BCA CTIS 2nd Re/Library

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3678

TBCA/M-25

COMPUTER NETWORKS

Paper : BCA-CTIS-201

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *five* questions in all. Question Number 1 is compulsory. In addition to compulsory questions, attempt *four* more questions selecting *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. Answer any *four* of the following questions in brief :

(i) List and explain the concept of communication modes in networking.

(ii) Compare and contrast workgroup and domain-based networking models.

(iii) Explore the functions of a Channel Service Unit/Data Service Unit (CSU/DSU) in a telecommunications network.

(iv) List any *two* benefits of wireless technology in networking.

(v) What is the role of the Internet Control Message Protocol (ICMP) in network communication?

(vi) List and describe the purpose of any one common hardware troubleshooting tool used by network technicians.

UNIT–I

2. Describe the different types of topologies and the transmission media used in these topologies in networking.

3. How does the TCP/IP model differ from the OSI model in terms of structure, functionality, and layering?

UNIT–II

4. Explain the process of installing and configuring network devices such as hubs, switches, bridges, routers, and gateways. What are the primary functions of each device, and how do they differ in terms of operation and use cases?

5. Explain the Ethernet standards with their features. Also, describe any one wireless security protocol used to secure wireless networks.

UNIT–III

6. Bring out the major points of distinction between IPv4 and IPv6 and explain the subnetting process in IPv4 addressing and its significance in network management.

7. (a) Discuss the differences between routing and switching in terms of their functions. How do routers and switches complement each other in network infrastructure?

(b) How do ISPs facilitate connectivity between end users and the global internet infrastructure?

UNIT–IV

8. (a) Explain the importance of authentication and authorization in network security and how do they control access to network resources.

   (b) Discuss the steps involved in troubleshooting network and internet connectivity issues.

9. (a) Describe the different types of security threats faced by computer networks.

   (b) What are the common hardware troubleshooting tools used by network technicians, and how do they help identify faulty components and hardware failures?

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TBCA/M-25 **3679**

DATA STRUCTURES

Paper–BCA-CTIS-202

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *five* questions in all. Question Number 1 is compulsory. In addition to the compulsory question, attempt four more questions selecting exactly one question from each unit. All questions carry equal marks.

Compulsory Question

1. (a) State major applications of data structures.

(b) How can you store the priority queue in computer memory?

(c) Comment on the basic operations on strings.

(d) Comment on the use of a threaded binary tree.

(e) State applications of B+ trees.

(f) What is an adjacency matrix? (6×2=12)

UNIT–I

2. (a) What are the various asymptotic notations? Explain each using a suitable example. 6

(b) How can you store a sparse matrix in computer memory? Explain using suitable examples. 6

3. (a) How can you find the complexity of an algorithm? Explain using suitable examples. 6

(b) Write an algorithm to check whether the input matrix is triangular or not. 6

UNIT–II

4. (a) Discuss the various ways to store strings in computer memory using suitable examples. 6

(b) Differentiate between arrays and linked lists. 6

5. (a) Write and explain an algorithm for evaluating a postfix expression. 6

(b) Discuss the various types of linked lists along with their memory representations. 6

UNIT–III

6. (a) Write and explain algorithms to delete an element from a simple queue and circular queue. 8

(b) Write an algorithm to search an element using linear search. 4

7. (a) Write and explain the algorithm to traverse a binary tree using inorder traversal. 6

(b) Write and explain the algorithm to sort the given data using insertion sort. 6

UNIT–IV

8. (a) How can you insert and delete elements in an B-tree? Explain using suitable examples for various conditions. 6

(b) Write and explain the algorithm for DFS. 6

9. (a) Write and explain the Dijkstra's algorithm. 6

(b) What is a minimum spanning tree? Write and explain an algorithm to find minimum spanning tree. 6

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3680

TBCA/M–25

INTRODUCTION TO CLOUD COMPUTING

Paper–BCA–CTIS–204

Time : 3 Hours] [Maximum Marks : 60

Note : Attempt **five** questions in all. Question No. **1** is compulsory. Attempt *four* more questions selecting **one** question from each unit.

Compulsory Question

1. Answer the following questions in brief: (4×3=12)

   (a) Define cloud computing. Explain disadvantages of cloud computing.

   (b) What is CDN? Explain in brief.

   (c) What is AWS? Explain any three key features of AWS.

   (d) How does Service-Oriented Architecture (SOA) complement cloud computing principles?

UNIT–I

2. What are different cloud computing deployment modes? Discuss each with its pros and cons. (12)

3. (a) What is data center? Discuss different components of a data center. (6)

(b) Write a short note on Cloud security. (6)

UNIT–II

4. (a) How can you evaluate SaaS from the perspective of user and vendor? Discuss. (6)

(b) What is SLA? Discuss different metrics of SLA. (6)

5. (a) What is PaaS? Give examples of PaaS. How is it different from IaaS? (6)

(b) Discuss about data protection and IaaS security in Cloud. (6)

UNIT–III

6. (a) Discuss different services provided by Microsoft Azure in brief. (6)

(b) Explain the key features of AWS Greengrass. (6)

7. (a) Discuss seven-step model of migrating to cloud. (6)

(b) How can you measure and mitigate risks involved in migrating to cloud? Explain. (6)

UNIT–IV

8. (a) How does virtualization technology contribute to the scalability and flexibility of cloud computing? Explain. (6)

(b) How do different cloud vendors differentiate themselves in terms of services and capabilities? Explain. (6)

9. (a) What are the key cost drivers and factors that influence the economic benefits of migrating to the cloud? (6)

(b) What factors should organizations consider when developing a cloud migration strategy? Explain. (6)

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3681

TBCA/M-25

WEB DESIGNING–II

Paper : BCA-CTIS-205

Time : Three Hours] [Maximum Marks : 60

Note : Question Number 1 is compulsory. Attempt *four* more questions, selecting *one* question from each unit.

Compulsory Question

1. (a) What is event handling in JavaScript?

(b) What are hidden fields in HTML?

(c) Define static variable in PHP. How it is different from local variable?

