreneurs in India. Discuss the various government schemes available to support start-ups in India. 8

Roll No. ....

12030

MBA 2nd Semester
(Open Elective Courses)
Examination – May, 2024

ENTREPRENEURSHIP DEVELOPMENT

Paper : 16IMSF1

Time : Three Hours]   [Maximum Marks : 40

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :   Attempt *five* questions in all. Question No. 1 **(Section – A)** is *compulsory*. Attempt other *four* questions from Section – B by selecting *one* question from each Unit. All questions carry equal marks.

SECTION – A

1. Answer the following in brief :   1 × 8 = 8

    (a) What is Imitative Entrepreneur ?

    (b) Differentiate between Entrepreneur and Manager.

    (c) What is the concept of industry analysis ?

    (d) Outline some sources of new business idea.

(e) What are objectives of marketing plan ?

(f) What do you mean by cash budget ?

(g) What do you mean by intellectual property rights ?

(h) Differentiate between commercial banks and developmental banks.

SECTION – B

UNIT – I

2. Entrepreneurship is the process of giving birth to an enterprise. Explain.   8

3. Discuss about growth of entrepreneurship in India. Examine the role of an entrepreneur in economic development of India.   8

UNIT – II

4. What is a business plan ? Describe the steps covered in preparation of business plan in detail.   8

5. What do you mean by Feasibility planning ? Describe fundamentals and ingredients of a good feasibility plan.   8

UNIT – III

6. What is meant by marketing research ? How can entrepreneurs use primary and secondary research to gather information about their target market and competitors ?   8

7. What is meant by financial plan ? What are its components ? What are the various stages involved in designing of financial plan ?   8

UNIT – IV

8. What are some common financing options for establishing new venture ? Suggest the ways to determine the most appropriate financing option for entrepreneurs.   8

9. (a) Write note on trademark and its registration.   4

   (b) What are the requirements for successful patent grants ?   4

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12030

MBA 2nd Semester (Open Elective Courses) Examination – May, 2023

ENTREPRENEURSHIP DEVELOPMENT (FOUNDATION ELECTIVE COURSES)

Paper : 16IMSF1

Time : Three hours]   *[Maximum Marks : 40*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : All questions of Section-A are *compulsory*. Attempt any four questions from Section-B selecting at least *one* question from each unit.

SECTION – A

1. Write short notes on :

    (a) Expansion or development financing

    (b) Permanent working capital

    (c) Financial feasibility

    (e) Environmental scanning

     P. T. O.

(f) Licensing

(g) Legal issues for new startup

(h) Uses of cash budget

(i) Competitor analysis

SECTION – B

UNIT – I

2. In the Indian context, explain the role that entrepreneurship has played in the economic development of the country.

3. Discuss the skill requirement and characteristics of a successful entrepreneur.

UNIT – II

4. While adjudging the viability of your proposed project, what factors you will take into consideration.

5. What is the purpose of feasibility test of a business idea ? Discuss the steps of feasibility test for your new business idea.

UNIT – III

6. What do you understand by the term 'working capital' ? Distinguish between Gross working capital and net working capital.

7. What are the steps in conducting market research ? What are the bases for market segmentation ?

UNIT – IV

8. Describe the institutional set up for entrepreneurial development in India.

9. Write notes on :

(a) Intellectual property rights,

(b) Trademarks.

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97550

M. Sc. Computer Science 2nd Semester
(Open Elective Course) w.e.f. 2016-17
Under CBCS Scheme
Examination – May, 2025

CYBER FORENSIC AND SECURITY

Paper : 16CSAO1

Time : Three Hours]   *[Maximum Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

प्रश्नों के उत्तर देने से पहले परीक्षार्थी यह सुनिश्चित कर लें कि उनको पूर्ण एवं सही प्रश्न-पत्र मिला है। परीक्षा के उपरान्त इस संबंध में कोई भी शिकायत नहीं सुनी जायेगी।

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

कुल *पाँच* प्रश्नों के उत्तर दीजिए। प्रश्न संख्या 1 *अनिवार्य* है। प्रत्येक इकाई से *एक* प्रश्न चुनकर *चार* अन्य प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं।

1. (a) How do malware and spyware differ ? $2 \times 8 = 16$

मैलवेयर और स्पाइवेयर में क्या अंतर है ?

(b) What are the implications of the Privacy Act in digital forensics ?

