Computer Networks   **Q. P. Code : 549603**

(3 Hours)   **[Total Marks: 80]**

N.B.: (1) Question No. 1 is compulsory.

(2) Attempt any Three questions out of remaining questions.

1.   Answer any four   **20**
    (a) Discuss and compare various types of Networks.
    (b) Explain PSTN.
    (c) Compare Circuit switched and Packet switched networks.
    (d) Differentiate between TCP and UDP.
    (e) Explain Framing in Data link layer.

2.   (a) Describe about the different Guided Transmission Medias .   **10**
    (b) What are three main function of Network layer? What is Routing. Explain   **10**
        Distance vector Routing.

3.   (a) Explain the Connection Establishment and Termination in TCP with neat   **10**
        diagram.
    (b) Explain the functions of data link layer   **10**

4.   (a) Explain TCP Sliding Window protocol with neat diagram in detail.   **10**
    (b) Explain HDLC protocol with suitable diagram.   **10**

5.   (a) Explain the following with example :-   **10**
        (i) Repeaters (ii) Switches (iii) Hubs (iv) Routers (v) Bridges
    (b) What are the elements of Transport Layer   **10**

6.   Write short notes on (Any Four)   **20**
        (i)   GSM operation subsystem
        (ii)   Networking using Windows and LINUX operating system
        (iii) Internet Control Protocol
        (iv)   Mobile Telephone System
        (v)   BGP.

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S.E./ INFT. / SEM-IV (CBSGS)

QP Code :549803

COMPUTER ORGANIZATION & ARCHITECTURE

MAX MARKS:80   TIME:03 HRS

N.B.   1. Question No 1 is compulsory.

2. Solve any **three** questions out of remaining five questions.

3. Assume suitable data if necessary.

Q. 1. Solve any **four** out of five.   (4*5=20)

    a. What are the major requirements of I/O module?

    b. Draw the flowchart of non-restoring division algorithm and explain the same.

    c. With the help of diagram, explain Von-Neumann architecture.

    d. Compare SRAM & DRAM.

    e. Note on pipeline hazards.

Q. 2. a) Explain Flynn's classification in detail.   (10)

    b) Discuss the various characteristics of Memory.   (10)

Q. 3. a) Multiply (-4) and (2) using Booth's algorithm.   (10)

    b) Explain Instruction cycle with Interrupt execution with example.   (10)

Q. 4. a) Express $(4.50)_{10}$ in IEEE 754 single & double precision standard of floating
      point number representation.   (10)

    b) Explain design of control unit wrt softwired and hardwired approach.   (10)

Q. 5. a) Divide 13 by 3 using restoring division algorithm.   (10)

    b) Explain different addressing modes with example.   (10)

Q. 6. Write a note on any **two**.   (2*10=20)

    a. Comparison of RISC & CISC

    b. Programmed I/O

    c. Mapping techniques of Cache memory

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Q. P. Code : 549702

(3 Hours) [Total Marks : 80

N.B. : (1) Attempt any **Four** questions.
(2) Draw suitable **diagram** whenever **necessary**.
(3) Assume suitable **data**, if **necessary**.

1. Attempt **four** sub questions.
   (a) State applications where Automata Theory is used. 5
   (b) What are limitations of finite automata. 5
   (c) Develop an NF A to accept strings ending with 'aba' over {a , b} 5
   (d) Explain with example equivalence between NFA & DFA. 5

2. (a) Consider the grammar G = { (S, A), (0, 1), P, S }, where P consists of : 10
   (i)   S → 0AS | 0   (ii)   A → S1A | SS | 10
   Show the leftmost and rightmost derivation for the input string '001100'. Is given G Ambiguous?
   (b) Construct deterministic PDA to recognize $a^n abb^n$, n > 0 over{ a,b} 10

3. (a) Define Normal form and its types and Convert given grammar to CNF: 10
   (i)   S → bA | aB   (ii)   A → bAA | aS | a   (iii)   B → aBB | bS | b
   (b) Define CFG and construct a CFG for $a^{2n}b^n$ 10