(d) What is mysqli_multi_query()? (4×3=12)

UNIT–I

2. Describe the control flow statements in JavaScript. Write a program using switch statement. (12)

3. (a) Explain the working of jQuery effects: .hide(), .show(), .fadeIn(), and .fadeOut(). (6)

(b) What is the DOM in the context of jQuery? (6)

UNIT–II

4. Explain various PHP operators with examples. (12)

5. (a) Describe the steps to install PHP on a Windows system using XAMPP. (6)

   (b) Write a program using a function in PHP that calculates factorial. (6)

UNIT–III

6. Write a single PHP file that includes both HTML form and the PHP code to process it. Explain the process. (12)

7. What are PHP sessions? Write a program that starts a session, sets a session variable, and accesses it on another page. (12)

UNIT–IV

8. Explain the steps to establish a connection between PHP and a MySQL database. Write the necessary PHP code for it. (12)

9. Write a complete PHP script for a login form that checks user credentials stored in a MySQL database. (12)

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3682

TBCA/M-25

INTRODUCTION TO INFORMATION SECURITY

Paper : BCA-CTIS-207

Time : Three Hours] [Maximum Marks : 60

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

Compulsory Question

1. (a) How has the definition of security evolved with the rise of digital technology and cyber threats? 3

   (b) How does authentication differ from authorization, and why is it critical to get both right in secure systems? 3

   (c) What is the function of a firewall in network security, and how does it filter incoming and outgoing traffic? 3

   (d) What are the key components of a risk assessment process? Discuss. 3

UNIT–I

2. (a) How does the growing dependence on digital infrastructure increase the necessity for robust security measures? 6

(b) How do terms like "threat", "vulnerability", and "risk" differ in the context of information security? 6

3. What is the security-functionality-ease of use triangle, and how do these three aspects influence each other in system design? Explain. 12

UNII–II

4. (a) What is account authorization, and how does it ensure that users only access resources they are permitted to use? 6

(b) How can organizations implement effective privilege management systems to secure sensitive data and critical operations? 6

5. What is hashing? What is the purpose of hashing in cybersecurity, and how is it used in password protection and data integrity? Explain. 12

UNIT–III

6. (a) What are the common password cracking techniques and how can users defend against them? 6

(b) What methods can be used to detect and prevent key-logger attacks on personal and enterprise devices? 6

7. (a) How do malware and spyware differ in their methods and objectives, and what are some common signs of infection? 6

(b) How can malicious changes to the Windows Registry compromise system security, and how can users monitor and protect it? 6

UNIT–IV

8. (a) What are the major threats to Local Area Network security, and how can they be mitigated using network policies and hardware solutions? 6

(b) What are the common threats associated with email communication and how can users and organizations secure email systems? 6

9. (a) How is penetration testing different from vulnerability assessment, and what is its role in proactive security management? 6

(b) What is meant by a vulnerability in cybersecurity, and how do software flaws and configuration errors contribute to it? 6

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3683

TBCA/M-25

DATABASE MANAGEMENT SYSTEM

Paper : BCA-CTIS-208

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *five* questions in all, selecting *one* question from each unit. Question No. 1 is compulsory.

Compulsory Question

1. (a) Define Data, Record, Schema and instance.

(b) Discuss Responsibilities of DBA.

(c) Define Entity and its types.

(d) Define Primary Key, Foreign Key, Secondary Key and Super Key.

UNIT–I

2. Define Data base, its components and Major features.

3. (a) Explain External, Conceptual and Internal Levels.

(b) Write note on Data independence and schema.

UNIT–II

4. Explain Relational Model and discuss its properties.

5. Explain Normalization from 1NF to BCNF.

UNIT–III

6. What is ER-Diagram? Explain ER diagram for Library Management system.

7. Explain with example :
Difference, Intersection, Select, Project and Join with types of Join as well.

UNIT–IV

8. Explain components of SQL and give at least 3 commands for each.

9. Explain using a program, control structures of PL/SQL.

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3684

TBCA/M-25

ENVIRONMENTAL STUDIES

Paper : BCA-CTIS-210

Time : Three Hours] [Maximum Marks : 40

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

Compulsory Question

1. Write short notes on the following :

(a) Sustainable development.
(b) Food chains and food web.
(c) Desertification.
(d) Dams.
(e) Pollution.
(f) Global warming.
(g) Droughts.
(h) Chipko movement. (8×1=8)

UNIT–I

2. Write explanatory notes on :

(a) Types of ecosystems with examples.
(b) Ecological succession. (2×4=8)

3. Explain types, characteristic features, structure and function of aquatic ecosystem. (8)

UNIT–II

4. Explain different types of non-renewable energy resources and their environmental impacts. (8)

5. Describe the factors responsible for the loss of biodiversity. (8)

UNIT–III

6. Describe the causes, effects and control measures of air pollution. (8)

7. Explain the following :

   (a) Solid waste management.

   (b) Nuclear hazards and human health. (2×4=8)

UNIT–IV

8. Write down how we can reduce the effects of cyclones through disaster management. (8)

9. Describe the role of environmental communication and public awareness in environmental conservation with suitable examples. (8)

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2141

NBCA/M–25

OBJECT ORIENTED PROGRAMMING USING C++

Paper–B23–CAP/CTS/CAL/CDS–201

(CC–A2)

Time : 3 Hours] [Maximum Marks : 50

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

Compulsory Question

1. Differentiate between following :

   (i) Private and public member.

   (ii) Multiple and Multilevel Inheritance.

   (iii) Abstract and Virtual Class.

   (iv) Protected access specifier.

   (v) Run-Time and Compile-Time Polymorphism. (5×2=10)

UNIT–I

2. What are the formatted and unformatted input-output functions with appropriate examples? (10)

3. Differentiate between the following :

   (a) Structure and union.

   (b) Call by value and call by reference. (10)

UNIT–II

4. (a) Describe static data members and static member function with suitable example. (5)

   (b) What is Destructor? State different rules needed to be considered while defining a destructor for a given class. (5)

5. (a) Explain scope resolution operator and its significance with suitable example. (5)

   (b) What is Constructor Overloading? Explain with example program. (5)

UNIT–III

6. What is inheritance? Explain various types of inheritance with suitable example. (10)

7. What do you mean by operator overloading? Explain how binary operator is overloaded with suitable example. (10)

UNIT–IV

8. Explain the concept of Exception handling in C++ with suitable example. (10)

9. What is virtual function? Explain its significance. Write program in C++ using virtual function. (10)

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2142

NBCA/M-25

INTRODUCTION TO WEB TECHNOLOGIES

Paper : B23-CAP-202

(CC-B2)

(BCA)

Time : Three Hours] [Maximum Marks : 50

Note : Attempt *five* questions in all selecting *one* question from each unit. Question number 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Describe the process of linking external CSS and JavaScript files to an HTML document.

(b) Explain the purpose of the HTML <meta> tag.

(c) What do you understand by the universal selector in CSS?

(d) Write a note on client side validation using JavaScript.

UNIT–I

2. (a) Discuss the importance of keywords and metadata in search engine indexing and ranking algorithms.

(b) What is URL? Describe the purpose of each component of a URL.

3. (a) What is a web browser, and how does it function? Name some popular web browsers and describe their key features.

(b) Write a note on evolution of WWW.

UNIT–II

4. (a) How can you merge cells in an HTML table? Provide examples.

(b) Describe the purpose of form attributes such as action and method in HTML forms.

5. (a) Explain the purpose of an ordered list in HTML. How does it differ from an unordered list? Illustrate.

