R4500

Sub. Code
25MSD2C1

M.Voc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Software Development

PRINCIPLES OF COMPUTER NETWORKS & CYBER SECURITY

(CBCS – 2025 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. A computer network is defined as _____ (CO1, K1)

   (a) A single computer system

   (b) Two or more computers connected for sharing resources

   (c) Internet only

   (d) A programming language

2. _____ layer in the OSI model is responsible for transmitting raw bits over a physical medium (CO1, K1)

   (a) Data Link Layer

   (b) Physical Layer

   (c) Transport Layer

   (d) Network Layer

3. The primary function of the data link layer is to _____ (CO2, K1)

(a) Transmit raw bits over the medium

(b) Provide error-free delivery of frames

(c) Define IP addresses

(d) Encrypt data

4. Sliding window protocols are mainly used to _____ (CO2, K2)

(a) Provide routing information

(b) Control flow and ensure reliable data transfer

(c) Encrypt packets

(d) Detect collisions in wireless networks

5. The primary function of the network layer is to _____ (CO3, K1)

(a) Provide error-free delivery of frames

(b) Determine the best path for data from source to destination

(c) Encrypt data

(d) Manage flow control

6. Network congestion can be controlled using _____ (CO3, K2)

(a) Sliding window protocol

(b) Congestion control algorithms

(c) Checksum

(d) Flowcharts

7. Network security primarily ensures _____ (CO4, K1)

(a) Faster data transmission

(b) Data confidentiality, integrity, and availability

(c) Increased network size

(d) Better user interface

8. Vulnerabilities in a network are _____ (CO4, K1)

(a) Potential weaknesses that can be exploited

(b) Encryption methods

(c) Firewalls

(d) Network routers

9. In cryptography, the original readable message is called _____ (CO5, K1)

(a) Cipher text

(b) Plain text

(c) Hash

(d) Key

10. Which cryptography process converts cipher text back to plain text? (CO5, K2)

(a) Hashing

(b) Encryption

(c) Decryption

(d) Signing

Part B (5 × 5 = 25)

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

11. (a) Define a computer network and explain its uses in real-world applications. (CO1, K1)

Or

(b) Describe service primitives and their role in communication between layers. (CO1, K2)

12. (a) Discuss the design issues in the data link layer. (CO2, K2)

Or

(b) How does Petri networks used as data link protocols? Explain. (CO2, K1)

13. (a) Explain the design issues of the network layer in detail. (CO3, K4)

Or

(b) What is congestion control? Discuss anyone algorithms to prevent congestion. (CO3, K2)

14. (a) Differentiate between active and passive attacks. (CO4, K4)

Or

(b) Discuss in detail about Threats with example. (CO4, K2)

15. (a) Compare plain text and cipher text with example. (CO5, K3)

Or

(b) Illustrate encryption and decryption process in symmetric key cryptography. (CO5, K2)

Part C (5 × 8 = 40)

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

16. (a) Illustrate OSI reference model and discuss its functions in detail. (CO1, K2)

Or

(b) What are the transmission Medias used in computer network? Explain. (CO1, K4)

17. (a) Explain about sliding window protocols with neat sketch. (CO2, K4)

Or

(b) Describe error detection and correction techniques in detail. (CO2, K2)

18. (a) Explain in detail about any two routing algorithm (CO3, K4)

Or

(b) Describe proactive and reactive congestion control mechanisms and algorithms in detail (CO3,K2)

19. (a) Explain the fundamental concepts of network security including goals, services and mechanisms. (CO4, K4)

Or

(b) Illustrate network security model with neat structure. (CO4, K2)

20. (a) Explain the concept of substitution techniques in detail. (CO5, K4)

Or

(b) Discuss the roles of encryption, key management, and authentication. (CO5, K2)

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R4501	Sub. Code 25MSD2C2

M.Voc. DEGREE EXAMINATION, APRIL – 2026

Second Semester

Software Development

DATA SCIENCE AND BIG DATA ANALYTICS

(CBCS – 2025 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 best defines data science? (CO1, K2)

