Roll No. ....   Total Pages : 2

ELECTRONICS FUNDAMENTALS
Paper : ES-201A

Time : Three Hours]   [Maximum Marks : 75

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

UNIT–I

1. (a) What is a PN junction diode? Draw and discuss the
         V-I characteristics of a PN junction diode.

    (b) Differentiate between full wave rectifier and bridge
         rectifier.   15

2. (a) How a Zener diode act as a Voltage Regulator? Discuss
         the operation in detail.

    (b) Discuss with the help of VI characteristics, how an
         Avalanche breakdown differs from a Zener breakdown.
                                                           15

UNIT–II

3. (a) Discuss the operation of a transistor as a switch.

    (b) Discuss in detail the operation of a NPN transistor.
                                                           15

4. (a) What is biasing? Discuss in detail the Voltage divider biasing method.

(b) Draw and explain the common emitter transistor configuration and its characteristics. 15

UNIT–III

5. (a) What is Barkhausen criterion of oscillations? Derive its equation.

(b) What is Hartley's Oscillator? Discuss its operation in detail. 15

6. Write short notes on the following :
(a) Colpitt's oscillator.
(b) Wein bridge oscillator. 15

UNIT–IV

7. (a) Discuss the terms, Senstivity, Resolution, Accuracy and Precision in context to electronic measurement system.

(b) What is an error? Discuss the various types of errors encountered in an electronic measurement system.

15

8. (a) What is a transducer? Discuss the working of a LVDT with its applications.

(b) What is Data acquisition system? With the help of a block diagram, explain its working. 15

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Roll No. ....   Total Pages : 2

BT-3/D-21

43158

DIGITAL ELECTRONICS AND LOGIC DESIGN
Paper–ES-217 A

Time : Three Hours]   [Maximum Marks : 75

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

UNIT–I

1. (a) Perform the following operation using 2's compliment :
45–28.

(b) State and prove De-Morgan's theorem for Boolean
algebra. Prove $A(A'+C) (A'B+C') = 0$.

(c) Design a BCD to Gray code converter.   (5×3=15)

2. (a) Discuss in brief about error detection and correction
codes.   5

(b) Minimize the following expression using K-Map and
realist the obtained expression using NAND gates only :
$F(A, B, C, D) = \Sigma m (0, 2, 3, 5, 7, 8, 9, 13)$.   10

UNIT–II

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

(b) Explain working of 4:1 MUX. Realize the following
expression using 8:1 Mux :

$Y = \Sigma m (0, 1, 2, 3, 6, 7, 9, 10, 11, 12, 15)$.   8

43158//KD/41   [P.T.O.

4. (a) What is encoder ? Design and explain working of BCD to binary encoder. 7

(b) What is demultiplexer ? How is it different from decoder? Design 1:8 demultiplexer. 8

UNIT–III

5. (a) What is flip flop? Draw logical diagram of SR flip-flop. Explain its working. Mention the problem associated with SR flip-flop. 8

(b) Convert SR flip-flop to JK flip-flop. 7

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

(b) What are registers? Mention different types of registers. Explain their working. 8

UNIT–IV

7. (a) Explain working of weighted resistor D/A converter.

8

(b) Describe the specifications of D/A converter. 7

8. (a) Draw diagram of successive approximation type A/D converter. 8

(b) Explain working of PAL logic device. 7

BT-3/D-21   **43159**

DATA STRUCTURE
Paper–IT-205A

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *five* questions out of *eight* questions selecting at least *one* question from each unit.

UNIT–I

1. (a) What is abstract data types ? Also explain built in and user defined Data structure with the help of example.

8

(b) What is sparse matrix ? Write a algorithm to transpose a matrix of $(p \times q)$ size matrix.   7

2. Write a algorithm to sort data 23, 67, 13, 21, 2, 56 with the help of Quick sort algorithm and explain all the steps.   15

UNIT–II

3. (a) What is stack and its uses.   5

(b) Write an Algorithm from infix to Postfix conversion using stack. Explain A+B/C*(D-A)^F^H and convert to postfix expression step-by-step.   10

4. What do you mean by circular Queue ? Write an algorithm to implement insertion and deletion in linear queue and circular Queue.   15

UNIT–III

5. What do you mean by linked list ? Write an algorithm to implement Stack Using Linked List. 15

6. What is double linked list ? Write an algorithm to implement deletion and insertion in double linked list. 15

UNIT–IV

7. What is Binary tree ? Write an algorithm to create binary tree from 23, 56, 78, 26, 65, 109. And insert 37 data in this tree. 15

8. What is directed graph and undirected graph ? Also explain minimum spanning tree with the help of example. 15

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BT-3/ D-21: 43160
PC-IT-207A : Object Oriented Programming using C++