(b) Describe the process of creating hyperlinks in HTML. How do you create internal and external links?

UNIT–III

6. (a) Describe the difference between content-box and border-box values for the box-sizing property. When would you use each?

(b) Explain the difference between inline, internal, and external CSS.

7. (a) What is the difference between class and id selectors in CSS? Illustrate.

(b) What are pseudo-classes and pseudo-elements in CSS? Discuss.

UNIT–IV

8. (a) Describe the role of the Document Object Model (DOM) in JavaScript. How do you manipulate HTML elements using JavaScript?

   (b) What is the difference between for in and for of loop in JavaScript? Discuss.

9. (a) Explain the difference between == and === operators in JavaScript.

   (b) Describe the purpose of functions in JavaScript. How do you define and call functions in JavaScript?

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2143

NBCA/M-25

CONCEPTS OF OPERATING SYSTEMS

Paper : B23-CAP/CTS/CAL/CDS-203

(CC-C2)

Time : Three Hours] [Maximum Marks : 50

Note : Question No. 1 is compulsory. In addition attempt *four* more questions, selecting at least *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. Attempt all the followings :

(a) Context Switching.

(b) Deadlock prevention.

(c) Swapping.

(d) First fit and Best fit.

(e) Acyclic- Graph Directory Structure. (5×2=10)

UNIT–I

2. What is an Operating System? Explain the concept of timesharing, distributed, network operating system in detail. (10)

3. (a) Write short note on system call and system program. (5)

(b) Define multiprogramming. How multiprogramming ensures effective utilization of main memory and CPU? (5)

UNIT–II

4. Consider the following set of processed that arrive at time 0, with the length of CPU Burst time (or run time) given in milliseconds.

Process	Burst Time	Priority
P1	8	3
P2	4	1
P3	5	4
P4	9	2

Calculate Average Waiting Time and Average Turnaround time for followings :

(a) Priority Scheduling.

(b) Round Robin Scheduling.

Consider time quantum of 5 milliseconds. (10)

5. Define deadlock. Explain Banker's algorithm using example. (10)

UNIT–III

6. What is Virtual Memory? Explain various page replacement policies in detail. (10)

7. Explain Followings :

(a) Critical Section problem. (5)

(b) Segmentation. (5)

UNIT–IV

8. What is disk scheduling? Explain any *four* disk scheduling algorithm with suitable example. (10)

9. Explain following in detail :

(a) Disk structure. (5)

(b) File protection mechanisms. (5)

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2144

NBCA/M-25

MATHEMATICAL FOUNDATIONS FOR

COMPUTER SCIENCE–II

Paper : B23-CAP-204

(CC-M2) (BCA)

Time : Three Hours] [Maximum Marks : 20

Note : Attempt *five* questions in all. Selecting at least *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) What is meant by frequency distribution and cumulative frequency distribution?

(b) What do you mean by dispersion?

(c) What is a scatter diagram?

(d) What is a regression coefficient? (4×1=4)

UNIT–I

2. Solve the integral $\int xe^x \, dx$. (4)

3. Explain Pie diagrams, Histograms, Frequency polygons, and Ogives. (4)

UNIT–II

4. The Median and Mode of the following wage distribution are known to be Rs. 33·50 and Rs. 34 respectively. Find the values f_3, f_4 and f_5.

Wages (in Rs.):	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Total
Frequency :	4	16	f_3	f_4	f_5	6	4	230

(4)

5. For a group of 200 candidates, the mean and standard deviation of scores were found to be 40 and 15 respectively. Later on, it was discovered that the scores 43 and 35 were misread as 34 and 53 respectively. Find the corrected mean and standard deviation corresponding to the corrected figures. (4)

UNIT–III

6. What is rank correlation? How can handle repeated ranks in this type of correlation? Obtain the rank correlation coefficient for the following data :

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

(4)

7. Discuss the various methods for finding the correlation using suitable examples. (4)

UNIT–IV

8. Find a linear regression equation for the following set of data :

X :	2	4	6	8
Y :	3	7	5	10

(4)

9. Fit a straight line of the form $Y = AX + B$ to the following data :

X :	0	5	10	15	20	25	30
Y :	10	14	19	25	31	36	39

(4)

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BAEC/M-25 **12723**

ENGLISH LANGUAGE AND COMMUNICATION SKILLS : LEVEL 2

Paper–B23–AEC–211

Time Allowed : 3 Hours] [Maximum Marks : 35

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

Compulsory Question

1. Attempt answers all the following :

   (i) What is Phonetics ?

   (ii) How many Consonants sounds are there in English Language ?

   (iii) What do you mean by Pitch ?

   (iv) Write two tips to boost confidence in Speaking.

   (v) Write a short note on Simple Past Tense.

   (vi) Write a sentence using Simple Present Tense.

   (vii) Which punctuation marks are used in the following sentence :

   He said, "Bravo! You did well."

UNIT–I

2. Transcribe any **14** words from the list given below :

Child, Mill, Gate, Wet, Book, Shoe, See, Life, Hurt, Please, Tight, Doubt, Circle, Thin, There, Women, Age.

For Blind Students only

Develop a story from the given hints :

A Wolf looked at a flock of sheep daily ..... dare not attack for fear of dogs ..... wolf plans ..... puts on sheep's skins ..... gets mixed up with the flock ..... sheep bleat ..... wolf tries to bleat ..... only howls ..... sinister wolf was detected ..... killed by dogs ..... greed leads us to destruction.

3. Describe Consonants Sounds in detail.

For Blind Students only

Develop a story from the given hints :

A farmer went to market ..... saw a goose ..... took home ..... lays golden eggs ..... farmer's wife becomes greedy ..... asks her husband to cut goose open ..... found no golden egg ..... farmer becomes sad ..... repented.

UNIT–II

4. Write dialogues between two friends regarding participation in a drama in Cultural event of their college.

5. What are disadvantages of Group discussion ?

UNIT–III

6. Punctuate the following sentences :

   (i) oh that's really great.

   (ii) sure why not.

   (iii) im an indian.

   (iv) where do you live.

   (v) his mother in law is a doctor.

   (vi) what a beautiful day.

   (vii) the children s playground is nearby

7. Describe the uses of Capital Letters with examples.

UNIT–IV

8. Describe Past tense and its uses in detail.

9. Fill in the blanks with correct form of verbs given in brackets.

   (i) Four plus four ..... eight. (make)

(ii) I ..... to Delhi tomorrow. (go)

(iii) Shakespeare ..... from 1564 to 1616. (live)

(iv) The Rajdhani express ..... at this station. (not stop)

(v) The sun ..... in the east. (rise)

(vi) Truth ..... no examination (fear)

(vii) The college ..... by the time we reach there. (close).

