BCA CTIS 2nd / Library

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TBCA/M-23 1882

COMPUTER NETWORKS

BCA-CTIS-201

Time : Three Hours] [Maximum Marks : 60

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

1. (a) What are the responsibilities of transport layer in OSI reference model ?

(b) Write a brief note on CSU/DSU.

(c) What is the difference between circuit switching and packet switching ? Discuss.

(d) What is the use of ipconfig command ?

Unit I

2. (a) What is a Computer Network ? What are the objectives of networking ? Discuss.

(b) With neat sketch explain twisted pair, standards of twisted pair and connectors of twisted pair.

3. (a) What do you understand by network topologies ? Explain the different network topologies with their merits and demerits.

(b) What are the key difference between TCP/IP model and OSI reference model ?

Unit II

4. (a) What do you understand by LAN ? Compare IEEE standard 802.4 and 802.5 and discuss their merits and demerits also.

   (b) What is PPP and what are the different components of it ? Discuss.

5. (a) How does Address Resolution Protocol (ARP) converts IP address to MAC address ? Explain.

   (b) What is the difference between WiFi and WiMax ? Discuss.

Unit III

6. (a) What is Internet Control Message Protocol (ICMP) ? How does it work ? Explain.

   (b) What are the differences between IPv4 and IPv6 ? What is the need of IPv6 ? What are its merits over IPv4 ? Discuss.

7. (a) What are the key difference between TCP and UDP ? Why UDP is faster than TCP ? Discuss the applications of UDP.

   (b) Discuss the Dijkstra Shortest path routing algorithm.

Unit IV

8. (a) What is Tunneling ? What is Secure Shell Tunneling (SSH) ? Discuss.

   (b) What is Encryption ? What is the need of it ? Discuss the AES encryption algorithm.

9. (a) What are the most common threats to security ? What is SQL injection attack ? Discuss.

   (b) What do you understand by remote access ? Discuss in brief the protocols used for remote access.

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TBCA/M-23 1883

DATA STRUCTURES

BCA-CTIS-202

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory.

(Compulsory Question)

1. (a) Differentiate between Linear and Non-Linear Data Structures. 3

(b) How can you represent a linked list in memory ? 3

(c) What is bubble sort ? Explain using example. 3

(d) What are AVL trees ? Discuss. 3

Unit I

2. What is the use of data structures ? Discuss various data structure operations. Also explain, how the complexity of an algorithm can be calculated ? 12

3. (a) What is an array ? Describe various types of arrays. How an array is stored in computer memory ? 6

(b) What is a Sparse Matrix ? How can you store a sparse matrix using linear array ? 6

Unit II

4. What do you understand by Stack ? Explain various operations that can take place on a stack with the help of algorithms. 12

5. (a) Find the table and corresponding graph for the second pattern matching algorithm where the pattern is P = ababab. 6

(b) Differentiate between Singly Linked List and Doubly Linked List using example. 6

Unit III

6. (a) Efficiently implement a queue class using a singly linked list, with no header or tail nodes. 6

(b) Write down the algorithm for insertion and deletion operations in a queue using arrays. 6

7. (a) Write the algorithm for binary search and explain it using suitable example. 6

(b) Discuss the concept of full binary tree and complete binary tree. Differentiate between the two using suitable examples. 6

Unit IV

8. (a) Write down the Depth-first search algorithm for graph and explain it with the help of an example. 6

   (b) Describe B-tree. Explain deletion operation of B-tree using suitable examples. 6

9. What do you understand by Graph, Multi-graph and Directed graph ? Write Dijkstra's algorithm for finding the shortest path in a graph and explain the same with the help of an appropriate example. 12

Roll No. ..... Total Pages : 03

TBCA/M-23 1884

INTRODUCTION TO CLOUD COMPUTING

BCA-CTIS-204

Time : Three Hours] [Maximum Marks : 60

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

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

(a) What do you mean by cloud scalability ? Explain in brief.

(b) Explain pricing models in cloud computing.

(c) What are impacts of cloud platforms ? Explain in brief.

(d) Explain about data integration.