Time: 3 Hours]   **[Max. Marks: 75**

	Note: Attempt any five questions out of eight questions selecting atleast one from each unit	Marks allotted
	UNIT-1	
1	(a) What is use of namespace and object in OOPS (b) What do you mean by Constructor and Destructor in C++. Explain Copy Constructor and Parametrized Constructor with the help of example.	4 11
11	(a) What is Dynamic Memory location with new and delete keywords. (b) What is encapsulation and Friend Class and its uses. Write a program to access Data members using an example.	5 10
	UNIT-2	
111	What is operator overloading. Explain the >>, << operator with the Help of example.	15
IV	What is inheritance and write a program to find area of cube if base Class is triangle with the help of private and protected inheritance.	15
	UNIT-3	
V	(a) What do you mean by virtual function and pure virtual function. (b) What is polymorphism and explain different types of polymorphism with the help of example.	5 10
VI	What do you mean by file handling. Write a program to read data From a file and write it into another file in sequence manner.	15
	UNIT-4	
VII	What is Function template and write a program to overload function template and explain it in brief.	15
VIII	What is Exception handling. Write a program to handle divide by zero and array bound Exception.	15

Roll No. ....   Total Pages : 2

BT-3/D-21   **43161**

FUNDAMENTALS OF MANAGEMENT
Paper–HM-905A

Time : Three Hours]   [Maximum Marks : 75

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

UNIT–I

1. Define management. What constitute business environment?
Discuss.   15

2. Discuss Fayol's contribution to management thoughts.   15

UNIT–II

3. Define financial management. Discuss the status and duties
of financial executives in an organisation.   15

4. Write a detailed note on various short-term and long-term
sources of finance.   15

UNIT–III

5. Elucidate the objectives and functions of personnel
management.   15

6. Clarify the meaning of job analysis, job description, and job
specification. Write down the job description, and job
specification for the post of computer engineer at entry level.
15

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UNIT–IV

7. (a) Clarify the nature of production management.

  (b) Bring out the comparison among job, batch and flow production. 15

8. Clarify the nature and scope of marketing management.

15

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Roll No. ....   Total Page : 2

BT–5/D–21   **45155**

INTRODUCTION TO DIGITAL &
DATA COMMUNICATION

Paper–IT–303N

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) List the tyes of Communication channels? Explain the different classifications of electronic communication system.   8

   (b) Differentiate between AM. FM and PM   7

2. (a) Draw comparison between Analog and Digital modulation? Write in brief the advantages and disadvantages of Digital communication.   8

   (b) What do you mean by Signal and concept of bandwidth? Write the sources of signal.   7

UNIT–II

3. (a) What is TDM? Compare STDM and STAT MUX methods of time division multiplexing.   8

   (b) Explain the FDM. What methods are used to send FDM channels.   7

4. (a) Explain sampling theorem. What is quantization process and why is it required?   8

   (b) Write a detailed note on PAM and PPM.   7

UNIT–III

5. What is Line coding? Explain various encoding scheme with suitable examples.   15

45155/K/238

6. What are modulation techniques? Differentiate among ASK, PSK and FSK? Which technique is better among them? 15

UNIT–IV

7. (a) Differentiate between Synchronous and Asynchronous transmission. 8

   (b) What is meant by error detection and correction? Explain the Hamming code with an example 7

8. Explain the following : 8,7

   (a) RS-449   (b) HDMI.

BT–5/D–21   **45198**

JAVA PROGRAMMING
Paper–ES–301A

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. Explain the various Applications of Java and how Java programming is important for Java.   15

2. Write short notes on following :   15

    (a) The Byte-Code.   (b) Constructors vs Methods.

    (c) Automatic Garbage Collection.

UNIT–II

3. What is Multithreading in Java? Explain the inter thread communication with the help of suitable example.   15

4. Explain the difference between method overriding and method overloading with the help of suitable example.   15

UNIT–III

5. Explain the Applet life cycle. Write a Java applet for calculator, which looks like as Calculator and perform different mathematical operations.

    15

6. Explain the following :   15

    (a) Relation Databases.   (b) JDBC API.

    (c) AWT classes.

UNIT–IV

7. (a) Explain the role and advantages of Java Servlets in Web Applications development.

