Seat No		Question Paper Code	WU24VII-423

WALCHAND INSTITUTE OF TECHNOLOGY, SOLAPUR
An Autonomous Institute affiliated to PAH Solapur University, Solapur

Information Technology
Final Year B. Tech. Sem-VII 2024-25 (CBCS pattern)
End Semester Examination

Course: Professional Elective- III- Big Data Analytics **Max. Marks:** 60 **SET:** S
Course Code : 21ITU7E42T
Day and Date: Monday 02/12/2024 **Time:** 02.30 pm to 05.30 pm

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary.
3. Draw neat sketches wherever necessary.
4. Q.1 should be solved in first 30 minutes and answers should be written only on the first page of answer book.
5. Supplements will not be provided.
6. Use of nonprogrammable calculator is permitted.

Q. No	Sub Que		Marks
1		**Multiple Choice Questions**	12
	i.	Running a _____ program involves running mapping tasks on many or all of the nodes in our cluster. a) MapReduce b) Map c) Reducer d) All of the mentioned	
	ii.	Point out the correct statement. a) MapReduce tries to place the data and the compute as close as possible b) Map Task in MapReduce is performed using the Mapper() function c) Reduce Task in MapReduce is performed using the Map() function d) All of the mentioned	
	iii.	Hive also support custom extensions written in _____ a) C# b) Java c) C d) C++	
	iv.	Apache HBase is a non-relational database modeled after Google's _____ a) BigTop b) Bigtable c) Scanner d) FoundationDB	

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	v.	Which of the following class provides access to configuration parameters? a) Config b) Configuration c) OutputConfig d) None of the mentioned	
	vi.	HBase is a distributed _____ database built on top of the Hadoop file system. a) Column-oriented b) Row-oriented c) Tuple-oriented d) None of the mentioned	
	vii.	Hive uses _____ for logging. a) logj4 b) log4l c) log4i d) log4j	
	viii.	Which of the following function is used to read data in PIG? a) WRITE b) READ c) LOAD d) None of the mentioned	
	ix.	Pig operates in mainly how many nodes? a) Two b) Three c) Four d) Five	
	x.	How many formats of SequenceFile are present in Hadoop I/O? a) 2 b) 3 c) 4 d) 5	
	xi.	Hadoop I/O Hadoop comes with a set of _____ for data I/O. a) Methods b) commands c) classes d) none of the mentioned	
	xii.	A _____ serves as the master and there is only one Name Node per cluster. a) Data Node b) Name Node c) Data block d) Replication	

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Course Code : 21ITU7E42T **Max. Marks:** 60 **SET:** S
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Q. No	Sub Que		Marks
Q.2		**Attempt any *Four***	12
	i.	What is a Big data? What are the features Big data?	
	ii.	What are the techniques of Analysing Data with Hadoop?	
	iii.	Illustrate with example how Hadoop Streaming works.	
	iv.	What are the different types of Digital data?	
	v.	Write a short note on Apache Hadoop?	
Q.3		**Attempt any *Two***	12
	i.	Demonstrate Hadoop file system interfaces in HDFS(Hadoop Distributed File System).	
	ii.	What is DFS? Why we need DFS? Elaborate in detail with example.	
	iii.	What is Hadoop? What are the important Features of HDFS(Hadoop Distributed File System)?	

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Q.4		**Attempt any *Four***	12
	i.	What are the key differences between Hive and Pig?	
	ii.	How is Apache Pig different from MapReduce?	
	iii.	What are the major components of a Pig execution environment?	
	iv.	Explain the different complex data types in Pig.	
	v.	What is UDF in Hive? Illustrate in detail?	
Q.5		**Attempt any *Two***	12
	i.	What is HBASE? Give the difference Between Hbase and Hive.	
	ii.	Differentiate between Supervised Learning and Unsupervised Learning.	
	iii.	Illustrate with example : Big Data Analytics with BigR.	

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Information Technology
Final Year B. Tech. Sem-VII 2024-25 (CBCS pattern)
End Semester Examination

Course: CYBER SECURITY **Max. Marks:** 60 **SET:Q**
Course Code: 21ITU7CC1T
Day and Date: Monday 25/11/2024 **Time:** 02:30 pm to 5:30 pm

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary.
3. Draw neat sketches wherever necessary.
4. Q.1 should be solved in first 30 minutes and answers should be written only on the first page of answer book.
5. Supplements will not be provided.
6. Use of nonprogrammable calculator is permitted.

