IT Lib

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

BT-3/D-22 43167

ELECTRONICS FUNDAMENTALS

ES-201A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. How is a PN junction diode formed ? Discuss the following modes of a PN junction diode with their V-I characteristics : 15
   (i) Forward bias
   (ii) Reverse bias.
2. (a) Discuss how a Zener diode works as a voltage regulator.
   (b) Discuss the working principle of a Light emitting diode with its applications. 15

Unit II

3. Discuss the working of a transistor in NPN configuration and also draw and explain the characteristics of a transistor in common emitter configuration. 15

4. (a) Discuss voltage divider biasing in detail.

(b) How does a transistor work as a switch ? Discuss in detail. 15

Unit III

5. (a) Explain the Barkhausen criterion of oscillations.

(b) Discuss the working of a Weinbridge oscillator. 15

6. Discuss the following in brief :

(a) Phase shift oscillator

(b) Collpitt's oscillator.

Unit IV

7. Discuss the following : 15

(a) Sensitivity

(b) Resolution

(c) Precision

(d) Repeatibility

(e) Calibration.

8. (a) Draw and explain the block diagram of a digital data acquisition system.

(b) Discuss the construction and working principle of a LVDT. 15

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

BT-3/D-22 **43168**

DIGITAL ELECTRONICS AND LOGIC DESIGN

ES-217A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) State and prove the De-Morgan theorem. Prove the following expressions :

$\overline{A}BC + A\overline{B}C + AB\overline{C} + ABC = AB + BC + CA$

$(A + B)(C + D) = \overline{(\overline{A + B})(\overline{C + D})}$. 4

(b) What are universal gates ? Perform AND operation using NOR gate. 4

(c) Reduce the following expressions using K-Map : $f = \Sigma\ (0, 1, 4, 5, 7, 13, 14, 15) + d\ (2, 9, 10, 12)$. Realise the obtained expressions using NAND/NOR logic. 7

2. (a) Explain the method of converting SOP representation into POS representation. 4

(b) Perform the following operations in binary number system : 6

(i) 23 + 15

(ii) 16 – 36 (using 1's compliment)

(iii) 17 – 9 (using 2's compliment).

(c) Design a four bit grey to binary and binary to grey code converter. 5

Unit II

3. (a) Design a full adder using two half adders. 7

(b) What is Encoder ? Design and explain the working of 8 : 3 encoder ? 8

4. What is Multiplexer ? Explain working of 8 : 1 Multiplexer. How can 16 : 1 MUX be designed using 8 : 1 Mux and OR gate ? Implement the function $f = \Sigma (1, 2, 6, 9, 13, 14, 15)$ using 8 : 1 Mux. 15

Unit III

5. (a) Differentiate between latch and flip-flop. Explain the working of JK flip-flop. Explain race around condition of JK flip-flop. Also describe, how is it removed by master slave flip-flop ? 10

(b) Convert D flip-flop to T flip-flop. 5

6. (a) Design mod 6 asynchronous counter. 7

(b) Design a bidirectional shift register. Explain its working. 8

Unit IV

7. (a) Mention specifications of DACs. Explain the working of weighted register D/A converter. 8

   (b) Explain the working of flash type ADC. 7

8. (a) Explain the working of successive approximation type A/D converter. 7

   (b) Differentiate between PAL and PLA. Implement NAND operation using PLA. 8

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

BT-3/D-22 43169

DATA STRUCTURES

PC-IT-205A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. What is Array ? Also write lower bound and upper bound for one dimension and two dimension array. Write an algorithm to transpose M × N matrix. 15

2. What is difference between selection sort and insertion sort ? Write an algorithm to implement insertion sort with example. 15

Unit II

3. What are the applications of Stack in real life ? Write an algorithem to convert Infix statements to Postfix statements by taking an appropriate example. 15

4. What is difference between Linear Queue and Circular Queue ? Write an algorithem to implement Insertion and Deletion in a Circular Queue. 15