    (b) Explain HTTP Servlets.   15

8. Explain two events handling mechanisms and also explain Delegation Event Model and event handling process.   15

Roll No. ....   Total Page : 1

BT–5/D–21   45199

INTERNET & WEB TECHNOLOGY
Paper–PCIT301A

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) Discuss the Working of Internet. List major components used in Internet.   7½

    (b) Make header diagram of IPv6. What is the significance of each field in IPv6 header?   7½

2. (a) Differentiate Internet, Intranet and Extranet with example.   7½

    (b) Explain the OSI model in detail.   7½

UNIT–II

3. (a) Discuss different types of Modern used for Networking.   7½

    (b) Explain the Working of IMAP.   7½

4. (a) Discuss different types of search Engines.   7½

    (b) Explain the working of SMTP.   7½

UNIT–III

5. (a) Write Syntax for CSS padding, element selector, border lists.   7½

    (b) Write HTML code for table consisting of 3 rows and 3 columns.
                                                                      7½

6. (a) How will you explain closures in JavaScript.   7½

    (b) Discuss different types of frames using HTML.   7½

UNIT–IV

7. (a) Discuss different types of encryption mechanisms.   7½

    (b) Explain the Working of Apache server in detail.   7½

8. Write short notes on the following :   2×7½=15

    (a) Digital Signature.   (b) Intruder detection system.

45199/K/274

BT–5/D–21   **45200**

COMPUTER GRAPHICS

Paper–PC–IT–303A

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) What is Computer graphics? Discuss its major applications.   7

    (b) List and explain the Operating characteristics for the following display devices :   8

        (i) Light Pen   (ii) Digitizers.

2. (a) Write an explain the Bresenham's algorithm for line drawing.   7

    (b) Write and explain mid-point circle drawing algorithm.   8

UNIT–II

3. Prove that the Multiplication of transformation matrices for each of the following sequence of operations is commutative :   15

    (i) Two successive rotations

    (ii) Two successive translations.

    (iii) Two successive scalings.

4. Write and explain the Sutherland-Hodgeman algorithm for polygon clipping.   15

UNIT–III

5. Explain the following in detail :   15

    (a) Parallel Projection.   (b) Perspective Projection.

    (c) Depth cueing.

6. How can you perform : 15

   (a) Scaling   (b) Translation

   (c) Rotation   (d) Reflection , in three-dimensional transformation.

UNIT–IV

7. What is Spline representation? Explain various type of Spline representations in detail. 15

8. (a) Write and explain the depth-buffer algorithm for detecting visible surface. 7½

   (b) Explain the working of scan line coherence algorithm using suitable example. 7½

Roll No. .... Total Pages : 2

BT-5/D-21 **45201**

COMPUTER ORGANIZATION AND ARCHITECTURE
Paper–PC–IT–305A

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 Von-neumann model of Computer. 8

   (b) Explain the essentials of Multilevel view point of Machine. 7

2. What do you understand by Computer Instruction ? Discuss Instruction Cycle. Explain Memory reference, Register reference and Input-output Instructions. 15

UNIT–II

3. (a) Explain Register Transfer Language (RTL) with example. 8

   (b) Discuss the essentials of designing of Control Unit. 7

4. Explain the following with suitable representation : 5×3=15

   (a) Arithmetic Micro Operation.

   (b) Logical Micro Operation.

   (c) Shift Micro Operation.

UNIT–III

5. Explain the functioning of Central Processing Unit (CPU). With suitable examples, explain the essentials of Accumulator, Register, Stack and Memory. 15

6. (a) Explain Program control and Program Interrupt.   8

    (b) Compare and contrast RISC and CISC.   7

UNIT–IV

7. (a) Compare Ram and ROM with their types and examples.   8

    (b) What is Cache Memory ? Explain Associative and Direct mapped Cache.   7

8. Explain the following in detail :

    (a) Direct Memory Access (DMA).   8

    (b) Input-Output Processor.   7

Roll No. .... Total Pages : 2

BT-5/D-21 **45203**
COMPUTER NETWORKS (ELECTIVE)
Paper–OE-IT-T 303A

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) Differentiate between LAN, MAN, WAN and wireless networks in terms of working principle / technology, capacity and network diameter. 7

   (b) Explain the functions of all the layers present in OSI reference model. 8

2. (a) Differentiate between 10base5, 10base10, 10-baseT and 100baseFX LAN technologies. 8

   (b) Describe the challenges associated with wireless networks. 7

UNIT-II

3. (a) Draw IP header and describe all the IP header fields. 8

   (b) Discuss the role of ARP, DHCP and DNS protocols. 7

4. (a) What are the features of TCP and UDP protocols? What kind of applications do both of these individually support? 9

   (b) Explain following protocols - SMTP, SNMP and TELNET. 6

UNIT-III

5. (a) Explain various media used in connected devices and computers in computer networks. 6

   (b) What are multiple access protocols? What are the differences between CSMA and ALOHA? 9

6. (a) What do you mean by flow control? Why is it needed? Explain sliding window protocol. 9

45203/K/276 **P. T. O.**

(b) What are different error detection and error correcting methods used in computer networks? Discuss. 6

UNIT-IV

7. (a) Describe the fundamentals behind unicast versus multicast routing protocols. Discuss working of hierarchical routing scheme. 9

(b) Explain ATM adaptation layer in detail. 6

8. (a) Explain the concept of subnetting in IP. Explain with the help of example the concept of subnet mask. 9

(b) Discuss the functioning of routing protocol for mobile hosts. 6

Roll No. ....   Total Pages : 2

BT-7/D-21   **47204**

COMPILER DESIGN
Paper : PE-IT-D-405A/IT 401N

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt any *five* questions, select atleast *one* question from each unit. All questions carry equal marks.