Q. No	Sub Que		Marks
1		**Multiple Choice Questions**	12
	i.	Which security service ensures that the sender of a message cannot deny having sent the message? A) Confidentiality B) Integrity C) Authentication D) Non-repudiation	
	ii.	Which term describes the method or pathway used by cybercriminals to infiltrate a system? A) Social engineering B) Attack vector C) Cyber Stalking D) Cyber defense	
	iii.	Which classification of cybercrime involves manipulating individuals to gain access to confidential information? A) Phishing B) Malware attack C) Social engineering D) Denial-of-service attack	
	iv.	What is SQL Injection primarily used for in cybercrime? A) To steal data from databases by inserting malicious SQL queries B) To mask the identity of the attacker C) To damage physical hardware D) To create a backup of the database	

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	v.	Which of the following is a technique where text is hidden within an image or audio file? A) Steganography B) Transposition C) Substitution D) Hashing	
	vi.	How does cloud computing pose potential risks for cyber offenses? A) It increases hardware storage capacity B) It centralizes data, making it an attractive target for attackers C) It allows offline access to sensitive information D) It restricts access to data on personal devices	
	vii.	Which of the following terms best describes an individual who uses digital technology to exploit or steal information? A) White-hat hacker B) Cybercriminal C) Security Analyst D) Forensic Expert	
	viii.	Which of the following is NOT considered a security attack? A) Interruption B) Interception C) Encryption D) Fabrication	
	ix.	Which type of attack involves exploiting vulnerabilities in mobile applications to gain unauthorized access to sensitive data? A) Phishing B) Mobile application malware C) SQL Injection D) Buffer Overflow	
	x.	Which amendment to the Indian IT Act was introduced to address issues like cyber terrorism and data protection? A) IT Act Amendment 2000 B) IT Act Amendment 2008 C) IT Act Amendment 2015 D) IT Act Amendment 2020	
	xi.	What is the primary purpose of a phishing attack? A) To protect a user's identity online B) To create an encrypted password C) To trick individuals into revealing sensitive information D) To perform software updates	
	xii.	Which of the following best describes an attack that targets mobile devices by sending malicious links through SMS or instant messaging? A) Vishing B) Smishing C) Pharming D) Whaling	

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Final Year B. Tech. Sem-VII 2024-25 (CBCS pattern)

End Semester Examination

Course: CYBER SECURITY **Max. Marks:** 60 **SET:**Q

Course Code: 21ITU7CC1T

Day and Date: Monday 25/11/2024 **Time:** 02:30 pm to 5:30 pm

Instructions:

1. All questions are compulsory.
2. Assume suitable data wherever necessary.
3. Draw neat sketches wherever necessary.
4. Q.1 should be solved in first 30 minutes and answers should be written only on the first page of answer book.
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Q. No	Sub Que		Marks
Q.2		**Attempt any *Four***	12
	i.	Differentiate Substitution techniques and transposition techniques.	
	ii.	Using the Caesar Cipher with a shift of 4, decode the given ciphertext to reveal the original plaintext message. Ciphertext: "DVMXIQIRX"	
	iii.	Explain the model for network security and illustrate it with a diagram.	
	iv.	Define a replay attack and explain how it works, using a diagram to illustrate the process.	
	v.	Describe Symmetric Cipher Model.	
Q.3		**Attempt any *Two***	12
	i.	How do viruses get disseminated? Explain with diagram.	
	ii.	Discuss the concept of social cyber stalking. What are its potential consequences for victims?	
	iii.	Define botnets and their role in facilitating cybercrime. How do they contribute to the scale and impact of cyber offenses?	

Question Paper Code	WU24VII-421

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Q.4		**Attempt any *Four***	12
	i.	What are proxy servers and anonymizers, and how do they assist cybercriminals in maintaining anonymity on the internet?	
	ii.	Differentiate Trojan Horses and Backdoors.	
	iii.	What are common attack vectors, and how can organizations secure their wireless communications.	
	iv.	What are the various forms of phishing attacks, and what steps can individuals take to protect themselves from such threats?	
	v.	Identify and explain three common types of cyber-attacks targeting mobile phones. What precautions can users take to protect their devices from these attacks?	
Q.5		**Attempt any *Two***	12
	i.	Describe Cyber Bullying .How does the Indian legal framework address cyber bullying and harassment? Discuss the relevant sections of the IT Act and other applicable laws.	
	ii.	Discuss Section 66 of the IT Act, which addresses hacking and other cyber offenses. How does the law define hacking, and what penalties are prescribed?	
	iii.	Describe the significance of Section 67 of the IT Act. What are the legal implications for individuals or entities involved in such activities?	