Unit III

5. What is the need of dynamic data structure ? Write an algorithm to implement Queue creation and insertion using linked list. **15**

6. What is double linked list and its advantages over single linked list ? Write an algorithm to implement insertion and deletion in double linked list. **15**

Unit IV

7. Define Trees, Internal node and external node in brief. Write an algorithm to implement Inorder and Postorder traversal in an binary tree. **15**

8. What is the difference between trees and graph ? Also explain minimum spanning tress with the help of example in detail. **15**

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

BT-3/D-22 43170

OBJECT ORIENTED PROGRAMMING USING C++

PC-IT-207A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. What is pre-process directive and name space in C++ ? Write a program to hide data and methods in C++ and find area of square, rectangle and cube using abstraction methods. **15**

2. What is public, private and protected accessifier in C++ ? Also write their uses in programming. Write a program to access private members from other class in C++ by taking an appropriate example. **15**

Unit II

3. What is operator overloading ? Write a program to implement ++/– – unary operator overloading and verify with the output of this program. **15**

4. (a) What do you mean by constructor and destructor in C++ ?

(b) What is Inheritance ? Write a program to implement multiple inheritance by taking an appropriate example. 15

Unit III

5. (a) What is virtual function, virtual constrcutor, virtual destructor and concrete class ?

(b) What is polumorphism ? Explain dynamic and static binding in detail. 15

6. What are different modes to read ? Write data from a file. Write a program to read data from *xy* file and write into *ab* file in a random method. 15

Unit IV

7. What is differnce between exception and error ? Write a program to handle arithemetic exception and array exception in C++. 15

8. What is function template and class template ? Explain template with the help of an example. Write a program to overload the template with the help of an appropriate example. 15

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

BT-3/D-22 43171

MATHEMATICS–III

BS-205A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Seciton. All questions carry equal marks.

Section A

1. (a) Discuss the convergence of the series $\sum \frac{\sqrt{n}}{\sqrt{n^2+1}} x^n$.

(b) Prove that the series $\sum \frac{x^n}{2n!}$ is convergent.

2. (a) Obtain a Fourier series expansion of the following periodic function of period :

$$f(x)=\begin{cases}\frac{1}{2}+x, & -\frac{1}{2}\le x\le 0\\ \frac{1}{2}-x, & 0<x<\frac{1}{2}\end{cases}.$$

(b) Find Fourier cosine series expansion of a periodic function $f(x)=x,\ 0<x<\pi$.

Section B

3. (a) Solve the differential equation :

$$\left(y^4+2y\right)dx+\left(xy^3+2y^4-4x\right)dy=0.$$

(b) Apply the method of variation of parameters to solve the differential equation $\frac{d^2y}{dx^2}+y=\operatorname{cosec}x$.

4. (a) Find the solution to the Bernoulli equation $\frac{dy}{dx}+\frac{y}{x}=x^2y^2$.

(b) Solve the equation :

$$\frac{d^2y}{dx^2}+2\frac{dy}{dx}+4y=\cos 2x.$$

Section C

5. (a) Find the area lying inside the cardioid $r=2(1+\cos\theta)$ and outside the circle $r=2$.

(b) Evaluate $\int_0^2\int_0^{\sqrt{2x-x^2}}\frac{x\,dy\,dx}{\sqrt{x^2+y^2}}$ by changing to polar form.

6. (a) Evaluate the double integral $\int_0^{\infty}\int_0^{x}xe^{-\frac{x^2}{y}}\,dy\,dx$.

(b) Evaluate the integral $\iiint\left(x^2+y^2+z^2\right)dx\,dy\,dz$ throughout the volume of the sphere $x^2+y^2+z^2=4$.

Section D

7. (a) Find the magnetic flux generated by the magnetic field $\overline{F} = yz\hat{i} + zx\hat{j} + xy\hat{k}$ over the surface of the sphere $x^2 + y^2 + z^2 = 4$ in the first octant.