Unit I

2. (a) What is cloud computing ? Explain advantages and disadvantages of cloud computing. 6

(b) What is data centre ? Explain evolution of data centre into private cloud. 6

3. Write short notes on the following :

(a) Cloud security 4

(b) Distribution over the Internet 4

(c) Time to market. 4

Unit II

4. What is IaaS ? Explain IaaS security, IaaS networking options and SLA. 12

5. (a) What is PaaS ? Discuss benefits and risks of PaaS. 6

(b) What is SaaS ? What are impacts of SaaS ? Explain any *one* example of SaaS in brief. 6

Unit III

6. What are cloud platforms ? Explain the features of AWS and Google Cloud Platform. 12

7. (a) Explain broad approach to migrate to cloud. 6

(b) How can you assess risks of migration to Cloud ? How can you mitigate risks ? Explain. 6

Unit IV

8. Explain the following :

(a) Impact of Cloud on IT Service Management 6

(b) Cloud Adoption 6

9. Write short notes on the following :

(a) Managing and Securing Cloud Services 6

(b) Economic Cost Model 6

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TBCA/M-23 1885

WEB DESIGNING–II

BCA-CTIS-205

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *Five* questions in all. Q. No. **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) What is a JavaScript expression ?

(ii) List any *two* core features supported by JQuery.

(iii) Describe any *two* PHP operators and their functions.

(iv) How does PHP enable the downloading of files ?

(v) What is the purpose of Regular Expressions in PHP ?

(vi) How can you execute multiple SQL queries in PHP ?

Unit I

2. (a) Give an introduction to JavaScript along with its features. Also, describe JavaScript Events and Event handlers.

(b) What are the advantages of using JavaScript functions ? Illustrate the use of JavaScript function with arguments using a suitable example.

3. Answer the following questions in brief :

(a) Describe how visual effects are created using JQuery.

(b) List and describe any *two* JQuery Event Methods.

(c) Describe any *two* ways to include JQuery in a web page.

Unit II

4. Give an introduction to PHP along with its basic building blocks. Also, describe the use of Date and Time functions in PHP.

5. What are the different kinds of arrays supported in PHP ? Illustrate using examples how these arrays are created and accessed.

Unit III

6. How are Forms created and used in PHP ? How are user-defined arrays used for accessing Form input ?

7. What is meant by server-side and client-side state management ? How are Cookies and Sessions used for state management ?

Unit IV

8. What is MySQL and how can you connect PHP to MySQL ? How can you insert and delete data to and from an existing table using PHP MySQL ?

9. What is front-end and back-end in a web application ? How can a web application be developed using front-end and back-end ? Illustrate using a suitable example.

Roll No. ..... Total Pages : 02

TBCA/M-23 1886

INTRODUCTION TO INFORMATION SECURITY

BCA-CTIS-207

Time : Three Hours] [Maximum Marks : 60

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

(Compulsory Question)

1. (a) What are recent cybersecurity statistics ? Discuss. 3

(b) What is Hashing ? Discuss. 3

(c) What is the need of windows registry ? How can security be enabled in windows registry ? 3

(d) Discuss the steps of security risk assessment. 3

Unit I

2. What is the need of security ? Also explain the trends and technologies in security systems. 12

3. What is the CIA triad and why is it important ? Explain. 12

Unit II

4. Discuss Authentication, Authorization and Encryption and explain the same using example of booking and taking an airplane flight. **12**

5. Discuss the access control management. Also explain various types of access control systems. **12**

Unit III

6. How is firewall useful in securing the systems ? Discuss various types of firewall. **12**

7. What are key loggers, malwares and spywares? Also discuss various password cracking techniques. **12**

Unit IV

8. Discuss the Secure/Multipurpose Internet Mail Extension (S/MIME) security protocol. **12**

9. (a) What is internet security ? How can threats to privacy be avoided while using internet ? **6**

   (b) What is Hacking ? How can the hacking attacks be avoided ? **6**

Roll No. ..... Total Pages : 03

TBCA/M-23 1887

DATABASE MAGAGEMENT SYSTEM
BCA-CTIS-208

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *Five* questions in all selecting *one* question each from Unit I to Unit IV. Question No. **1** is compulsory. All questions carry equal marks.