   (a) Study of data storage

   (b) Study of algorithms only

   (c) Extracting insights and knowledge from data

   (d) Creating computer networks

2. Data wrangling refers to _____. (CO1, K1)

   (a) Storing data in databases

   (b) Cleaning, transforming, and preparing data for analysis

   (c) Creating machine learning models

   (d) Visualizing data only

3. Which of the following is considered a source of big data? (CO2, K2)

(a) Social media platforms

(b) Spreadsheets only

(c) Printed books

(d) Manual logs

4. One major limitation of conventional data processing systems is _____ (CO2, K2)

(a) Cannot handle unstructured data efficiently

(b) Too many CPUs

(c) Too much storage

(d) Simple queries

5. _____ type of machine learning uses labeled data to train models. (CO3, K2)

(a) Unsupervised Learning

(b) Supervised Learning

(c) Reinforcement Learning

(d) Semi-supervised Learning

6. Semi-supervised learning is used when _____. (CO3, K1)

(a) All data is labeled

(b) No data is labeled

(c) Only some data is labeled

(d) Data is structured

7. Which of the following is a type of digital data? (CO4, K2)

(a) Structured data

(b) Semi-structured data

(c) Unstructured data

(d) All of the above

8. Hadoop Streaming is used for _____. (CO4, K1)

(a) Real-time video streaming

(b) Writing MapReduce programs in languages other than Java

(c) Sending data over HTTP

(d) Streaming Apache Spark jobs

9. The primary purpose of HDFS is to _____ (CO5, K1)

(a) Store small files efficiently

(b) Store and manage very large files across a distributed cluster

(c) Replace relational databases

(d) Encrypt data in transit

10. Flume and Scoopare primarily used for _____ (CO5, K1)

(a) Data compression

(b) Data ingestion into Hadoop

(c) Data visualization

(d) File serialization

Part B (5 × 5 = 25)

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

11. (a) Describe in detail about the evolution of data from raw data to modern data science. (CO1, K2)

Or

(b) Explain data wrangling and its significance in preparing data for analysis. (CO1, K4)

12. (a) Describe the characteristics of Bigdata. (CO2, K2)

Or

(b) Discuss the 6Vs of big data and its significance. (CO2, K2)

13. (a) How to predict new observations in machine learning? Explain. (CO3, K3)

Or

(b) Compare supervised, unsupervised, and semi-supervised learning. (CO3, K3)

14. (a) Illustrate the types of digital data and their relevance in big data analytics. (CO4, K4)

Or

(b) How to analyze data with Unix tools? Explain. (CO4, K4)

15. (a) Illustrate the design of HDFS and its importance in big data storage. (CO5, K5)

Or

(b) Explain data flow in HDFS and the process of data ingestion using Flume and Scoop. (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Explain how data science differs from traditional data analysis. (CO1, K4)

Or

(b) Explain the key steps involved from data capture to knowledge generation. (CO1, K4)

17. (a) Describe the challenges faced by conventional systems in handling large datasets. (CO2, K2)

Or

(b) Discuss the components of big data ecosystem and the role of data science within the ecosystem. (CO2, K2)

18. (a) Illustrate the machine learning modeling process with key steps in detail. (CO3, K3)

Or

(b) Describe in detail about exploratory data analysis with examples. (CO3, K3)

19. (a) Discuss big data analytics and its importance in modern business and research. (CO4, K4)

Or

(b) How Hadoop streaming allows data processing with non-Java languages. Provide a practical example. (CO4, K4)

20. (a) Illustrate the architecture of HDFS in detail. (CO5, K2)

Or

(b) Explain how data ingest into Hadoop using Flume and Scaoop. (CO5, K4)

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R4969

Sub. Code
2MS4G1

M.Voc. DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Software Development