   (b) Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ and $z = x^2 + y^2 - 3$ at the point (1, 2, 3).

8. (a) Find the directional derivative of the function $xy + yz + zx$ at the point (1, 2, 1) in the direction of the vector $\hat{i} + \hat{j} + \hat{k}$.

   (b) A fluid motion is given by $\overline{V} = r^2\overline{r}$. Show that the motion is irrotational.

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

BT-3/D-22 43172

FUNDAMENTALS OF MANAGEMENT

HM-905-A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Define the concept and functions of management. 15

2. Write notes on the following : 8+7

   (a) Henry Fayol's principles.

   (b) Social responsibilities of business.

Unit II

3. What is financial planning ? Briefly discuss the tools of financial planning. 15

4. Explain working capital. Discuss the features of appropriate capital structure. 15

Unit III

5. Write short notes on the following : 7.5+7.5

   (a) Importance of personnel management

   (b) Function of personnel management.

6. Write short notes on the following : 7+8

   (a) Importance of job analysis

   (b) Process of job analysis.

Unit IV

7. What are the objectives of production management ? Explain plant layout. 15

8. Write short notes on the following : 8+7

   (a) Marketing mix

   (b) Discuss scope of international marketing.

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

BT-5/D-22 **45198**

JAVA PROGRAMMING

Paper–ES–301A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each Unit-I to Unit-IV. All questions carry equal marks.

UNIT-I

1. (a) Differentiate between object oriented programming language and object based programming language. Write the importance and structure of Java program.

(b) What do you mean by object and class in Java? Write the steps for creating an object from a class and automatic garbage collection. (8+7=15)

2. (a) What is array of characters? Discuss about operations on string handling using string buffer class.

(b) Define abstraction, polymorphism and inheritance? Discuss abstraction through abstract classes.

(8+7=15)

UNIT-II

3. (a) What is CLASSPATH? Write a brief note on packages in Java. Discuss about access protection in packages.

   (b) How do you deal with different types of exceptions in Java? Discuss about checked and unchecked exceptions. (8+7=15)

4. (a) What are the different states in lifecycle of thread? Discuss about thread priorities. How does thread communicate with each other?

   (b) Briefly discuss about byte and character structure in Java. How do you store and retrieve objects from file? State an example. (8+7=15)

UNIT- III

5. What is an Applet? Explain Applet life cycle. Compare an Applet with a standal one Java application. How do you pass parameters to Applets? (15)

6. (a) What is JDBC? What are the various types of JDBC Driver? Write code snippet for each type of JDBC connection.

   (b) Draw the hierarchy of Java AWT classes. How do you create a frame in AWT by extending frame class? (8+7=15)

UNIT-IV

7. (a) What is delegation event model? Discuss event classes in JAVA. How events are handled within the class and by other class?

   (b) Discuss the role and advantages of Servlets in web application development. (8+7=15)

8. Write notes on the following :

   (a) Java server pages.

   (b) Single thread model. (8+7=15)

Roll No. ..... Total Pages : 2

BT-5/D-22 **45199**

INTERNET AND WEB TECHNOLOGY

Paper–PC–IT-301A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions by selecting at least one question from each unit.

UNIT-I

1. (i) Make header diagram of IPv6. Explain the role of each field in IPv6 header? (8)

(ii) Discuss the working of Internet. List major components used in Internet. (7)

2. (i) Explain OSI model in detail. (8)

(ii) Discuss different classes of IP address. (7)

UNIT-II

3. (i) Explain MIME in detail. (7)

(ii) Discuss the working of search engines. (8)

4. (i) Explain the working of IMAP. (7)

(ii) Differentiate directories search engine and meta search engine with example. (8)

UNIT-III

5. (i) Write syntax for CSS padding, element selector, border, lists. (8)

(ii) Write HTML code for table consisting of 3 rows and 3 columns. (7)

6. (i) Explain different types of style sheets used in CSS. (7)

(ii) Differentiate call () and apply () function in java script using example. (8)

7. Write short notes on :

(i) Network Attacks.

