R3677

Sub. Code
551301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Computer Science

ADVANCED WEB TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective questions by choosing the correct option.

1. What is the purpose of the alt attribute in an <img> tag? (CO1, K1)

   (a) To specify the image source

   (b) To specify the image width and height

   (c) To provide alternative text for the image

   (d) To specify the image border

2. What is the purpose of the type of operator in JavaScript? (CO1, K1)

   (a) To check the type of a variable

   (b) To check the value of a variable

   (c) To declare a variable

   (d) To define a function

3. What is the purpose of a constructor in a PHP class? (CO2, K1)

(a) To initialize object properties

(b) To destroy an object

(c) To extend a class

(d) To implement an interface

4. What is the purpose of the mysqli_query() function in PHP? (CO2, K1)

(a) To connect to a database

(b) To select a database

(c) To execute a SQL query

(d) To close a database connection

5. What is the purpose of the <?xml> declaration in an XML document? (CO3, K1)

(a) To specify the document type

(b) To specify the character encoding

(c) To specify the XML version

(d) To specify the document structure

6. What is the purpose of the json_encode() function in PHP when working with AJAX? (CO3, K1)

(a) To encode a PHP array as a JSON string

(b) To decode a JSON string as a PHP array

(c) To parse an XML document

(d) To validate an XML document

7. What is the purpose of the require function in Node.js? (CO4, K1)

(a) To delete a module

(b) To export a module

(c) To create a new module

(d) To import a module

8. What is the purpose of the npm init command? (CO4, K1)

(a) To delete a package

(b) To create a new package

(c) To update a package

(d) To list all packages

9. What is the command used to create a new Angular project? (CO5, K1)

(a) ng new (b) ng init

(c) ng create (d) ng setup

10. How do parent and child components communicate with each other in Angular? (CO5, K1)

(a) Using services (b) Using events

(c) Using pipes (d) Using templates

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Describe the difference between inline, block and inline-block elements in HTML. (CO1, K3)

Or

(b) Describe how to use JSX in React Native. Provide examples. (CO1, K3)

12. (a) Explain the concept of interfaces in PHP. Describe how they are used to define a contract for classes. (CO2, K2)

Or

(b) What is the purpose of SQL queries in PHP? Provide examples of different types of SQL queries. (CO2, K2)

13. (a) What is the purpose of the xml_parser_create( ) function in PHP? (CO3, K2)

Or

(b) Describe the role of the XMLHttpRequest object in AJAX. (CO3, K3)

14. (a) Write a simple Node.js program that prints "Hello World" to the console. (CO4, K2)

Or

(b) Describe the process of sending an email using Node.js. Explain how to use the node mailer module. (CO4, K3)

15. (a) Describe the advantages of using TypeScript in Angular development. (CO5, K3)

Or

(b) Describe the process of configuring routes in an Angular application. (CO5, K3)

Part C

$(5 \times 8 = 40)$

Answer **all** the questions not more than 1000 words each.

16. (a) Discuss the different types of CSS styles. (CO1, K3)

Or

(b) Explain how to create and use components in React Native app and provide examples. (CO1, K2)

17. (a) What is the purpose of the final keyword in PHP? Explain with an example. (CO2, K1)

Or

(b) Describe the difference between GROUP BY and HAVING clauses in SQL. Provide examples. (CO2, K3)

18. (a) Create a simple XML document that describes a person, including their name, age, and address. (CO3, K5)

Or

(b) Describe the process of using the XML DOM to parse an XML document and extract specific data. (CO3, K3)

19. (a) Explain the difference between built-in modules and external modules in Node.js. (CO4, K2)

Or

(b) Explain the concept of database connections in Node.js. (CO4, K2)

20. (a) Explain the role of the declarations array in an Angular module. (CO5, K2)

Or

(b) How do you communicate between parent and child components in Angular? (CO5, K5)

R3678

Sub. Code
551302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Computer Science

IOT AND ROBOTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective type questions
by choosing the correct option.