PRINCIPLES OF DIGITAL MARKETING

(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. _____ is the primary advantage of digital advertising over traditional advertising (CO1,K2)
   (a) Higher cost
   (b) Difficult tracking
   (c) Real-time analytics and precise targeting
   (d) Limited reach

2. _____ type is best for large businesses with high traffic websites (CO1,K2)
   (a) Shared Hosting
   (b) Virtual Private Server (VPS)
   (c) Dedicated Hosting
   (d) Free Hosting

3. _____ form of social media allows real-time engagement with users (CO2, K1)
   (a) Blogs (b) Live streaming
   (c) Podcasts (d) E-books

4. _____ metric is used to measure the effectiveness of an email marketing campaign (CO2,K1)

(a) Page views

(b) Bounce rate

(c) Click-through rate (CTR)

(d) Domain authority

5. _____ tool is commonly used for monitoring online reputation (CO3,K4)

(a) Google Alerts (b) Adobe Photoshop

(c) Microsoft Word (d) Canva

6. _____platform is widely used for business reputation management (CO3,K4)

(a) LinkedIn (b) Google My Business

(c) Snapchat (d) Telegram

7. Which of the following is a well-known payment service provider? (CO4, K1)

(a) Google Pay (b) PayPal

(c) Paytm (d) All of the above

8. _____ standard is commonly used for securing online transactions (CO4, K1)

(a) HTTPS (b) HTTP

(c) FTP (d) SMTP

9. _____ is a key characteristic of a creative organization (CO5, K3)

(a) Strict hierarchy

(b) Encouraging experimentation

(c) Avoiding risks

(d) Discouraging failures

10. Which of the following best describes an experiment in innovation? (CO5, K3)

(a) Testing ideas in a real-world scenario

(b) Avoiding risks and changes

(c) Copying competitors' strategies

(d) Following rigid processes

Part B (5 × 5 = 25)

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

11. (a) Why is strategic thinking important in digital marketing? (CO1, K2)

Or

(b) Describe the role of a website in the digital marketing ecosystem. (CO1, K2)

12. (a) What are the key benefits of email marketing for businesses? (CO2, K1)

Or

(b) How do businesses use social media dashboards? (CO2, K1)

13. (a) What are the key strategies for managing online reputation? (CO3, K4)

Or

(b) What factors make an affiliate marketing program successful? (CO3, K4)

14. (a) Explain the role of payment service providers (PSPs) in online transactions. (CO4, K2)

Or

(b) How do trademarks help in protecting brand identity? (CO4, K2)

15. (a) What are some common myths about creativity? (CO5, K3)

Or

(b) What is the role of experimentation in innovation? Explain. (CO5, K3)

Part C (5 × 8 = 40)

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

16. (a) How can business leverage websites to improve digital marketing success? Explain. (CO1, K2)

Or

(b) What are the best practices for creating an effective website for digital marketing? Explain. (CO1, K2)

17. (a) Discuss the evolution of email marketing and its impact on business communication. (CO2, K5)

Or

(b) Discuss the impact of social media engagement on brand reputation. (CO2, K1)

18. (a) Discuss the importance of Online Reputation Management (ORM) for businesses. (CO3, K4)

Or

(b) How does affiliate marketing impact digital business models? (CO3, K4)

19. (a) Explain the legal challenges in digital payments and intellectual property rights. (CO4, K2)

Or

(b) How do payment gateways ensure security in digital transactions? (CO4, K2)

20. (a) Describe the process of design thinking and its role in innovation. (CO5, K3)

Or

(b) What are some real-world examples of businesses that succeeded through creativity and innovation? (CO5, K3)

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R4970	Sub. Code
	2MS4G2

M.Voc DEGREE EXAMINATION, APRIL – 2026

Fourth Semester

Software Development

FUNDAMENTALS OF INDUSTRY 4.0 AND 3D PRINTING

(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. _____ is the role of predictive analytics in Industry 4.0 (CO1,K2)