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PVAC/M-25 **12730**

HUMAN VALUES & ETHICS

Paper–B22–VAC–101

Time allowed : 3 Hours] [Maximum Marks : 35

Note : Attempt **five** questions in all, selecting **one** question from each unit. Question No. **9** is compulsory. All questions carry equal marks.

प्रत्येक इकाई से **एक** प्रश्न का चयन करते हुए, कुल **पाँच** प्रश्नों के उत्तर दीजिए। प्रश्न संख्या **9** अनिवार्य है। सभी प्रश्नों के अंक समान हैं।

UNIT–I (इकाई–I)

1. What is the respective relevance of skills, values and ethics in our lives?
   हमारे जीवन में कौशल, मूल्य और नैतिकता की प्रासंगिकता क्या है?

2. How can we attain harmony with self, society and nature?
   हम स्वयं, समाज और प्रकृति के साथ सामंजस्य कैसे प्राप्त कर सकते हैं?

UNIT–II (इकाई–II)

3. What is the notion of Brahmvihara and how is it relevant today?

ब्रह्मविहार की अवधारणा क्या है और यह आज कैसे प्रासंगिक है?

4. Which ethical theory is more relevant to you between deontology and utilitarianism and why?
कर्तव्य और उपयोगितावाद के बीच कौन सा नैतिक सिद्धांत आपके लिए अधिक प्रासंगिक है और क्यों?

UNIT–III (इकाई–III)

5. How can we understand personality through Panchakosha (five sheaths) of Upanishad?
हम उपनिषद के पंचकोश (पाँच आवरण) के माध्यम से व्यक्तित्व को कैसे समझ सकते हैं?

6. Can we differentiate 'happiness' from 'well-being'? Elaborate with an example.
क्या हम 'खुशी' और 'कल्याण' में अंतर कर सकते हैं? एक उदाहरण के साथ विस्तार से बताएँ।

UNIT–IV (इकाई–IV)

7. Analyze the urgency of sustainability and accountability as professional values?
पेशेवर मूल्यों के रूप में स्थिरता और जवाबदेही की तात्कालिकता का विश्लेषण कीजिए?

8. Write a short note on planning, communication and teamwork as core competencies.
मुख्य दक्षताओं के रूप में नियोजन, संचार और टीमवर्क पर एक संक्षिप्त टिप्पणी लिखिए।

Compulsory Question (अनिवार्य प्रश्न)

9. State whether following statements are True or False:
बताइए कि निम्नलिखित कथन सत्य हैं या असत्य:

(i) The content of Value Education includes teaching values such as compassion, honesty, empathy and integrity which contribute to character development and personal growth. (True/False)
मूल्य शिक्षा की विषय-वस्तु में करुणा, ईमानदारी, सहानुभूति और सत्यनिष्ठा जैसे मूल्यों को पढ़ाना शामिल है जो चरित्र विकास और व्यक्तिगत विकास में योगदान करते हैं। (सत्य/असत्य)

(ii) Moral Values are rigid and unchanging, unaffected by cultural norms or historical context. (True/False)
नैतिक मूल्य कठोर और अपरिवर्तनीय होते हैं, जो सांस्कृतिक मानदंडों या ऐतिहासिक संदर्भ से अप्रभावित होते हैं। (सत्य/असत्य)

(iii) Values play a minor role in shaping our behavior and decision–making, with external factors having a more significant impact. (True/False)
मूल्य हमारे व्यवहार और निर्णय लेने को आकार देने में एक छोटी भूमिका निभाते हैं, जबकि बाहरी कारक अधिक महत्वपूर्ण प्रभाव डालते हैं। (सत्य/असत्य)

(iv) Deontology asserts that moral duties and rules are subjective and can vary based on cultural context and individual beliefs. (True/False)

डीओन्टोलॉजी का दावा है कि नैतिक कर्तव्य और नियम व्यक्तिपरक हैं और सांस्कृतिक संदर्भ और व्यक्तिगत मान्यताओं के आधार पर भिन्न हो सकते हैं। (सत्य/असत्य)

(v) The significance of human values lies solely in their theoretical understanding, without practical implications in daily life. (True/False)

मानवीय मूल्यों का महत्व केवल उनकी सैद्धांतिक समझ में निहित है, दैनिक जीवन में व्यावहारिक निहितार्थों के बिना। (सत्य/असत्य)

(vi) Inclusiveness promotes diversity and ensures that all voices are heard, regardless of background, identity, or status. (True/False)

समावेशिता विविधता को बढ़ावा देती है और यह सुनिश्चित करती है कि पृष्ठभूमि, पहचान या स्थिति की परवाह किए बिना सभी आवाजें सुनी जाएँ। (सत्य/असत्य)

(vii) Brahmvihara (also known as the Four Immeasurables) includes virtues like loving–kindness, compassion, empathetic joy and equanimity. These qualities are cultivated to benefit oneself and others. (True/False)

ब्रह्मविहार (जिसे चार अपरिमेय भी कहा जाता है) में प्रेम-दया, करुणा, सहानुभूतिपूर्ण आनंद और समभाव जैसे गुण शामिल हैं। इन गुणों को स्वयं और दूसरों के लाभ के लिए विकसित किया जाता है। (सत्य/असत्य)

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

PSEC/M-25 13314

BUSINESS COMMUNICATION

Time : Three Hours] [Maximum Marks : 50

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. Attempt *four* more questions 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 चुनते हुए, अन्य **चार** प्रश्न कीजिए । सभी प्रश्नों के अंक समान हैं ।

Compulsory Question (अनिवार्य प्रश्न)

1. Write short notes on the following : **4×2.5=10**

(a) Diagonal communication

(b) Telegram

(c) Post script

(d) Visual aids.

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

(अ) विकर्ण संचार

(ब) टेलीग्राम

(स) पोस्ट स्क्रिप्ट

(द) दृश्य सहायताएँ ।

Unit I (इकाई I)

2. What types of barriers emerge in business communication ? How can these be minimized ? **10**

व्यावसायिक संचार में किस प्रकार की बाधाएँ आती हैं ? इन्हें कैसे कम किया जा सकता है ?

3. How does a grapevine operate in an organization ? How can its harmful effects be controlled ? **10**

किसी संगठन में अफवाह (ग्रेपवाइन) कैसे फैलती है ? इसके हानिकारक प्रभावों को कैसे नियंत्रित किया जा सकता है ?

Unit II (इकाई II)

4. Explain the format of report writing. What points to be taken care of while writing a good report ? **10**

रिपोर्ट लेखन के प्रारूप की व्याख्या कीजिए । एक अच्छी रिपोर्ट लिखते समय किन बातों का ध्यान रखना चाहिए ?

5. Differentiate between notice and circular. How notice is drafted in official communication ? 10

नोटिस और परिपत्र के बीच अंतर बताइये । आधिकारिक संचार में नोटिस कैसे तैयार किया जाता है ?