1. What is the primary role of IoT in digital transformation? (CO1, K1)

   (a) To reduce the need for internet connectivity

   (b) To connect physical devices and enable data sharing

   (c) To improve internet speed

   (d) To store large amounts of data in cloud storage

2. Which of the following is NOT a key challenge faced by IoT systems? (CO1, K1)

   (a) Security and privacy concerns

   (b) Scalability of devices

   (c) Limited use of sensors

   (d) Data interoperability across platforms

3. Which of the following best describes the role of sensors in the Internet of Things (IoT)? (CO2, K1)

(a) Sensors are used for processing data.

(b) Sensors convert physical parameters into digital data for transmission.

(c) Sensors are responsible for sending control signals to actuators.

(d) Sensors ensure the security of IoT networks.

4. Which IEEE standard is commonly used for low-power, short-range communication in IoT devices? (CO2, K1)

(a) IEEE 802.11

(b) IEEE 802.3

(c) IEEE 802.15.4

(d) IEEE 802.16

5. Which of the following is a key advantage of using the Internet Protocol (IP) in IoT networks? (CO3, K1)

(a) Enhanced data encryption

(b) Scalability and interoperability

(c) Improved network topology

(d) Reduced power consumption

6. What is the primary challenge faced by constrained nodes in IoT networks? (CO3, K1)

(a) Limited bandwidth

(b) Limited memory and processing power

(c) Inability to communicate with the cloud

(d) Security vulnerabilities

7. What is the primary difference between automation and robotics? (CO4, K1)

(a) Automation focuses on task repetition, while robotics focuses on human-like interaction.

(b) Robotics involves physical movement and control, while automation does not.

(c) Automation is used only in manufacturing, while robotics is used in all industries.

(d) Automation is only concerned with hardware, while robotics is software-based.

8. Which of the following is considered one of the earliest robots in the field of automation? (CO4, K1)

(a) ASIMO (b) Unimate

(c) Roomba (d) R2-D2

9. What is the main function of a robot drive system? (CO5, K1)

(a) To provide energy to the robot

(b) To control the robot's movement and speed

(c) To handle the robot's tasks and operations

(d) To process the sensor data for the robot

10. Which of the following factors most affects a robot's precision of movement? (CO5, K1)

(a) The quality of the robot's sensors

(b) The software used to program the robot

(c) The mechanical structure and actuators of the robot

(d) The amount of power supplied to the robot

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Explain the genesis of IoT and its evolution over time. (CO1, K2)

Or

(b) Discuss how IoT is driving digitization across industries. (CO1, K3)

12. (a) Explain the role of IEEE 802.15.4 standard in IoT networks and how it supports low-power, low-data-rate communication. (CO2, K2)

Or

(b) What are the main components of an IoT system, and how do sensors and actuators work together to perform tasks in an IoT environment? (CO2, K2)

13. (a) Explain the advantages of using Internet Protocol (IP) as the network layer for IoT communication. (CO3, K2)

Or

(b) Describe the challenges faced by constrained nodes in IoT networks and discuss the impact on performance. (CO3, K3)

14. (a) Explain the difference between automation and robotics and give examples of each. (CO4, K2)

Or

(b) Discuss the key milestones in the history of robotics and automation. (CO4, K3)

15. (a) Explain the role of a robot's drive system and how it impacts the robot's overall performance. (CO5, K2)

Or

(b) Describe the different types of control systems used in robotics and how they affect dynamic performance. (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each

16. (a) Discuss the IoT network architecture and design, highlighting its components and their roles in building a robust IoT system. (CO1, K4)

Or

(b) Explain the IoT architecture and its functional stack, focusing on each layer's role and importance in an IoT ecosystem. (CO1, K3)

17. (a) Discuss the different IoT access technologies and how they differ in terms of range, power consumption, and data rate. (CO2, K3)

Or

(b) Explain the security challenges in IoT networks and discuss the measures that can be implemented to enhance IoT security. (CO2, K3)

18. (a) Discuss the different versions of the Internet Protocol (IPv4 and IPv6) and explain why IPv6 is considered more suitable for IoT networks. (CO3, K4)

Or

(b) Analyze the importance of optimizing IP for IoT networks, specifically focusing on the role of 6LoWPAN and other related protocols. (CO3, K5)

19. (a) Discuss the evolution of robotics from its inception to the present day, highlighting key technological advancements and milestones. (CO4, K4)

Or

(b) Examine the robotics market and the future prospects of robotics, including key industries driving growth. (CO4, K5)