(Compulsor Question)

1. (a) What are menu-based and form-based database interfaces ?

(b) Differentiate between physical and logical data independence.

(c) Differentiate between full and partial functional dependency.

(d) Define multivalued and join dependencies.

(e) What is meant by entity, entity set and entity type ?

(f) How do we perform join operation in relational algebra ?

(g) Write the syntax and purpose of commit and rollback SQL statements.

(h) What are Index ? How are indexes created ? **12**

Unit I

2. (a) What is Database Management System (DBMS) ? Write its essential characteristics. Discuss the important components of database system.

(b) Define database schema, sub-schema, instances ? How DBMS overcome the disadvantages of file based approach. **6+6=12**

3. (a) Who are database designers, application developers and system manager ? Discuss role and responsibilities of database administrator.

(b) Discuss 1-tier and 2-tier architecture of DBMS. How mapping plays an important role in 3-tier architecture ? **6+6=12**

Unit II

4. What do you mean by data model ? Why do we need these data model ? Write the advantages and disadvantages of data model proposed by DBTG in CODASYL. **12**

5. What do you mean by normalization ? Write the benefits of normalization. How BCNF is simpler and stronger than 3NF ? Give example in support of your answer. **12**

Unit III

6. (a) What are Attributes ? Explain different types of attributes along with their symbolic notations.

   (b) Define relationship, recursive relationship and role name. Discuss relationship constraints. **6+6=12**

7. (a) Draw an ER diagram on flight management system. How ER diagram is reduced to relational tables ?

   (b) Draw comparison between relational algebra and relational calculus. Discuss select, union and difference operations. **6+6=12**

Unit IV

8. Differentiate between SQL and PL/SQL. Discuss the data types used in SQL. How do we implement primary and foreign key constraint in SQL ? Illustrate. **12**

9. (a) Explain PL/SQL block structure. How do we use control statements in PL/SQL ?

   (b) What are Cursors ? How do we implement implicit and explicit cursors in PL/SQL ? **6+6=12**

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TBCA/M-23 1888

ENVIRONMENTAL STUDIES

BCA-CTIS-210

Time : Three Hours] [Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting *one* question from each unit (8 marks each). Question No. **1** is Compulsory.

प्रत्येक इकाई से **एक** प्रश्न (प्रत्येक 8 अंक) का चयन करते हुए, कुल **पाँच** प्रश्नों के उत्तर दीजिए । प्रश्न **1** अनिवार्य है ।

Compulsory Question (अनिवार्य प्रश्न)

1. Write in short about on the following : **4×2=8**

(a) Advantages of environmental education.

(b) Human wildlife conflicts.

(c) Sustainable development.

(d) Natural disaster.

निम्नलिखित के बारे में संक्षेप में लिखिए :

(अ) पर्यावरण शिक्षा के लाभ ।

(ब) मानव व वन्य-जीवन के बीच विरोध ।

(स) सतत विकास ।

(द) प्राकृतिक आपदा ।

Unit I (इकाई I)

2. Define Ecosystem. Give a detailed description of the structure of an ecosystem. 8

पारिस्थितिकी तंत्र को परिभाषित कीजिए । पारिस्थितिक तंत्र की संरचना का विस्तृत विवरण दीजिए ।

3. Write short notes on the following : 4×2=8

(a) Food web.

(b) Ecological Pyramid.

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

(अ) खाद्य जाल

(ब) पारिस्थितिक पिरामिड ।

Unit II (इकाई II)

4. Explain the different causes of land degradation and its impact. 8

भूमि क्षरण के विभिन्न कारणों एवं इसके प्रभावों का वर्णन कीजिए ।

5. Explain biodiversity hotspots of India. 8

भारत के जैव-विविधता हॉटस्पॉट को समझाइए ।

Unit III (इकाई III)

6. Write short notes on the following : 4×2=8

(a) Acid rain and its causes

(b) Causes of ozone layer depletion.