Unit III (इकाई III)

6. Explain the role of content, clarity of thought and its expression in group discussion. 10

समूह चर्चा में विषय-वस्तु, विचारों की स्पष्टता और उसकी अभिव्यक्ति की भूमिका की व्याख्या कीजिए ।

7. What are interview skills ? What considerations should be taken while self-introduction and panel addressing during interviews ? 10

साक्षात्कार कौशल क्या हैं ? साक्षात्कार के दौरान आत्म-परिचय और पैनल संबोधन करते समय किन बातों का ध्यान रखना चाहिए ?

Unit IV (इकाई IV)

8. What types of audio-visual aids can be used in business communication ? How their use can be made effective ? 10

व्यावसायिक संचार में किस प्रकार के दृश्य-श्रव्य साधनों का उपयोग किया जा सकता है ? उनका उपयोग कैसे प्रभावी बनाया जा सकता है ?

9. Which factors contribute towards successful interview ? Explain the important non-verbal aspects at the time of interview. **10**

सफल साक्षात्कार में कौनसे कारक योगदान करते हैं ? साक्षात्कार के समय महत्वपूर्ण गैर-मौखिक पहलुओं की व्याख्या कीजिए ।

BCA CTIS 4th Rel Lib.

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3685

TBCA/M-25

ETHICAL HACKING

Paper : BCA-CTIS-401

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *five* questions in all. Question Number 1 is compulsory. In addition to the compulsory question, attempt *four* more questions, selecting *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. Answer any *six* of the following questions in brief :

(i) What are the categories of exploits? Describe any *one* with example.

(ii) Name *one* international law that addresses cybercrime.

(iii) What does "target of evaluation" mean?

(iv) Differentiate between a threat and a vulnerability.

(v) Name *one* tool used for maintaining access.

(vi) What is a rootkit?

(vii) Name any *one* BRICS country other than India and state if ethical hacking is legal there.

(viii) What is the meaning of the term "mitigation"?

UNIT–I

2. Define ethical hacking and the primary objective of ethical hacking. Also, explain the different phases involved in an exploit carried out by a hacker.

3. (a) What is a zero-day vulnerability? Why is it considered dangerous in cybersecurity?

   (b) Explain how case studies help in understanding real-world hacking scenarios. Analyze one case in detail.

UNIT–II

4. (a) Define and differentiate between a hacker, a cracker, and an ethical hacker.

   (b) Describe the elements of security. How can hacking impact each of these elements?

5. Describe various scanning techniques used by ethical hackers. How do they help in identifying vulnerabilities? What is the role of open-source tools in scanning? Discuss any *two* tools.

UNIT–III

6. Explain the maintaining access phase in ethical hacking. Why is it important in a penetration test? How do attackers use Trojans to maintain access to a system?

7. Discuss the various methods used to cover tracks after a successful exploit. Explain the use of log cleaners and anti-forensics tools. How do they help attackers evade detection?

UNIT–IV

8. (a) Discuss the role of vulnerability tracking in managing cyber risks after penetration testing.

   (b) Discuss Section 65 and Section 66 of the IT Act, 2008.

9. (a) What are the essential components of a well-structured penetration testing report?

   (b) Explain the process of filing a cyber complaint for suspected hacking in India.

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TBCA/M-25

DIGITAL FORENSIC AND INVESTIGATION

Paper : BCA-CTIS-402

Time : Three Hours] [Maximum Marks : 60

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

Compulsory Question

1. (a) Name any *four* specific areas of digital forensic science. 2

(b) Briefly explain how computer forensic works? 2

(c) Name any *two* solid state storage devices and their uses. 2

(d) Is operating system forensic free? 2

(e) What is platter in a hard disk drive? 2

(f) What are Trojan Horses viruses? 2

UNIT–I

2. Distinguish between :

(a) Ransomeware and Malware. 6

(b) Phishing and Identity theft. 6

3. (a) What should be the qualifications for technical staff and non-technical Staff? 6

(b) Elaborate the importance of computer forensic. 6

UNIT–II

4. (a) What are three types of data acquisition method? 6

(b) Is it possible to recover lost data? How? 6

5. (a) What is a memory card? Discuss SD card and its uses and application Areas. 6

(b) What are blue-ray storage discs? 6

UNIT–III

6. What is a dictionary attack? How it works ? For what it is used for? How to prevent it? 12

7. (a) Is email tracking is illegal? 6

(b) Explain brute force password cracking technique. 6

UNIT–IV

8. (a) Write one key benefits of each digital evidence. 6

(b) What are key components of a forensic report? 6

9. Compare :

(a) Viruses and Worms. 6

(b) Hackers and Crackers. 6

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TBCA/M-25

SERVER ADMINISTRATION

Paper : BCA-CTIS-404

Time : Three Hours] [Maximum Marks : 60

Note : Question No. 1 is compulsory. In addition to that, attempt *four* more questions selecting *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. (a) Why is it important to properly configure installation partitions, and how does it affect system performance and management? (3)

(b) How can administrators use Group Policy to enforce BitLocker settings across an organization? (3)

(c) What is permission inheritance in Windows, and how does it work when new files or folders are created? (3)

(d) What are the limitations and best practices when using CNAME records in DNS? (3)

UNIT–I

2. What are server roles and features in Windows Server 2012? How do they enhance server functionality? What are the minimum and recommended hardware requirements for installing Windows Server 2012? Discuss. (12)

3. (a) How can network configuration, computer naming, and updates be handled post-installation? (6)

(b) What is NIC Teaming in Windows Server 2012, and how does it improve network performance and fault tolerance? Describe the steps to configure NIC Teaming using Server Manager or PowerShell. (6)

UNIT–II

4. (a) How can Group Policy be used to centrally manage EFS settings across an organization? What are the benefits of configuring EFS via Group Policy in a domain environment? (8)

(b) Explain how to configure and assign a recovery agent for EFS on a domain controller or local computer. (4)

5. What is BitLocker, and how does it differ from EFS in securing data? Describe the process of encrypting a drive using BitLocker and its impact on system performance and data access. How can users configure BitLocker encryption for both system and data drives? (12)

UNIT–III

6. (a) Describe the different types of shares in Windows and how they are arranged. (6)

(b) What is the difference between share-level and NTFS permissions, and how are conflicts between them resolved? (6)

7. (a) How can NTFS permissions be assigned to users or groups using Windows Explorer or command line tools? (4)

(b) What types of storage reports can be generated with FSRM, and how do they support administrative tasks? Describe the steps to configure scheduled storage reports and interpret the data collected. (8)

UNIT–IV

8. What are DNS zones? Explain the differences between fully qualified domain names (FQDNs), root domains, and subdomains in DNS. Also differentiate between primary and secondary DNS zones, and discuss how are they used in fault tolerance. (12)

9. (a) What is a caching-only DNS server, and how does it improve DNS query performance? How can you configure a DNS server to operate as a caching-only server? (8)

(b) What is DNS forwarding, and how does it affect DNS query resolution? (4)

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TBCA/M-25

CONTAINERIZATION USING DOCKERS

Paper : BCA-CTIS-405

Time : Three Hours] [Maximum Marks : 60

Note : Question No. 1 is compulsory. In addition, attempt *four* more questions selecting exactly *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. (a) What is Docker, and why is it used in modern software development?