20. (a) Explain the working principles behind robot drive systems, including their types and the advantages and disadvantages of each. (CO5, K3)

Or

(b) Describe the programming and working control mechanisms used in robotics, and how they ensure efficient task performance. (CO5, K4)

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R3679

Sub. Code
551303

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Computer Science

DATA ANALYTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which of the following is a characteristic of a cloud-based data repository? (CO1, K1)

   (a) High upfront costs

   (b) Limited scalability

   (c) Enhanced security

   (d) On-demand provisioning

2. What is the primary benefit of a cloud-based analytical architecture? (CO1, K1)

   (a) Increased security

   (b) Improved scalability

   (c) Enhanced collaboration

   (d) Reduced costs

3. What is the primary goal of data discovery? (CO2, Kl)

(a) To identify patterns in the data

(b) To build a predictive model

(c) To understand the distribution of the data

(d) To visualize the data

4. What is the primary goal of model building? (CO2, K1)

(a) To evaluate the performance of a model

(b) To define the scope and objectives of the modeling project

(c) To build a predictive model

(d) To select the modeling technique

5. What is the fundamental concept in Bayesian modeling? (CO3, K1)

(a) Bayes' theorem

(b) Maximum likelihood estimation

(c) Least squares estimation

(d) Regression analysis

6. What is the purpose of rule induction in data analysis? (CO3, K1)

(a) To identify patterns and relationships in data

(b) To make predictions about future outcomes

(c) To identify casual relationships between variables

(d) To evaluate the goodness of fit of a model

7. What is the primary characteristic of competitive learning in neural networks? (CO4, K1)

(a) Each neuron competes with others to represent the input data

(b) Each neuron cooperates with others to represent the input data

(c) The network is trained using a supervised learning algorithm

(d) The network is trained using an unsupervised learning algorithm

8. Which of the following is a type of stochastic search method? (CO4, K1)

(a) Simulated annealing

(b) Genetic algorithms

(c) Particle swarm optimization

(d) All of the above

9. Which of the following is a benefit of stream computing? (CO5, K1)

(a) Improved data quality

(b) Increased processing speed

(c) Enhanced data security

(d) Reduced storage costs

10. What is the primary goal of a Realtime Analytics Platform (RTAP)? (CO5, K1)

(a) To process data in batch mode

(b) To analyze data in real-time

(c) To store data in a relational database

(d) To visualize data in a dashboards

Part B (5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Classify the different types of data available in data analytics. (CO1, K1)

Or

(b) Discuss different characteristics of data. (CO1, K1)

12. (a) Explain Drivers in big data. (CO2, K2)

Or

(b) Discuss about model building. (CO2, K2)

13. (a) Explain multivariate analysis in detail. (CO3, K2)

Or

(b) Discuss about nonlinear dynamics. (CO3, K2)

14. (a) Explain about extracting Fuzzy models from data. (CO4, K2)

Or

(b) Explain supervised learning in detail. (CO4, K2)

15. (a) Discuss about stream concepts. (CO5, K4)

Or

(b) Explain sampling data in a stream. (CO5, K4)

Part C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Explain about current analytical architecture.

(CO1, K1)

Or

(b) Discuss about analyst perspective on data analytics.

(CO1, K1)

17. (a) Explain about data preparation in detail. (CO2, K2)

Or

(b) Brief notes on operationalize. (CO2, K2)

18. (a) Explain about inference and Bayesian networks.

(CO3, K2)

Or

(b) Discuss about linear systems analysis. (CO3, K2)

19. (a) Explain about Fuzzy decision trees in detail.

(CO4, K2)

Or

(b) Explain in detail about principal component analysis. (CO4, K2)

20. (a) Explain about stream computing in detail. (CO5, K4)

Or

(b) Discuss about Real time analytics platform (RTAP) applications. (CO5, K4)

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R3680

Sub. Code
551304

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Computer Science

DEEP LEARNING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective type questions by choosing the correct option.

1. In backpropagation, how is the error propagated through the network? (CO1, K1)

   (a) The error is sent backward to adjust weights to minimize loss.

   (b) The error is ignored as it does not affect the results.

   (c) The error is passed along the layers, but no adjustments are made.

   (d) The error is used to update the input data directly.