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

(अ) अम्लीय वर्षा और इसके कारण

(ब) ओजोन परत के क्षरण के कारण ।

7. Describe the impacts of emissions of greenhouse gases on our environment. 8

हमारे पर्यावरण पर ग्रीनहाउस गैसों के उत्सर्जन के प्रभावों का वर्णन कीजिए ।

Unit IV (इकाई IV)

8. Explain the following forms of natural disaster : 4×2=8

(a) Earthquake

(b) Flood.

प्राकृतिक आपदा के निम्नलिखित रूपों की व्याख्या कीजिए :

(अ) भूकंप

(ब) बाढ़

9. Write short notes on the following : 4×2=8

(a) Chipko Movement.

(b) Silent Valley Movement.

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

(अ) चिपको आंदोलन

(ब) साइलेंट वैली आंदोलन ।

BCACTIS 4th/Library

Roll No. ..... Total Pages : 03

TBCA/M-23 1889

ETHICAL HACKING

BCA-CTIS-401

Time : Three Hours] [Maximum Marks : 60

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.

(Compulsory Question)

1. Answer any *four* of the following questions in brief :
   (i) Why is Ethical Hacking important ?
   (ii) What is an 'Exploit' in ethical hacking ?
   (iii) What are malware-based attacks ?
   (iv) What is the difference between website hacking and computer hacking ?
   (v) What does the term 'Forensics' mean ?
   (vi) What is meant by the "protection of personal data" which is identified as one of the dimensions to be legally dealt with among BRICS countries ?

Unit I

2. What is meant by Hacking and Ethical Hacking ? What phases are involved in an exploit by an attacker ? Distinguish between white, black and grey hat hackers.

3. What are the legal issues and code of ethics/rules for ethical hacking ? What laws and punishments are associated with hacking ?

Unit II

4. Define the terms : hacker, cracker, threat and vulnerability. To what kind of attacks can a computer or network system be vulnerable ?

5. What is Port Scanning in ethical hacking ? Describe the types of Ports, Port scans and Tools used in Port Scanning. How does a Network Mapper work ?

Unit III

6. Describe any *five* hacking techniques and five tools used by hackers to gain access to systems.

7. (a) Once hackers gain access to a system, what steps do they take to maintain access to retain ownership of the system ?

   (b) What is the purpose of covering tracks phase in hacking activity and how is it carried out ?

Unit IV

8. What is the significance of penetration testing report ? Explain how various documents are prepared in ethical hacking and penetration testing process. List and describe the contents of penetration testing report.

9. (a) List any *four* notable features of the Information Technology Amendment Act 2008 of India.

(b) Describe the procedure for filing a complaint of suspected hacking in India.

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Total Pages : 03

TBCA/M-23 1890

DIGITAL FORENSIC AND INVESTIGATION

BCA-CTIS-402

Time : Three Hours]

[Maximum Marks : 60

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

1. (a) What is an evidence ?

(b) What are the challenges in e-Mail forensic ?

(c) What are the problems with live analysis ?

(d) Which section was introduced in IT Act Amendment, 2008 ?

Unit I

2. (a) What are the common forms of cyber crimes ? Discuss.

(b) What are the main responsibilities of the first responder ? Discuss.

3. (a) What is meant by computer forensics ? What are the different types of it ? Discuss.

(b) What are the basic phases of digital investigation ? Discuss.

Unit II

4. (a) What is volatile data analysis in computer forensics ? Discuss the techniques and tools for recovering and analyzing the volatile data.

   (b) What is the difference between magnetic and optical storage media ? Discuss the working of magnetic disk.

5. (a) Discuss in detail the techniques to recover the deleted data from the hard disk.

   (b) How is data stored on optical media such as CD ? Discuss.

Unit III

6. (a) What is Steganography ? How is it used by cyber criminals ? Discuss.

   (b) Write a note on cross drive analysis.

7. (a) What is the difference between brute force attack and dictionary attack ? Explain.

   (b) What are the different sources of network evidence ? Explain.

Unit IV

8. (a) What should be included and how should it be structured in digital forensic report ? Discuss.

(b) What are the main features of Indian IT Act, 2008 ? Discuss.

9. (a) What are the sources of digital evidence ? Discuss.

(b) How is the cause of cyber attack identified ? Discuss.