(b) What is a Docker registry?

(c) How does Docker help in building and testing web applications?

(d) Name *one* advantage of using Docker in a CI pipeline for application testing.

(e) What is the purpose of the none network in Docker?

(f) How can you list all Docker images using the Docker Engine API?

(g) What is Docker Compose used for in orchestration?

(h) What are Helios and Centurion in Docker orchestration? (8×1.5=12)

UNIT–I

2. (a) Compare Docker containers with virtual machines. Mention at least three key differences with examples. 6

   (b) What is Swarm mode in Docker? How does it help in managing containers at scale? 6

3. Define Microservices. How does Docker facilitate microservice architecture? Explain with examples and container-based deployment. 12

UNIT–II

4. (a) How can an application and its application server be containerized using Docker? Provide a suitable example. 6

   (b) How can Docker containers be managed without using SSH? Mention tools and best practices. 6

5. Describe the process of creating and managing a multi-container application using Docker Compose. Illustrate with an example of a web app with a database. 12

UNIT–III

6. Describe the steps and best practices for securely authenticating and using the Docker Engine API in a remote environment. 12

7. Explain how Docker Compose helps in creating container-specific networks. Demonstrate with a Compose file for a web app connected to a database. 12

UNIT–IV

8. Write short notes on alternative orchestration tools – Helios, Centurion, and Apache Mesos. Compare their architecture, usage, and Docker integration. 12

9. Discuss how service discovery works in container orchestration. Compare different tools like Docker's internal DNS, Consul, and etc. 12

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TBCA/M-25

INTERNET OF THINGS

Paper : BCA-407-CTIS

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *five* questions in all. Question No. 1 is compulsory. Attempt *four* more questions selecting *one* question from each unit.

Compulsory Question

1. Answer the following questions in brief :

(a) What is IoT and why is it important?

(b) What are the organizations involved in standardizing protocols for IoT? Explain their primary objectives in brief.

(c) What are the advantages of adopting open-source architectures for IoT development?

(d) What distinguishes the WoT from the IoT, and how do they complement each other in enabling connected devices and applications? (4×3=12)

UNIT–I

2. (a) What are components of an IoT ecosystem and explain each in brief. (6)

(b) What technological advancements have fueled the growth of IoT, explain in brief. (6)

3. (a) What are key business drivers behind the adoption of IoT solutions across various industries?

(b) What are the privacy concerns associated with IoT devices and applications, and how can organizations mitigate risks related to data privacy and confidentiality?

UNIT–II

4. (a) What is ZigBee? How does it work? Explain. (6)

(b) What is SCADA? How does SCADA work? Explain. (6)

5. What is OneM2M standard, and how does it contribute to simplifying IoT development and integration across different industries and applications? Explain. (12)

UNIT–III

6. How does the Open Interconnect Consortium (OIC) define its architecture and design principles for enabling seamless connectivity and interoperability among IoT devices and systems? Explain. (12)

7. Discuss different components of IoTivity architecture with suitable diagram. What role does the Resource Directory (RD) play in the IoTivity architecture? (12)

UNIT–IV

8. (a) What are the two pillars of the Web? How do they form the foundation for building scalable and interoperable web-based systems? (6)

   (b) What is Brownfield IoT? Explain. (6)

9. Describe the architecture of a unified multi-tier Web of Things system, along with functions and interactions of each layer? (12)

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TBCA/M-25

DESIGNING ENTERPRISE NETWORK

Paper : BCA-CTIS-408

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *five* questions in all. Question Number 1 is compulsory. In addition to the compulsory question, attempt *four* more questions, selecting *one* question from each unit. All questions carry equal marks.

Compulsory Question

1. Answer any *four* of the following questions in brief :

(i) Explain the significance of MAC addresses in Ethernet communication.

(ii) Define and compare Class A, B, and C networks in IPv4 addressing.

(iii) What command is used to assign an IPv4 address to a router interface in Cisco?

(iv) Mention two common tools used for Ethernet LAN troubleshooting.

(v) How does a router determine the next-hop IP address in a routing table?

(vi) What is a Standard IPv4 Access Control List (ACL)?

UNIT–I

2. List the functions of each layer in the OSI model. Also, list the major protocols of TCP/IP transport and application layers along with their purpose.

3. (a) Define Wide Area Network (WAN) and explain how it differs from LAN. Also, describe the role of routers in WAN connectivity.

   (b) Describe the basic architecture of an Ethernet LAN. How do switches differ from hubs?

UNIT–II

4. Explain the process of subnetting a Class B IP address with suitable examples/diagrams.

5. (a) Discuss limitations of classful networking in large-scale deployments.

   (b) Define VLAN and explain how it improves LAN performance and security.

UNIT–III

6. (a) Explain the steps required to configure IPv4 routing in a LAN environment.

   (b) Describe each step involved in the Cisco IOS router boot process.

7. (a) Compare and contrast OSPF multi-area routing and single-area EIGRP.

(b) What is meant by managing Cisco IOS files? How is it carried out?

UNIT–IV

8. What are the key differences between IPv4 and IPv6? Discuss how IPv6 addresses some of the limitations of IPv4.

9. (a) What are some advanced techniques for enhancing device security using IPv4 ACLs?

(b) What is the purpose of Network Address Translation (NAT) in IPv4, and how does it help in managing IP address depletion?

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TBCA/M-25

LOGICAL REASONING AND THINKING

Paper : BCA-CTIS-410

Opt–(i)

Time : Three Hours] [Maximum Marks : 40

Note : Attempt *five* questions in all, selecting *one* question from each unit. Question number 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Give one-word substitutes for the following :

(i) A person who cannot make mistakes.

(ii) A speech made without preparation.

(b) What precautions must be taken while using secondary data? Provide examples where misuse has occurred.

(c) How many times in a day do the hands of a clock coincide?

(d) Explain how sampling is different from a census. What are the advantages of sampling?

UNIT–I

2. (a) Break the following scrambled sequence into a meaningful pattern and continue it :

A, D, H, M, S, ?.

(b) Complete the following series and explain the logic used :

(i) A, C, F, J, O, ?.

(ii) Z, X, U, Q, L, ?.

3. (a) From the following group, identify the odd word and justify your answer :

(i) Apple, Mango, Banana, Spinach.