2. Which of the following is a characteristic of a perceptron model? (CO1, K1)

   (a) It uses multiple hidden layers to process data.

   (b) It is limited to binary classification problems.

   (c) It uses the sigmoid activation function for outputs.

   (d) It is designed to handle complex tasks like object recognition.

3. Which type of neural network is best suited for processing sequential data, such as time series or natural language? (CO2, K1)

(a) Convolutional Neural Networks (CNNs)

(b) Recurrent Neural Networks (RNNs)

(c) Recursive Neural Networks

(d) Fully Connected Neural Networks

4. What is the key difference between a Recurrent Neural Network (RNN) and a Deep Recurrent Network? (CO2, K1)

(a) A Deep Recurrent Network uses fewer layers than an RNN.

(b) A Deep Recurrent Network has multiple layers of RNNs to capture more complex patterns.

(c) An RNN has no hidden layers, while a Deep RNN does.

(d) Deep Recurrent Networks are only suitable for image data.

5. How does regularization help in training a neural network? (CO3, K1)

(a) By making the model overfit the training data

(b) By preventing the model from learning too much from the noise in the data, improving generalization

(c) By removing layers from the network

(d) By increasing the number of neurons in each layer

6. What is the main function of an autoencoder in neural networks? (CO3, K1)

(a) To encode categorical data into numerical values

(b) To reconstruct the input data after compressing it into a lower-dimensional representation

(c) To classify data into categories

(d) To make predictions on new, unseen data

7. What is the key feature of Bidirectional Recurrent Neural Networks (BRNNs)? (CO4, K1)

(a) They process the input sequence only in one direction.

(b) They use multiple layers of RNNs to capture complex patterns.

(c) They process the input sequence in both forward and backward directions to capture context from past and future inputs.

(d) They are used exclusively for image processing.

8. What distinguishes a Deep Recurrent Network from a standard RNN? (CO4, K1)

(a) It only processes short-term dependencies.

(b) It has multiple layers of RNNs stacked on top of each other, allowing it to model more complex patterns.

(c) It does not use backpropagation for training.

(d) It is exclusively used for classification tasks.

9. What is the main function of Generative Adversarial Networks (GANs) in deep learning? (CO5, K1)

(a) To detect objects in images

(b) To generate new, realistic images from random noise

(c) To perform sentiment analysis on text

(d) To segment objects in videos

10. Which deep learning method is best suited for analyzing sentiment or opinion in text, often used in opinion mining? (CO5, K1)

(a) Named Entity Recognition (NER)

(b) Opinion Mining with Recurrent Neural Networks (RNNs)

(c) Sentence Classification using Convolutional Neural Networks (CNNs)

(d) Parsing and Sentiment Analysis using Recursive Neural Networks

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Explain the working of a perceptron. (CO1, K2)

Or

(b) What is neural network explain in detail. (CO1, K2)

12. (a) Define Convolution in deep learning and explain it. (CO2, K2)

Or

(b) Discuss about recurrent and recursive nets. (CO2, K3)

13. (a) Explain about Back propagation in detail. (CO3, K2)

Or

(b) Discuss about Regularization. (CO3, K3)

14. (a) Describe the key components of an RNNs architecture. (CO4, K3)

Or

(b) Explain about Gated RNNs. (CO4, K2)

15. (a) Explain about image segmentation in detail. (CO5, K2)

Or

(b) Explain about automatic image captioning. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Describe the different layers in a typical neural network. (CO1, K4)

Or

(b) What is feed forward neural network. Explain in briefly. (CO1, K4)

17. (a) Explain about Transfer learning in detail. (CO2, K3)

Or

(b) Explain about deep recurrent network in detail. (CO2, K3)

18. (a) Discuss about structure of a feed forward neural network. (CO3, K4)

Or

(b) Discuss about auto encoders in detail. (CO3, K4)

19. (a) Explain in detail about recursive neural network. (CO4, K3)

Or

(b) Discuss the concept of bidirectional RNNs. (CO4, K4)

20. (a) Explain about automatic image captioning in detail. (CO5, K3)

Or

(b) Discuss about opinion mining using recurrent neural network. (CO5, K4)

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R3681

Sub. Code
551507

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Computer Science

Elective : CYBER SECURITY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the objective type questions by choosing the correct option.