डिजिटल फोरेंसिक में गोपनीयता अधिनियम के क्या निहितार्थ हैं ?

(c) What is Cyber Security ?

साइबर सुरक्षा क्या है ?

(d) How does ethical hacking contribute to improving security measures ?

नैतिक हैकिंग सुरक्षा उपायों को बेहतर बनाने में कैसे योगदान देती है ?

(e) What are the common types of cyber threats ?

साइबर खतरों के सामान्य प्रकार क्या हैं ?

(f) What is meant by digital investigation ?

डिजिटल जांच से क्या अभिप्राय है ?

(g) Who are cyber security professionals ?

साइबर सुरक्षा पेशेवर कौन हैं ?

(h) How ISO standards help in cyber security ?

आईएसओ मानक साइबर सुरक्षा में कैसे मदद करते हैं ?

UNIT – I

इकाई – I

2. (a) What are the primary security threats to e-commerce platforms ? How do intruders and hackers exploit vulnerabilities ? Explain.   8

ई-कॉमर्स प्लेटफॉर्म के लिए प्राथमिक सुरक्षा खतरे क्या हैं ? घुसपैठिए और हैकर्स कमजोरियों का फायदा कैसे उठाते हैं ? व्याख्या कीजिए।

(b) How insider threats differ from external cyber threats ? Explain by giving examples of each.   8

अंदरूनी खतरे बाहरी साइबर खतरों से कैसे भिन्न हैं ? प्रत्येक का उदाहरण देकर व्याख्या कीजिए।

3. (a) What is Information System ? How do email and web-based threats impact Information Systems ? Explain.   8

सूचना प्रणाली क्या है ? ईमेल और वेब-आधारित खतरे सूचना प्रणाली को कैसे प्रभावित करते हैं ? समझाएँ।

(b) What are the potential consequences of the email and web-threats on sensitive data and operations within a company ? Explain. 8

किसी कंपनी के भीतर संवेदनशील डेटा और संचालन पर ईमेल और वेब-खतरों के संभावित परिणाम क्या हैं ? समझाएँ।

UNIT – II

इकाई – II

4. (a) What are the key principles of Cyber Security ? How do they apply to protecting business computer systems ? Explain. 8

साइबर सुरक्षा के प्रमुख सिद्धांत क्या हैं ? वे व्यावसायिक कंप्यूटर सिस्टम की सुरक्षा के लिए कैसे लागू होते हैं ? समझाएँ।

(b) What are biometric security systems ? How these help prevent data from being compromised ? Explain. 8

बायोमेट्रिक सुरक्षा प्रणाली क्या हैं ? ये डेटा को साझा होने से कैसे बचाते हैं ? समझाएँ।

5. (a) What do you mean by cyber forensics investigations ? How does Internet tracing help in this process ? Explain. 8

साइबर फोरेंसिक जांच से आपका क्या अभिप्राय है ? इस प्रक्रिया में इंटरनेट ट्रेसिंग कैसे मदद करती है ? समझाएँ।

(b) What is the role of wireless technologies in cyber forensics ? Also outline the challenges they present in detecting and mitigating threats. 8

साइबर फोरेंसिक में वायरलेस तकनीकों की क्या भूमिका है ? खतरों का पता लगाने और उन्हें कम करने में वे जो चुनौतियाँ पेश करते हैं, उन्हें भी रेखांकित करें।

UNIT – III

इकाई – III

6. (a) What are the different types of evidence in digital investigations ? How do volatile evidence and artifacts play a role in criminal cases ? Explain. 8

डिजिटल जांच में विभिन्न प्रकार के साक्ष्य क्या हैं ? आपराधिक मामलों में अस्थिर साक्ष्य और कलाकृतियाँ किस तरह की भूमिका निभाती हैं ? समझाएँ।

(b) What are the procedures for collecting and archiving digital evidences ? Explain the challenges in preventing contamination during the collection process. 8

डिजिटल साक्ष्यों को एकत्रित करने और संग्रहीत करने की प्रक्रियाएँ क्या हैं ? संग्रहण प्रक्रिया के दौरान संदूषण को रोकने में चुनौतियों की व्याख्या करें।

7. (a) How do the rules of evidence impact the admissibility of digital data in court ? Why is training essential for investigators ? Explain. 8