Seat No		Question Paper Code	WU24VII-424

WALCHAND INSTITUTE OF TECHNOLOGY, SOLAPUR
An Autonomous Institute affiliated to PAH Solapur University, Solapur

Information Technology
Final Year B. Tech. Sem-VII 2024-25 (CBCS pattern)
End Semester Examination

Course: Generative AI
Course Code: 21TU7CC2T **Max. Marks:** 60 **SET:** P
Day and Date: Friday 06/12/2024 **Time:** 02:30 pm to 05:30 pm

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary.
3. Draw neat sketches wherever necessary.
4. Q.1 should be solved in first 30 minutes and answers should be written only on the first page of answer book.
5. Supplements will not be provided.
6. Use of nonprogrammable calculator is permitted.

Q. No	Sub Que		Marks
1		**Multiple Choice Questions**	12
	i.	What is the main goal of Generative AI? A) To analyse existing data B) To create new data or content C) To sort data into categories D) To compress data	
	ii.	What is a common ethical concern associated with Generative AI? A) Data integrity B) Creation of realistic but fake content C) Data loss D) Increased computational power	
	iii.	What does the standard deviation measure in a data set? A) The average value B) The central tendency C) The spread of the values around the mean D) The frequency of occurrence	
	iv.	What is the primary purpose of using Bayes' theorem in AI? A) To reduce dimensionality B) To update probabilities based on new evidence C) To perform clustering D) To improve sorting algorithms	
	v.	Which type of learning algorithm is used when the output labels are not known? A) Unsupervised learning B) Supervised learning C) Reinforcement learning D) Semi-supervised learning	

Seat No		Question Paper Code	

	vi.	Which framework is known for its dynamic computational graphs? A) PyTorch B) Scikit-learn C) TensorFlow D) Keras
	vii.	Which type of generative model uses a probabilistic approach to encode and decode data? A) VAE B) GAN C) SVM D) K-means clustering
	viii.	What is the role of the generator in a GAN? A) To generate new data B) To classify data C) To evaluate data authenticity D) To preprocess data
	ix.	What is a critical aspect of responsible AI innovation? A) Prioritizing speed over accuracy B) Ensuring transparency and accountability C) Ignoring ethical concerns D) Focusing solely on technical improvements
	x.	How is Generative AI used in the entertainment industry. A) To manage inventory B) To automate accounting C) To forecast weather D) To generate realistic special effects
	xi.	Which application is a common use case for sequence-to-sequence models in NLP? A) Sentiment analysis B) Machine translation C) Image classification D) Object detection
	xii.	What is the key feature of the Transformer architecture that sets it apart from RNNs? A) Convolutional layers B) Sigmoid activation C) Recurrent layers D) Self-attention mechanism

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WALCHAND INSTITUTE OF TECHNOLOGY, SOLAPUR
An Autonomous Institute affiliated to PAH Solapur University, Solapur

Information Technology
Final Year B. Tech. Sem-VII 2024-25 (CBCS pattern)
End Semester Examination

Course: Generative AI **Max. Marks:** 60 **SET:** P
Course Code: 21TU7CC2T
Day and Date: Friday 06/12/2024 **Time:** 02:30 pm to 05:30 pm

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary.
3. Draw neat sketches wherever necessary.
4. Q.1 should be solved in first 30 minutes and answers should be written only on the first page of answer book.
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6. Use of nonprogrammable calculator is permitted.

Q. No	Sub Que		Marks
Q.2		**Attempt any four.**	12
	i.	Elaborate the concept of deepfakes and discuss how Generative AI is used to create them	
	ii.	Illustrate how does Generative AI contribute to advancements in creative fields such as art and music?	
	iii	Elaborate the ethical concerns associated with Generative AI? Provide examples to illustrate these concerns.	
	iv.	Illustrate any two major applications of Generative AI used in different industries.	
	v	Differentiate between AI and Generative AI	
	vi	Write short note on Generative model.	
Q.3			12
	i.	Apply the concept of Bayes' Theorem to a diagnostic test scenario: Assume there's a disease affecting 2% of the population. A diagnostic test for this disease has a sensitivity (true positive rate) of 95% and a specificity (true negative rate) of 90%. If a person tests positive, calculate the probability that they actually have the disease.	
	ii.	Use linear regression to predict future values based on the following data points X= [1,2,3,4,5] and Y=[2,3,5,4,6] Calculate the linear regression line and predict the value of y when x=6.	
	iii.	A sample of 40 students is taken to estimate the average test score of a larger population. The sample mean score is 78, and the sample standard deviation is 10. Construct a 95% confidence interval for the population mean score.	