1. The Indian IT Act of 2000 (ITA 2000) addresses which of the following? (CO1, K1)

   (a) Financial crimes in traditional banking systems

   (b) The legal framework for electronic commerce and cybercrimes

   (c) International trade laws

   (d) Laws governing physical crimes only

2. From a global perspective, which of the following is a common threat associated with cybercrimes? (CO1, K1)

   (a) Physical theft of property

   (b) Online identity theft and data breaches

   (c) Decrease in internet usage

   (d) Increased financial stability of nations

3. What is the role of botnets in cybercrimes? (CO2, K1)

(a) They help secure the internet from attacks

(b) They are networks of infected computers used to carry out large-scale attacks

(c) They monitor online activity for security purposes

(d) They prevent unauthorized access to websites

4. How does cloud computing pose a unique risk to cybersecurity? (CO2, K1)

(a) It creates stronger firewalls for websites

(b) It provides better protection against phishing

(c) It stores sensitive data remotely, making it vulnerable to data breaches and attacks

(d) It increases the speed of internet connections

5. What is one of the key challenges posed by mobile devices regarding cybersecurity? (CO3, K1)

(a) Devices have limited battery life

(b) Mobile devices often lack adequate security measures and can be easily compromised

(c) Mobile devices are rarely used for internet browsing

(d) Encryption on mobile devices is often too complex to implement

6. Which of the following is a measure that organizations can adopt to secure mobile devices within their infrastructure? (CO3, K1)

(a) Use of physical looks for mobile devices

(b) Establishing strict security policies and monitoring device access

(c) Limiting employee access to mobile devices

(d) Ignoring remote wipe capabilities for lost devices

7. Which of the following is a malicious software that records keystrokes to capture passwords or sensitive information? (CO4, K1)

(a) Trojan Horses

(b) Keyloggers

(c) Buffer Overflow

(d) Spyware

8. What cybercrime technique involves embedding malicious code within harmless files or images? (CO4, K1)

(a) SQL Injection

(b) Steganography

(c) Virus and Worms

(d) Phishing

9. What is one of the major challenges faced by Indian law in combating cybercrime? (CO5, K1)

(a) The lack of technological innovation

(b) Difficulty in keeping pace with rapidly evolving cyber threats

(c) Insufficient number of IT professionals

(d) Lack of awareness among students

10. Which of the following would be considered a consequence of not addressing weaknesses in the Information Technology Act in India? (CO5, K1)

(a) Increased unemployment in the tech industry

(b) Growth in the number of cybercrimes and online frauds

(c) Higher educational standards for cybersecurity professionals

(d) Reduced internet connectivity

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Explain origins of the word cyber crimes and information security. (CO1 K2)

Or

(b) Explain about cybercriminals. (CO1, K2)

12. (a) How criminals plan to attacks? (CO2, K2)

Or

(b) Discuss about social engineering (CO2, K3)

13. (a) Explain about trends in mobility in cyber security. (CO3, K2)

Or

(b) Discuss about security challenges posed by mobile devices. (CO3, K3)

14. (a) Explain Phishing in detail. (CO4, K2)

Or

(b) Explain about Steganography. (CO4, K2)

15. (a) Explain about legal perspectives in detail. (CO5, K2)

Or

(b) Discuss about Indian context. (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) What are the different classifications of cybercrimes? Explain. (CO1, K2)

Or

(b) What are the essential survival mantras for netizens to stay safe online? (CO1, K2)

17. (a) Explain about cloud computing. (CO2, K3)

Or

(b) Explain the fuel for cybercrime in detail. (CO2, K3)

18. (a) What are the registry settings and configurations for securing mobile devices? Explain. (CO3, K3)

Or

(b) What are the key aspects of authentication service security and how can it be ensured? (CO3, K3)

19. (a) "How can password cracking techniques be applied to break passwords and what methods are used?" (CO4, K4)

Or

(b) How do viruses and worms differ in their mechanisms of spreading and causing damage, and what are the implications of these differences in cybersecurity? (CO4, K4)

20. (a) Explain about Indian IT Act. (CO5, K4)

Or

(b) Discuss about cyber security certifications. (CO5, K4)

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