(ii) Table, Chair, Cupboard, Window.

(b) Describe the difference between arithmetic and geometric series with two examples of each. Create a new mixed pattern and explain its logic.

UNIT–II

4. (a) A train 150 meters long crosses a platform 200 meters long in 30 seconds. Find the speed of the train in km/h.

(b) How many 4-digit numbers can be formed using digits 1 to 7 without repetition?

5. (a) A's salary is increased by 20% and then decreased by 20%. What is the net change in salary?

(b) Define secondary data. How does it differ from primary data? List three government sources for secondary data.

UNIT–III

6. (a) Use a three-set Venn diagram to solve : In a survey of 150 people, 80 like coffee, 60 like tea, 50 like juice. 30 like both coffee and tea, 20 like tea and juice, 15 like coffee and juice, and 10 like all three.

   (b) Use truth tables to verify :

   $$(p \rightarrow q) \wedge (q \rightarrow r) \Rightarrow (p \rightarrow r).$$

7. (a) Write the standard form and draw a Venn diagram for the following : "Some students are athletes. No athlete is a musician."

   (b) In a family, A is the brother of B, C is the sister of A, and D is the father of C. How is D related to B?

UNIT–IV

8. (a) Differentiate between simple, double, and manifold classification tables with examples.

   (b) Define Data Interpretation. Explain its importance in decision-making with an example from finance or healthcare.

9. Differentiate between :

   (a) Histogram and Bar Chart (at least 3 points with illustrations).

   (b) Pie Chart and Column Chart (with real-life applications).

BCA CTIS 4th Reg/ Lib

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NBCA/M-25 **2326**

DATA STRUCTURES AND APPLICATIONS

Paper–CC-A4:B23-CTS-401

Time Allowed : 3 Hours] [Maximum Marks : 50

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

Compulsory Question

1. Write short notes on the following : 5×2=10

   (a) How are Data structure traversed ?

   (b) Explain ⊙ notation for algorithm complexity.

   (c) Give prefix form for A/B^C + D.

   (d) Given an array of float values in row major representation A[1..M][1..N], If base address of this array 800 then find the address of A[i][j].

   (e) Compute the total number of nodes in a complete binary tree of height 4.

UNIT–I

2. Explain with example on the following :

   (a) Static and Dynamic Data structures. 5

(b) Non Primitive Data structures. 5

3. (a) How memory is allocated to a one dimensional array ? 5

(b) Write an algorithm to add two dimensional arrays a[1..M,1..N] and b[1..M,1..N]. 5

UNIT–II

4. (a) What are arrays of Characters ? How array of strings are initialized ? 5

(b) Explain syntax and purpose of following string handling functions:

(i) strcmp. (ii) strcat 5

5. (a) How a double linked list is organized and how it is different from an array ? 5

(b) Write an algorithm to traverse a double linked list. 5

UNIT–III

6. Differentiate between the following :

(a) Recursive and Iterative operations. 5

(b) Prefix and Postfix polish notation. 5

7. How a Dequeue is organized and develop an algorithm for insertion and deletion operations than a dequeue ? 10

UNIT–IV

8. (a) Explain linked organization of Binary tree in memory. 5

   (b) Write an algorithm to traverse a binary tree in postorder. 5

9. Explain the following :

   (a) Merge Sort. 5

   (b) Binary Search. 5

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NBCA/M-25 **35251**

BASICS OF INFORMATION SECURITY

Paper–CC–B4 : B23–CTS–402

Time Allowed : 3 Hours] [Maximum Marks : 50

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

Compulsory Question

1. Write short notes on the following : 5×2=10

   (a) Define Information Security.

   (b) What are the key steps involved in a basic risk assessment process?

   (c) What are the two keys used in Asymmetric encryption?

   (d) What is secure software development?

   (e) What role do Antivirus and firewall play in OS-level security?

UNIT–I

2. (a) Explain the CIA triad in information security. Why is it important? 5

(b) List and explain different types of Malware affecting computer systems. 5

3. Explain the relationship between Threats, Vulnerabilities, and Risk. How can Risk assessment be used to secure Information systems effectively? 10

UNIT–II

4. (a) What is Hashing? How is it different from encryption? Provide examples. 5

(b) How does multi-factor authentication enhance security over traditional password-based systems? 5

5. Define and compare DAC, MAC, and RBAC access control models. How are they applied in real-world systems? 10

UNIT–III

6. (a) Define the XSS (Cross-Site Scripting). What are its types and how can it be avoided? 5

(b) Define the Firewall. Explain the types of firewalls and their working principles. 5

7. Explain various secure coding practices and their importance. How do they help in mitigating common vulnerabilities? 10

UNIT–IV

8. (a) Define the Patch management. Explain its importance in maintaining system security. 5

   (b) How can regular updates and patching protect an OS from known vulnerabilities? 5

9. Describe how HTTPS ensures secure communication between clients and servers? How does it differ from HTTP ? 10

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

NBCA/M-25 **35252**

COMPUTER NETWORKS

Paper–CC–C4 : B23–CTS–403

Time Allowed : 3 Hours] [Maximum Marks : 50

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

Compulsory Question

1. Answer any Five of the following questions in brief :

   (a) Define computer networks and explain their importance in modern communication.

   (b) Describe any one signal encoding technique that is used in LANs.

   (c) What is the purpose of using the binary exponential backoff algorithm in Ethernet LAN?

   (d) Name and describe one network application that you commonly use.

   (e) What is the purpose of port numbers?

   (f) How many bits are in an IPv6 address?

(g) What is the purpose of a Firewall in a network?

UNIT–I

2. (a) Differentiate between LAN, WAN, and MAN along with the topologies most suitable for them.

   (b) List and discuss the functions of any four layers in the OSI model.

3. Describe the construction, working and applications of any two types of Transmission media used in networks. Also, describe any two types of Network devices that are used in LANs or WANs.

UNIT–II

4. Explain the need for error detection and describe CRC (Cyclic Redundancy Check) with an example.

5. Describe the working of Dijkstra's algorithm and its role in link-state routing.

UNIT–III

6. Compare TCP and UDP and describe the TCP three-way handshake process for reliable communication.

7. Answer the following questions in brief :

   (a) What is the purpose of the checksum in TCP?

   (b) What is a DNS resolver?

(c) Define the Web service. What does the URL represent?

UNIT–IV

8. Explain the core principles of Network security. Describe how Cryptography ensuresnetwork security.

9. Explain the principles of Wireless communication and how they differ from wired communication? What is the difference between Mobile networks and Ad hoc networks?

C

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NASV/M-25

ENGLISH LANGUAGE AND
COMMUNICATION LEVEL–4

Paper : B23-AECE-411

Time : Three Hours] [Maximum Marks : 35

Note : Attempt *five* questions in all. All question carry equal marks.