(ii) Digital Signature. (2×7½=15)

8. (i) Discuss different types of decryption mechanisms. (7)

(ii) Explain the working of Apache server in detail. (8)

Roll No. ..... Total Pages : 2

BT-5/D-22 **45200**

COMPUTER GRAPHICS

Paper–PC–IT-303A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least one question from each unit. All questions carry equal marks.

UNIT-I

1. (a) Write and explain scan line polygon filling algorithm. (7.5)

(b) What are the various graphics devices? Explain any three in brief. (7.5)

2. (a) Compare and contrast the DDA and Bresenham's line drawing algorithms. (8)

(b) What are the various applications of computer graphics? Explain in detail. (7)

UNIT-II

3. Explain the following two-dimensional transformations using suitable examples :

(i) Translation.

(ii) Scaling.

(iii) Rotation.

(iv) Shearing.

Also state applications of each type of transformation. (15)

4. Discuss the various methods for curve clipping and text clipping using suitable examples in detail. (15)

UNIT-III

5. What are the various three-dimensional display methods? Explain in detail using suitable examples. (15)

6. How can you perform :
   (i) Coordinate axis Rotation about all the dimension.
   (ii) Shearing.
   (iii) Quaternion method for Rotation.
   (iv) Reflection, in three-dimensional transformation? (15)

UNIT-IV

7. (a) What is a Bezier curve? Explain its major properties in detail. (7.5)
   (b) What are the various continuities conditions in spline representations? Explain. (7.5)

8. (a) Write and explain the priority algorithm using suitable example. (7.5)
   (b) Explain the working of area coherence algorithm using suitable example. (7.5)

Roll No. ..... Total Pages : 2

BT-5/D-22 **45201**

COMPUTER ORGANIZATION AND ARCHITECTURE

Paper : PC-IT-305-A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting atleast *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) What is Von-Neumann model of machine? Explain along with Flynn's classification of computers. (7.5)

(b) Explain various functions of an operating system in detail. (7.5)

2. (a) Discuss the various types of instruction available in a typical computer. (7.5)

(b) Explain any three peripheral devices used for I/O purpose in computers. (7.5)

UNIT–II

3. (a) What do you mean by register transfer? Explain basic symbols of register transfer using suitable examples. (5)

(b) Explain the working and design of a 4-bit arithmetic circuit. Also draw the table for the circuit. (10)

4. (a) What is microprogram sequencer? Explain its working in detail. (7.5)

(b) Explain the difference between hardwired control and microprogrammed control. Is it possible to have a hardwired control associated with a control memory? (7.5)

UNIT–III

5. What is an instruction format? Explain various types of CPU organization. Write an assembly program using three-address instructions, two-address instructions, one-address instructions, zero-address instructions and RISC instructions. (15)

6. (a) Explain any five types of addressing modes using suitable examples. (7.5)

(b) Write a short note on program interrupt. (7.5)

UNIT–IV

7. (a) What is cache coherence? How the problem of cache coherence can be solved? (7.5)

(b) What is DMA? Explain its working in brief. (7.5)

8. (a) What is an IOP? Explain its working. (7.5)

(b) Discuss the memory hierarchy in detail. (7.5)

Roll No. ..... Total Pages : 2

BT-5/D-22 **45203**

COMPUTER NETWORKS

Paper–OE–IT–303A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions selecting atleast *one* question out of each unit.