   (a) Reducing costs by anticipating machine failures

   (b) Making manual work more efficient

   (c) Eliminating automation in industries

   (d) None of the above

2. _____ introduced the concept of Industry 4.0 (CO1, K2)

   (a) USA (b) Japan

   (c) Germany (d) China

3. What differentiates Industrial Internet of Things (IIoT) from IoT? (CO2, K3)

(a) IIoT focuses only on consumer applications

(b) IIoT is applied in industrial settings for automation and monitoring

(c) loT is only used for robotics

(d) There is no difference between loT and IIoT

4. _____ is a key enabler of predictive analytics in Industry 4.0 (CO2, K3)

(a) Typewriters

(b) Big Data and Machine Learning

(c) Coal Mining

(d) Manual Forecasting

5. Which technology enables real-time monitoring in CPS? (CO3, K4)

(a) Blockchain

(b) Edge computing

(c) Traditional networking

(d) Handwritten reports

6. _____ is the primary role of collaborative robots (Cobots) (CO3 K4)

(a) Replace all human workers in factories

(b) Work alongside humans to improve efficiency and safety

(c) Perform only manual repetitive tasks

(d) Operate in isolation without human interaction

7. What is the key advantage of metal 3D printing? (CO4, K5)

(a) Creates hollow objects

(b) Allows complex geometries and strong structures

(c) Produces only plastic parts

(d) Uses only traditional metals

8. Which country has made significant advancements in metal 3D printing technology? (CO4, K5)

(a) USA (b) Germany

(c) China (d) All of the above

9. In 3D printing, the purpose of the slicing process is _____ (CO5, K5)

(a) To cut the model into separate parts

(b) To prepare the model by dividing it into printable layers

(c) To add colors to the 3D model

(d) To increase the strength of the final object

10. Which of the following is NOT a type of 3D printing technology? (CO5, K5)

(a) Fused Deposition Modeling (FDM)

(b) Selective Laser Sintering (SLS)

(c) Digital light Processing (DLP)

(d) Lathe Machining

Part B (5 × 5 = 25)

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

11. (a) What are the major drivers and enablers of Industry 4.0? (CO1, K2)

Or

(b) Compare traditional factories with Industry 4.0 factories. (CO1, K2)

12. (a) Define the Internet of Things (loT) and explain its role in Industry 4.0. (CO2, K3)

Or

(b) What are the major components of Smart Manufacturing? (CO2, K3)

13. (a) Differentiate between Industrial Robots and Collaborative Robots (Cobots). (CO3, K4)

Or

(b) Explain the role of cyber security in Industry 4.0. (CO3, K4)

14. (a) Define 3D printing and explain its basic working principle. (CO4, K5)

Or

(b) What are the major milestones in 3D printing technology? (CO4, K5)

15. (a) What is Time Compression Engineering (TCE) and how does it relate to rapid prototyping? (CO5, K5)

Or

(b) Define Rapid Prototyping (RP) and its significance in modern manufacturing. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Compare Industry 4.0 in the USA, Europe, and China. (CO1, K2)

Or

(b) Explain the importance of predictive analytics in smart manufacturing. (CO1, K2)

17. (a) Explain the role of IoT, IIoT. and IoS in shaping Industry 4.0 with relevant examples. (CO2, K3)

Or

(b) How do Smart Cities leverage digital transformation to improve infrastructure, transportation and governance? (CO2, K3)

18. (a) Explain Cyber-Physical Systems (CPS) and their applications in Industry 4.0. (CO3, K4)

Or

(b) Explain the role of Mobile Computing in Industry 4.0. (CO3, K4)

19. (a) Discuss the role of computers and CAD technology in 3D Printing. (CO4, K5)

Or

(b) What are hybrid 3D printing systems, and how do they enhance manufacturing? (CO4, K5)

20. (a) Discuss the historical evolution of 3D printing technology and its impact on modern manufacturing. (CO5, K5)

Or

(b) Classify the efficient types of Rapid Prototyping processes and explain their working principles. (CO5, K5)

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