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TBCA/M-23 1891

SERVER ADMINISTRATION

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) How paths are upgraded after/during the windows server installation ? **3**

(b) What is the difference between BitLocker and BitLocker to Go ? **3**

(c) What is file screening management ? How can you manage files with file screening ? **3**

(d) How can primary and secondary zones be configured ? Explain. **3**

Unit I

2. (a) What are the system requirements for installing Windows Server 2012 ? Also discuss how we can install Windows Server 2012. **6**

(b) Discuss how can you create new partitions when installing Windows Server. 6

3. Discuss the following : 12

(i) Configuring NIC teaming

(ii) Configuring Local Storage

(iii) Installing Migration Tools.

Unit II

4. How can you configure the EFS with group policies ? Also explain how EFS recovery agent can be configured ? 12

5. (a) How can we manage EFS certificates ? Explain. 6

(b) How files can be encrypted with BitLocker ? Discuss. 6

Unit III

6. How can a file sharing strategy be designed ? How the file and folder access permissions can be assigned and denied ? Explain. 12

7. How can the basic NTFS permissions be assigned and how share and NTFS permissions can be combined ? Explain. 12

Unit IV

8. What is DNS name ? Differentiate between iterative and recursive resolution. Also discuss the address resolution mechanism. **12**

9. Discuss the following : **12**

   (i) SOA records

   (ii) NS records

   (iii) CNAME records

   (iv) PTR records.

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TBCA/M-23 1892

CONTAINERIZATION USING DOCKERS

BCA-CTIS

Time : Three Hours] [Maximum Marks : 60

Note : Q. 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) Enlist the major features of Dockers.

(b) How can you use Dockers to test a static website ?

(c) What is a Docker Network ?

(d) What is meant by automated rollout ?

(e) What is centurion ?

(f) Comment on the need of authenticating the docker engine API. **6×2=12**

Unit I

2. (a) What are the various components of Docker ? Explain in detail. **6**

(b) Write and explain the steps to install Docker in brief. **6**

3. What is meant by a Docker image ? How can you list, pull, search images in Docker ? Also describe the procedure to create your own images using Docker. **12**

Unit II

4. How can you use Docker for continuous integration ? Explain using suitable example. **12**

5. Explain the procedure to create multi-container application stack using suitable example. **12**

Unit III

6. What are the various Docker APIs ? Explain each in detail using suitable examples. **12**

7. (a) How can you create user defined bridge network using Dockers ? Explain in brief. **6**

   (b) Write short notes on special container networks. **6**

Unit IV

8. What is meant by Docker Compose ? Explain its working and uses in detail. **12**

9. What is a Docker Swarm ? How can you install and setup a swarm ? Explain the use of filters in swarm in detail. **12**

Roll No.....

Total No. of page(s): 1

TBCA/M-23: 1893-RE
BCA-CTIS -407: Internet of Things

Time: 3 hrs]

[Max. Marks: 60

Note: Attempt FIVE questions in all. Q. No. I is compulsory. Attempt FOUR more questions selecting ONE question from each UNIT.

I	Answer the following questions in brief: a) What do you mean by IoT? Explain its importance. b) What are issues with IoT standardization? Explain. c) What are key functionalities of IoTivity framework? Explain in brief. d) What is Web of Things? How is it different from IoT?	4x3 =12
	UNIT-I	
II	a) What are elements of IoT ecosystem? Explain role of each in brief. b) What is WSN? Explain the relationship among IoT, M2M and WSN.	6 6
III	Write short note on: a) Privacy and Security issues in IoT b) Business Drivers for IoT	6 6
	UNIT-II	
IV	a) What is M2M communication? Explain CoAP protocol in detail. b) Explain key features of Zigbee application support sub layer.	6 6
V	a) What are IEEE 802.15.4 standards? Discuss. b) What is KNX protocol? Explain.	6 6
	UNIT-III	
VI	Explain IoT open source architecture with suitable diagram. Also states its design principles.	12
VII	What is IoTivity stack? Explain its architecture with suitable diagram.	12
	UNIT-IV	
VIII	a) Explain standards of web of things. b) Explain unified multitier web of things architecture.	6 6
IX	Write short note on: a) Brownfield IoT b) Smart Objects	6 6

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TBCA/M-23 1894

DESIGN ENTERPRISE NETWORKING

BCA-CTIS-408

Time : Three Hours] [Maximum Marks : 60

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. In addition to 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) How is an Ethernet LAN different from a WAN ?