UNIT–I

1. Explain the following terms :
   (a) Bandwidth. (3)
   (b) Physical and Logical Topologies. (9)
   (c) Media 10 base 2. (3)

2. What is OSI Model? Explain all the functions of layers in brief. (15)

UNIT–II

3. What is TCP/IP Model? Explain all the layers in brief. (15)

4. What do you mean by Protocol? Explain SMTP, FTP and SNMP in detail. (15)

UNIT–III

5. Define Attenuation. Also explain different types of twisted pair cable, untwisted pair cable and optical fibre cable. (15)

6. Explain ALOHA protocol, CSMA/CA and token ring protocol with the help of an example. (15)

UNIT–IV

7. (a) What do you mean by IP address class, subnetting, net mask. Explain it with the help of an example.
   (b) Explain the structure and working of IPv6 in detail. (15)

8. What do you mean by static and dynamic routing? Explain distance vector routing, link state routing, hierarchical routing and multicast routing. (15)

Roll No. ..... Total Pages : 2

BT-7/D-22 **47278**

COMPILER DESIGN

Paper–PE-IT-D-405 A

Time allowed : 3 Hours] [Maximum Marks : 75

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

1. What is the significance of the term 'phase' in a compiler? Describe the structure of a compiler in terms of its various phases and illustrate the phases of compilation process with reference to a small program fragment written in a language of your choice.

2. Describe the steps to construct an NFA that can be used as a recognizer for the tokens corresponding to a regular expression. Illustrate the whole process using the regular expression (b | ab*ab*)* .

3. (a) What are the basic constituents of a grammar? Generates the grammar for strings having equal number of a's and b's.

   (b) Describe any one data structure used to organize symbol tables?

4. (a) What is a Shift-Reduce Parser? Illustrate shift-reduce parsing for an input string of your choice.

   (b) What is an LR parser? Describe the SLR technique for producing LR parsing tables.

5. Describe the following intermediate code representations :

   (i) Syntax tree

   (ii) Postfix notation

   (iii) Three-address code.

6. (a) How is a code generated for a basic block from its DAG representation?

   (b) What is type checking and what is its need in a compiler?

7. What are basic blocks? How is optimization of basic blocks carried out?

8. Answer the following questions in brief :

   (i) How is memory allocated using Heap Storage management?

   (ii) What is Data Flow Analysis?

   (iii) What are the different ways of passing parameters to procedures?

Roll No. ..... Total Pages : 2

BT–7/D-22 **47280**

SOFTWARE PROJECT MANAGEMENT

Paper–PE–IT–D409A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

Unit–I

1. (a) Explain the Boehm fundamental economic relationship for conventional Software. How to improve the Software economics? 8

   (b) Describe in brief staffing principles proposed by Boehm. 7

2. (a) What types of Automation can be done through Software environment? Justify with a suitable example. 8

   (b) Explore the principles of modern Software management in detail. 7

Unit–II

3. (a) Identify the role of management Artifacts, Engineering artifacts and Pragmatics artifacts to develop cost effective Software process. 8

(b) Explain the need of Workflows and checkpoints of the processes in Software project management. 7

4. (a) Describe the inception, elaboration and construction phase of the Software life cycle with the help of suitable examples. 10

(b) Write short note on training phase. 5

Unit–III

5. (a) How can we implement Iterative process planning? Explain with a suitable example. 8

(b) What are the basic life cycle expectations in software management? 7

6. (a) Describe the role of project organizations and responsibilities. 8

(b) Explain the project control and process instrumentation core metrics. 7

Unit–IV

7. (a) State and explain the Cost monitoring and earned value analysis. 7

(b) How to visualize the progress of any Software project. 8

8. Write short notes on the following : 5×3=15

(a) Contract Management.

(b) Software Configuration Management.

(c) Project Tracking.

Roll No. ..... Total Pages : 2

BT-7/D-22 **47283**

CYBER LAW & ETHICS

Paper–OE–IT–401 A

Time allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each unit. All questions carry equal marks.