UNIT–I

1. What is a compiler, why compilation is done in phases, explain compilation phases.

2. (a) What is role of regular expression in Lexical Analysis.
   (b) What is finite Automata.

UNIT–II

3. (a) Explain Parsing and Discuss role of a Parser.
   (b) Explain construction of Canonical LR parser with example.

4. What are context free grammars. Design a Minimal DFA for a language having even numbers of 'a' and even numbers of 'b' given $\Sigma = \{a, b\}$

UNIT–III

5. What is Direct Acyclic Graph. Give an algorithm for obtaining DAG for a given sequence of two address code in compiler.

6. Write note on :
   (a) Sources of error and error handling process.
   (b) Use of Boolean expressions.

UNIT–IV

7. Define Optimization, discuss principle sources of optimization, Explain optimization achieved using Data flow analysis.

8. Write note on :
   (a) Peephole optimization.
   (b) Static storage management.
   (c) Optimization for machine independence.

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BT-7/D-21   **47207**

ADVANCED COMPUTER NETWORKS
Paper : IT-415N/PE-IT-D-401A

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) Explain the seven-layer architecture of OSI model in computer networks.   (8)
    (b) Elaborate MAC protocols for high-speed LANs.   (7)

2. (a) Explain in detail TCP/IP suite of protocols.   (8)
    (b) Explain in detail Distributed Queue Dual Bus (DQDB).   (7)

UNIT–II

3. (a) How does IPv6 solve the problem Of IPv4 address exhaustion?   (8)
    (b) What are the advantages of IPv6? What is the difference between unicast and multicast address?   (7)

4. Explain the structure of IPv6 header and its fields in detail. Also explain static & automatic address configuration.   (15)

UNIT–III

5. (a) What is Mobile IP? Elaborate security related issues in Mobile IP. (8)

(b) Define IP multicasting. Describe how does multicast protocols work. (7)

6. (a) What is SSL? Why do you need SSL Certificates? How does SSL work? (8)

(b) What is authentication header? Explain different fields of authentication header in detail. (7)

UNIT–IV

7. Explain different security issues in Wireless LAN. What are the various protocols in a (WAP) wireless application protocol suite? (15)

8. Explain the following :
(a) SNMP.
(b) IGMP.
(c) GPRS. (15)

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BT-7/D-21   **47211**

SOFTWARE PROJECT MANAGEMENT
Paper–IT-423-N/PE-IT-D-409A

Time : Three Hours]   [Maximum Marks : 75

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

UNIT–I

1. (a) Enlist and explain the top ten software metrics as stated by Boehm.   7½

   (b) Discuss the various generations of software economics leading to target objectives.   7½

2. (a) State and explain the principles of modern software management.   7½

   (b) What are the various mechanisms to reduce the software product size?   7½

UNIT–II

3. Describe the various life-cycle phases in software management process in detail.   15

4. (a) Discuss the various elements in the artifacts of the software management process in brief.   7½

   (b) Explain a typical sequence of life-cycle checkpoints in brief.   7½

UNIT–III

5. (a) Explain the iterative planning process used throughout the life-cycle of software. 7½

(b) State and explain the various activities of software management teams. 7½

6. (a) What is meant by round-trip engineering? Explain in detail. 7½

(b) Discuss the various quality indicators for the measurement of software change. 7½

UNIT–IV

7. Discuss the general framework for the management and control of a project using suitable examples. 15

8. Write short notes on :

(a) Earned Value Analysis.

(b) Contract Management.

(c) Project Tracking. 15

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BT-7/D-21   **47283**

CYBER LAW AND ETHICS
Paper : OE-IT-401A

Time : Three Hours]   [Maximum Marks : 75

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

UNIT–I

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

UNIT–II

3. (i) What is IT act 2000? What is the need of IT Act? What are its limitations?   8

(ii) Classify various cryptography methods for data protection with example.   7

4. (i) Explain the working digital signature in detail. 8

(ii) Discuss the role of cyber regulations appellate tribunal.

7

UNIT–III

5. (i) How Indian evidence act is different from bankers book evidence act? 8

(ii) Discuss various methods to protect electronics database.

7

6. Write short notes on :

(i) Indian Panel code.

(ii) Online Dispute Resolution. (2×7½=15)

UNIT–IV

7. (i) Differentiate B2B and B2C e-commerce models. 7

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

8. (i) How Al can play an important role in Cyber ethics?

8

(ii) Discuss the significance of EDI in electronic business.

7

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