4. (a) Design mealy machine to accept all strings ending with aa or bb 10
   (b) Minimize given DFA- 10
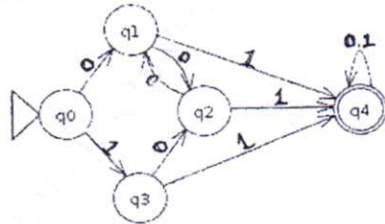
5. (a) Develope ε -NFA to accept $0^n 1^n 2^n$, where n >= 0 over { 0,1 ,2} 5
   (b) Define Halting problem 5
   (c) Give Regular Expressions for- 6
       (i)   Binary strings containing atleast one 11 & atleast one 00
       (ii)   Strings with even number of a's
       (iii)   Strings in which third symbol from end is 'c' over { a,b,c}
   (d) Describe Regular Language for given Regular Expressions 4
       (i)   (ab+ba)*,
       (ii)   1(0+1)(0+1) (0+1) (0+1)* 0

6. (a) Write short note on - Chomsky Hierarchy 7
   (b) Explain Post correspondence problem 7
   (c) Explain Pumping Lemma for Regular Language 6

Q.P. Code : 549904

(3 Hours)   [Total Marks : 80]

Note: 1) Question No.1 is **compulsory.**
      2) Solve **any three** questions out of remaining questions .
      3) Assume suitable data if required.

1. Give **any four** :-
   (a) Explain the functions of webserver.   5
   (b) Difference between static and dynamic web pages.   5
   (c) What is the purpose of the XML DTD.   5
   (d) Explain features of PHP framework.   5

2. (a) What are the major components of a web browser? Draw a neat diagram to   10
       explain them.
   (b) Write the HTML code for the following table: 10

TEMPERATURE				
CITIES	DELHI	MUMBAI	KOLKATTA	CHENNAI
MAXIMUM	21	35	43	50
MINIMUM	5	14	28	32

3. (a) Write a simple JavaScript example program for Fibonacci sequence.   5
   (b) Write a program to find the current date and time using JSP.   5
   (c) Discuss life cycle of a JSP.   10

4. (a) Compare Client-Side vs Server-Side Programming Languages.   10
   (b) What is JQUERY? Illustrate the use of is JQUERY for form validation.   10

5. (a) How to connect to MySQL database using PHP.   10
   (b) Describe the life cycle of ASP.Net   10

6. Write short note on (**any two**)   20
       (i) Important Classes in ADO.NET.
       (ii) Types of CSS.
       (iii) ASP.NET Web server control.
       (iv) Cookies and sessions.

INFO THEORY & CODING   **Q. P. Code : 550000**

(3 Hours)   [Total Marks -80

N.B.- 1. Question No. 1 is compulsory
    2. Attempt any three Questions out of remaining five Questions
    3. Figures to right indicate marks.
    4 all questions carry equal marks.

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1. a) What is Entropy? What are its types?   [4]
   b) Compare Lossy and Lossless compression.   [4]
   c) Write a note on convolution code.   [4]
   d) State Fermat's little theorem and its applications.   [4]
   e) Explain cyclic codes.   [4]

2. a) What do you mean by symmetric key cryptography? Explain DES in detail.   [10]
   b) The generator polynomial for a (7, 4) cyclic code is given by $G(D)= 1+D+D^3$.
     Compute all systematic codewords.   [10]

3. a) Explain LZW compression algorithm with example.   [10]
   b) State Chinese Remainder theorem. Using it solve for X.   [10]

       X=1 MOD 2
       X=2 MOD 3
       X= 2 MOD 5

4. (a) Consider the symbols {1,1,1,1,1,1,1,2,2,2,2,2,2,2,3,3,3,3,3,4,4,4,4,5,5,5,6,6,7}   [10]
    i. Find efficient fixed length code.
    ii. Find Huffman code.
    iii. Compare 2 codes.
  (b) Explain Modular arithmetic with example   [5]
  (c) Compare MD5 and SHA-1   [5]

5. (a) Explain Diffie- Hellman algorithm. Which attack, is it vulnerable to? [10]
  (b) Explain the idea of Message Digest 5 (MD 5)   [5]
  (c) Explain Speech compression.   [5]

6. Write short notes on any **two**:   [20]
    a) RSA
    b) RLE
    c) Channel Capacity
    d) Data Encryption Standard (DES)