Question Paper Code	WU24VII-KUA

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Q.4		**Attempt any 4.**	12
	i.	Elaborate the concept of cross-validation in machine learning. How does cross-validation help in building robust models? Describe one commonly used cross-validation technique.	
	ii.	Give details of overfitting in machine learning, and how can it be prevented?	
	iii.	Illustrate the role of activation functions in neural networks.	
	iv	Describe the backpropagation algorithm and its importance.	
	v	Illustrate the evaluation metrics, and why are they crucial in machine learning?	
Q.5			12
	i.	Design a Generative AI-based system for real-time language translation in a multilingual conference setting. Outline the components and steps required to implement this system, including data collection, model selection, training, and deployment.	
	ii.	Apply the principles of Generative AI to develop a system for personalized content generation on social media platforms. Describe the process of collecting user data, training the model, generating content, and ensuring the ethical use of the system.	
	iii.	Create a Generative AI framework to enhance cybersecurity through the generation of realistic phishing email scenarios for training purposes. Detail the steps involved in collecting data, designing the generative model, generating training scenarios, and evaluating the effectiveness of the system.	

Seat No		Question Paper Code	WU24VII-422

	v.	Which of the following mechanisms requires participants to "burn" a portion of their cryptocurrency to validate blocks? a. Proof of Stake b. Proof of Activity c. Proof of Deposit d. Proof of Burn
	vi.	Which of the following is a significant limitation of Bitcoin as a currency? a. Lack of privacy features b. Limited scalability c. Complex transaction fees d. Limited international acceptance
	vii.	What is the primary purpose of a Merkle tree in blockchain? a. To increase the number of transactions in each block b. To verify transactions efficiently by using hash pointers c. To store user identity information d. To create digital signatures
	viii.	What is the purpose of Bitcoin scripts in transactions? a. To enable multi-signature transactions and other conditions for spending bitcoins b. To encrypt all transaction data c. To allow mining without computational work d. To store user information on the blockchain
	ix.	In Ethereum, smart contracts are primarily written and executed using which programming language? a. Python b. Solidity c. Java d. Rust
	x.	Which of the following best defines a blockchain? a. A centralized database with limited access b. A distributed ledger that records transactions across many computers c. A digital currency used for online payments d. A collection of documents stored on a single server
	xi.	Which of the following is NOT a common application of blockchain? a. Supply chain management b. Digital voting systems c. Cloud-based document storage d. Cryptocurrencies
	xii.	Which type of blockchain is used when multiple organizations jointly control and operate the network? a. Public blockchain b. Private blockchain c. Consortium blockchain d. Hybrid blockchain

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Seat No		Question Paper Code	WU24VII-422

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Information Technology
Final Year B. Tech. Sem-VII 2024-25 (CBCS pattern)
End Semester Examination

Course: Professional Elective-II- Blockchain Technology **Max. Marks:** 60 **SET:** Q
Course Code: 21ITU7EN33T
Day and Date: Friday 29/11/2024 **Time:** 02.30 pm to 05.30 pm

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary.
3. Draw neat sketches wherever necessary.
4. Q.1 should be solved in first 30 minutes and answers should be written only on the first page of answer book.
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Q. No	Sub Que		Marks
Q.2		**Attempt any *Four***	12
	i.	What is blockchain, and how does it function as a distributed ledger?	
	ii.	What is the difference between a public blockchain and a private blockchain?	
	iii.	Identify and explain the primary types of blockchain: public, private, and consortium?	
	iv.	How does a distributed system contribute to the reliability of blockchain networks?	
	v.	Discuss the key properties of P2P systems and how they differ from client-server architectures?	
Q.3		**Attempt any *Two***	12
	i.	Demonstrate how hash pointers are used in blockchain to create a chain of blocks. Why are they important in ensuring data integrity?	
	ii.	Describe how digital signatures work to ensure transaction authenticity in blockchain systems. Illustrate with an example?	
	iii.	Illustrate the process of storing and using bitcoins in a Bitcoin wallet. How would you secure these stored bitcoins against unauthorized access?	

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Q.4		**Attempt any *Four***	12
	i.	Explain how Proof of Storage works and describe one scenario where it is useful?	
	ii.	What are some limitations of Bitcoin in terms of scalability and transaction speed, and how do they affect its usability as a currency?	
	iii.	Describe the purpose of smart contracts. How do they differ from traditional contracts?	
	iv.	Compare Bitcoin's architecture with Ethereum's stack. How does each support different use cases?	
	v.	Describe the consensus mechanism used in Ethereum. How does it ensure that transactions on the network are valid and secure?	
Q.5		**Attempt any *Two***	12
	i.	How would you implement a consortium blockchain for a financial organization? Describe the roles and benefits of using a consortium in this context?	
	ii.	Describe how blockchain could be used to streamline data management in large industries, such as manufacturing or logistics?	
	iii.	Illustrate the steps for developing and deploying a distributed application (DApp) using Hyperledger for a specific industry, such as finance or healthcare?	