साक्ष्य के नियम अदालत में डिजिटल डेटा की स्वीकार्यता को कैसे प्रभावित करते हैं ? जांचकर्ताओं के लिए प्रशिक्षण क्यों आवश्यक है ? समझाएँ।

(b) What is the role of digital crime scene reconstruction in investigating cybercrime ? What are the key duties and competencies required for digital forensic professionals ? Explain. 8

साइबर अपराध की जाँच में डिजिटल अपराध स्थल पुनर्निर्माण की क्या भूमिका है ? डिजिटल फोरेंसिक पेशेवरों के लिए आवश्यक प्रमुख कर्त्तव्य और योग्यताएँ क्या हैं ? समझाएँ।

8. (a) What organizational roles are essential for effectively responding to cyber incidents ? What procedures should be followed during an incident response ? Explain. 8

साइबर घटनाओं का प्रभावी ढंग से जवाब देने के लिए कौन-सी संगठनात्मक भूमिकाएँ आवश्यक हैं ? किसी घटना की प्रतिक्रिया के दौरान किन प्रक्रियाओं का पालन किया जाना चाहिए ? समझाएँ।

(b) What is the reporting procedures and legal considerations that organizations must keep in mind while handling cyber incidents ? Explain. 8

साइबर घटनाओं को संभालते समय संगठनों को किन रिपोर्टिंग प्रक्रियाओं और कानूनी विचारों को ध्यान में रखना चाहिए ? समझाएँ।

9. (a) How are cyber security standards ? How do these help in the management of cyber crimes and the protection of digital assets ? Explain. 8

साइबर सुरक्षा मानक कैसे हैं ? ये साइबर अपराधों के प्रबंधन और डिजिटल संपत्तियों की सुरक्षा में कैसे मदद करते हैं ? समझाएँ।

(b) What is the impact of Cyber Laws in India ? How do these help in safeguarding IPRs in cyberspace ? Explain. 8

भारत में साइबर कानूनों का क्या प्रभाव है ? ये साइबरस्पेस में बौद्धिक संपदा अधिकारों की सुरक्षा में किस प्रकार सहायक हैं ? स्पष्ट कीजिए।

Roll No. ....

97550

M. Sc. Computer Science 2nd Semester
(Elective Courses) Programmes Under
CBCS Scheme
Examination – May, 2024
CYBER FORENSIC AND SECURITY
Paper : 16CSAO1

Time : Three Hours]   [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. *Compulsory question :*

   (a) What is the need of digital forensics in information security ?

   (b) Briefly explain insider attacks.

   (c) Give *two* ways of password hacking.

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(d) Differentiate physical evidence and digital evidence with suitable example for each.

(e) What is the role of Court-of-Law in cyber forensics ?

(f) Explain CIA triad.

(g) How Spyware is different from Adware ?

(h) Define ethical hacking.

UNIT – I

2. What is digital information system ? How digital information can be protected using information security mechanisms ? Also discuss how computer security, network security and information security can be affected ?

3. Explain how human errors can become vulnerable and biggest threat to information security without malicious purpose. Discuss some variants of vulnerabilities, threats and attacks with proper examples for each. Give any *two* cyber-crimes to E-commerce.

UNIT – II

4. Define cyber forensics. What is the role of intrusion detection system in cyber forensics ? Discuss various principles of cyber security. How Pitfalls can be avoided using firewalls ?

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5. Discuss the importance of cryptography to protect digital evidence. List some types of cryptographic techniques. Also draw and illustrate the process of information security using cryptography using anyone cryptographic technique. Also define the role of biometric security systems in cyber forensics.

UNIT – III

6. Draw information hacking process cycle. Identify various classes of hackers which can create risks for digital information as well as which can be beneficial for crime investigation. What are various obstacles in various steps of cyber forensics ?

7. Define digital evidence in cyber forensics. Draw and explain various steps of cyber forensics. Explain various actions involved in the collection of digital evidence in a cyber-crime case.

UNIT – IV

8. What are intellectual properties issued in a cyberspace ? Explain in detail the roles and responsibilities of police, law enforcement, and judiciary. Also discuss the procedure of report writing.

97550-600-(P-4)(Q-9)(24)   (3)   P. T. O.

9. What is cyber law ? How much it is effective in India ? Explain copyright act, privacy act and patent law and their roles in jurisdiction. Explain the purpose of IT Act, 2000.