1. Write short answers :

(a) What is the meaning of the prefix "pre-" in the word "preview?"

(b) Give the root word of "unhappiness."

(c) Convert the sentence "He is too tired to work" into a complex sentence.

(d) What type of sentence is "Where are you going?"

(e) Give one example of a persuasive technique used in public speaking.

(f) What is one polite way to start a formal conversation?

(g) What do we mean by *contextual vocabulary*?

UNIT–I

2. Explain the process of word formation in English with reference to derivation, compounding, and blending. Give suitable examples.

OR

3. How do Latin and Greek roots help learners understand the meanings of unfamiliar words? Discuss with examples.

UNIT–II

4. Describe the various types of sentences based on structure (simple, compound, complex) and provide examples of each.

OR

5. Discuss the transformation of sentences with focus on changing affirmative to negative, assertive to interrogative, and active to passive voice.

UNIT–III

6. Discuss the key elements of an effective public speech. How do voice modulation, body language, and content structure influence its success?

OR

7. Explain the major persuasion techniques used in public speaking. Illustrate your answer with examples from famous speeches or real-life situations.

UNIT–IV

8. What is paragraph coherence? Discuss the role of topic sentences, supporting details, and logical sequencing in maintaining coherence.

OR

9. Explain how transition words and phrases contribute to the unity and flow of a paragraph. Provide examples of different categories of transition signals.

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E-COMMERCE

Paper – B23–VAC–417

Time : Three Hours] [Maximum Marks : 35

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

नोट : कुल **पांच** प्रश्न कीजिए। प्रश्न सं. 1 अनिवार्य है। प्रत्येक इकाई से **एक** प्रश्न चुनते हुए, **चार** अन्य प्रश्न कीजिए।

Compulsory Question (अनिवार्य प्रश्न)

1. Answer the following questions in brief :
   (a) What is e-commerce? How does it differ from e-business?
   (b) Explain the role of online booking and scheduling in the service industry.
   (c) What is a payment gateway? How does it facilitate online transactions?
   (d) What are the challenges and risks associated with managing a virtual organization? (4×1.75=7)

   निम्नलिखित प्रश्नों का उत्तर संक्षेप में दीजिए :

   (क) ई-वाणिज्य क्या है? यह ई-व्यवसाय से कैसे भिन्न है?

(ख) सेवा उद्योग में ऑनलाइन बुकिंग और सारणी की भूमिका की व्याख्या कीजिए।

(ग) भुगतान गेटवे क्या है? यह ऑनलाइन लेन-देन को कैसे सुविधाजनक बनाता है?

(घ) किसी आभासी संगठन के प्रबंधन से जुड़ी चुनौतियाँ और जोखिम क्या हैं?

UNIT–I (इकाई–I)

2. (a) What motivates businesses to adopt online transaction models? 3.5

(b) Compare the advantages and disadvantages of pure online *vs.* brick-and-click businesses. 3.5

(क) व्यवसायों को ऑनलाइन मॉडल अपनाने के लिए क्या प्रेरित करता है?

(ख) शुद्ध ऑनलाइन बनाम ब्रिक-एंड-क्लिक व्यवसायों के लाभ और हानि की तुलना करें।

3. Define and differentiate between B2B, B2C, C2C, and C2B models of e-commerce. 7

ई-वाणिज्य के B2B, B2C, C2C और C2B मॉडल को परिभाषित करें और उनके बीच अंतर करें।

UNIT–II (इकाई–II)

4. (a) How does the Internet serve as a backbone for online business operations? 3.5

(b) What is middleware? Explain its function in integrating business applications. 3.5

(क) इंटरनेट ऑनलाइन व्यापार संचालन के लिए रीढ़ की हड्डी के रूप में कैसे काम करता है?

(ख) मिडलवेयर क्या है? व्यावसायिक अनुप्रयोगों को एकीकृत करने में इसके कार्य की व्याख्या करें।

5. Compare and contrast credit cards, digital wallets, and net banking as payment methods. 7

भुगतान विधियों के रूप में क्रेडिट कार्ड, डिजिटल वॉलेट और नेट बैंकिंग की तुलना और अंतर कीजिए।

UNIT–III (इकाई–III)

6. What are the benefits of integrating e-commerce with supply chain and inventory systems in manufacturing? 7

विनिर्माण में आपूर्ति श्रृंखला और इन्वेंट्री प्रणाली के साथ ई-वाणिज्य को एकीकृत करने के क्या लाभ हैं?

7. What are the key components of a successful e-commerce retail platform? Explain each in brief. 7

एक सफल ई-वाणिज्य खुदरा प्लेटफार्म के मुख्य घटक क्या हैं? प्रत्येक की संक्षेप में व्याख्या कीजिए।

UNIT–IV (इकाई–IV)

8. What is data encryption? Why is it important in e-commerce? Differentiate between symmetric and asymmetric encryption. 7

डेटा एन्क्रिप्शन क्या है? ई-वाणिज्य में यह क्यों महत्वपूर्ण है? सममित और असममित एन्क्रिप्शन के बीच अंतर करें।

9. What is a digital signature? Explain how digital signatures ensure data integrity and authentication. 7

डिजिटल हस्ताक्षर क्या है? डिजिटल हस्ताक्षर डेटा की अखंडता और प्रमाणीकरण कैसे सुनिश्चित करते हैं?

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NASV/M-25

SOFTWARE TESTING

Paper : B23-VOC-216

Time : Three Hours] [Maximum Marks : 50

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

Compulsory Question

1. (a) Differentiate between error and fault.

(b) What is the difference between fault of omission and fault of commission?

(c) What do you understand by alpha and beta testing?

(d) What is static testing?

UNIT-I

2. (a) Exhaustive testing is impossible. Comment.

(b) How does the V-Model integrate testing phases with corresponding development phases?

3. (a) Discuss the widely accepted principles of testing.

(b) Define software testing. What are its objectives? Discuss.

UNIT–II

4. (a) What is black box testing? How does black box testing differ from white box testing?

   (b) What is Boundary Value Analysis? Provide an example of Boundary Value Analysis for a system that accepts numbers between 1 and 100.

5. (a) Explain the concept of control flow graphs in path testing.

   (b) Write the algorithm to find the larger of two numbers, draw its control flow graph and design the test cases as per path coverage criteria.

UNIT–III

6. (a) Describe the purpose of user acceptance testing (UAT).

   (b) Describe the differences between top-down and bottom-up integration testing approaches.

7. (a) What do you understand by load testing and stress testing? Explain.

   (b) What is software reliability? What is MTTF metric? Discuss.

UNIT–IV

8. (a) How do you determine the staffing needs for a testing project?

   (b) What types of resources are required for effective software testing?

9. (a) List common test deliverables that might be produced during a testing project.

   (b) What key components should be included in a comprehensive test plan?