(ii) What is an Ethernet Virtual LAN ?

(iii) What is the purpose of Spanning Tree Protocol ?

(iv) What is the purpose of a serial interface and what is meant by operation status of a serial interface ?

(v) What is the function of OSPF protocol ?

(vi) List any two services of IPv4.

Unit I

2. Sketch the OSI reference model and TCP/IP reference model (listing all the protocols of the layers of TCP/IP model). Also list the functions of the layers of OSI model.

3. Give an overview of Ethernet LANs mentioning its physical specifications and media access control. How is Ethernet LAN build with switches ? How are Ethernet switches configured ?

Unit II

4. How are IPv4 datagrams addressed in the Internet ? Why and how is subnetting done in IPv4 ?

5. (a) Describe how IPv4 addresses are configured.

   (b) Describe common LAN switch features and explain how to troubleshoot any LAN switch problem.

Unit III

6. (a) What is meant by IPv4 routing and its configuration ? Describe the configuration process of IPv4 routing.

   (b) Describe the Cisco IOS file system and its management.

7. What is a Router ? Which memory elements are involved in router boot process ? What type of ports does a Cisco router have? What is router boot sequence and what series of steps are performed by the router during the router boot sequence ?

Unit IV

8. What are the advantages and motivations behind the development of IPv6 ? Compare and contrast IPv4 and IPv6 along with a description of IPv6 addressing.

9. Give an overview of the network management requirements and the role of SNMP in network management.

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TBCA/M-23 1895

LOGICAL REASONING AND THINKING

BCA-CTIS-410 (i)

Time : Three Hours] [Maximum Marks : 40

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

1. (a) What is the synonym of EMBEZZLE ?

(i) Misappropriate

(ii) Balance

(iii) Remunerate

(iv) Clear

(b) What is the difference between positional and non-positional number system ?

(c) Discuss the implication logical connective using truth table.

(d) In how many ways can the letters of the word 'LEADER' be arranged ?

Unit I

2. (a) Look at this series : 8, 6, 9, 23, 87, .. What number should come next ? Also explain the reasoning.

(b) Give the one word substitute for the following :

(i) Study of celestial bodies

(ii) Study of plants

(iii) Study of human mind.

3. (a) Find the odd man out : 396, 462, 572, 427, 671, 264. Give the reason.

(b) Choose the missing terms out of the given alternatives : AYD, BVF, DRH, ?, KGL.

(i) FMI

(ii) GMJ

(iii) GLJ

(iv) HLK.

Give the reason.

Unit II

4. (a) What is the difference between primary and secondary data ? What are the sources of secondary data ? Discuss.

(b) What is set theory ? Discuss the union, intersection and difference operation using Venn diagram.

5. (a) What is HCF ? How do you compute it using prime factorization method ? Explain using an example.

(b) A problem is given to three students whose chance of solving it are 1/2, 1/3 and 1/4 respectively. What is the probability that the problem will be solved ?

Unit III

6. (a) What is Syllogism ? Discuss modus ponen using suitable example.

   (b) Give a brief overview of different types of sampling techniques.

7. (a) What will be the angle between hour and minute's hand of the clock at 7.30 ?

   (b) It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010 ?

Unit IV

8. (a) Thirty AA batteries were tested to determine how long they would last. The results, to the nearest minute, were recorded as follows : 423, 369, 387, 411, 393, 394, 371, 377, 389, 409, 392, 408, 431, 401, 363, 391, 405, 382, 400, 381, 399, 415, 428, 422, 396, 372, 410, 419, 386, 390. Construct a frequency distribution table.

(b) What is a line chart ? When is it used ? What are the best practices to draw the line chart ? Discuss.

9. (a) What is data interpretation ? What are the techniques for qualitative data interpretation ? Discuss.

(b) What is Histogram ? How is it different from bar charts ? Illustrate.