UNIT-I

1. (i) Differentiate civil jurisdiction and cyber jurisdiction with example. 8

   (ii) Discuss the significance of domain name in controlling cyber crime. 7

2. (i) Discuss the working of courts with help of court hierarchy. 7

   (ii) Differentiate doctrinal approach and real approach with example. 8

UNIT-II

3. (i) Discuss the role of Electronic governance in cyberspace. 7

   (ii) Write and explain various steps involved in Cryptographic algorithm. 8

4. (i) Explain the working digital signature in detail. 7

(ii) Discuss the amendments and limitation of IT act 2000. 8

UNIT-III

5. (i) Discuss various methods to protect electronics database. 8

(ii) Differentiate copyright and patent with example. 7

6. Write short notes on the following :

(i) Indian Penal Code. 7½

(ii) Criminal Procedural Code. 7½

UNIT-IV

7. (i) Discuss the significance of cyber ethics. 7

(ii) How AI can play an important role in Cyber ethics? 8

8. (i) Discuss various Ethics used for information society. 7

(ii) Define Block chain. Discuss the role of chain in cyber ethics. 8

Roll No. ..... Total Pages : 2

BT-8/D-22 **48357**

CLOUD COMPUTING

Pape–PE–IT–A-404-A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting one question from each unit.

UNIT-I

1. (a) Explain the concept of cloud computing. (5)

(b) What are the pros and cons of using cloud computing. (10)

2. (a) Why organizations are moving to cloud, what are the reasons of moving to cloud instead of having own infrastructure. (5)

(b) Differentiate between cloud, cluster and grid computing. (10)

UNIT-II

3. Explain SAAS, IAAS and PAAS models and services provide by them. (15)

4. Differentiate between public, private and hybrid cloud with help of examples. (15)

UNIT-III

5. Elaborate the term Service level agreement in cloud computing and write some parameters specified in this document. (15)

6. What is Cloud scalability, how scaling is achieved in cloud and what are its benefits? (15)

UNIT-IV

7. What are various security issues in cloud and what measure must be taken for removing these security issues. (15)

8. Why authentication in cloud is important and what authentication methods are provided by cloud for its users. Explain in detail. (15)

Roll No. ..... Total Pages : 2

BT-8/D-22 **48360**

CYBER SECURITY

Paper : OE-IT-402A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) What is Cyber Crime? List the types of cyber criminals.

(b) Explain the following terms related to cyber crimes :

(i) Spamming.

(ii) Identity Theft.

2. (a) Explain various threats to Information Security.

(b) Discuss in detail about the Policy standards in information security.

3. (a) Explain the main techniques hackers can use to get hold of your password.

(b) How to prevent SQL Injection Attacks.

4. (a) What is Cyber Stalking? Explain various types of Stalkers with a case study.

(b) What are the DDoS Attacks and explain how to protect from DDoS attacks.

5. (a) Distinguish between active attacks and passive attacks.
   (b) Explain the following terms :
      (i) E-mail Bombing/Mail Bombs.
      (ii) Intrusion Detection.

6. (a) What is data security? Explain various methods for providing data security.
   (b) What are the physical security countermeasures for laptops?

7. (a) What is the need for Computer Forensics?
   (b) Explain in detail the forensic analysis of E-mail.

8. (a) What are the positive aspects of the ITA 2000? Explain.
   (b) Discuss the impact of Digital signatures in ITA 2000.

Roll No. ..... Total Pages : 2

BT-8/D-22 **48364**

INFORMATION SECURITY

Paper–OE-IT-410A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all. Selecting at least *one* question from each unit. All questions carry equal marks.

UNIT-I

1. Describe the types of Security Attacks. (15)

2. (a) Explain Substitution techniques. (10)

(b) Write a short note on symmetric and symmetric key cryptography. (5)

UNIT-II

3. Write short notes on the following :

(a) Stream Ciphers.

(b) Location and placement of encryption function. (15)

4. Describe the Principles of Public key crypto systems. (15)

UNIT-III

5. Describe message authentication algorithms. (15)

6. Discuss the following terms :

(a) Digital signatures.

(b) Biometric authentication. (15)

UNIT-IV

7. (a) Explain virus and related threats.
   (b) Write a short note on Web Security. (15)

8. Describe types of firewalls. (15)
