

Q.P. Code : 13123

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

- N.B: 1. Question No. 1 is compulsory.
2. Attempt any Three questions out of remaining questions.

- Q. 1 Answer any four 20
- a) Compare Slotted ALOHA and Pure ALOHA.
 - b) Explain IP Address and Subnet Mask
 - c) Compare Circuit switched and Packet switched networks.
 - d) Explain Selective Repeat Protocol.
 - e) Piggybacking.
- Q. 2 a) What is OSI model? Give the function and services of each layer. 10
b) What are three main functions of Network layer? What is Routing? Explain shortest path Routing. 10
- Q. 3 a) Draw and explain TCP segment header. 10
b) Explain CSMA/CD protocol. 10
- Q. 4 a) Compare 802.3, 802.4 and 802.5 IEEE standard. 10
b) Explain HDLC protocol along with its different frame structure. 10
- Q. 5 a) What is congestion control and what are the causes of congestion? Explain Token Bucket algorithm. 10
b) What are the elements of Transport Layer 10
- Q. 6 Write short notes on (Any Four) 20
- i) Network Topologies
 - ii) Traditional Ethernet
 - iii) Mobile Telephone System
 - iv) RIP(Routing Information Protocol)
 - v) Berkeley socket
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Duration: 3 hours

Total marks: 80

Note (1) Question No. 1 is compulsory

- (2) Attempt any three questions from remaining questions
- (3) Draw suitable diagrams wherever necessary
- (4) Assume suitable data, if necessary

Q 1. (a) Write regular expression to denote a language L which accepts all the strings (05)
which begin or end with either 00 or 11.

(b) Convert the given CFG to CNF (05)
 $S \rightarrow aSa | bSb | a | b$

(c) Difference between FA and PDA (05)

(d) Design moore machine to convert each occurrence of 111 to 101 (05)

Q 2. (a) Construct NFA with epsilon which accept a language consisting the string of any (10)
number of a's followed by any number of b's followed by any number of c's.

Also convert it into NFA without epsilon.

(b) Design a DFA corresponding to regular expression $(a+b)^* aba (a+b)^*$. (10)

Q 3 (a) Use pumping lemma prove that whether following language is regular or not (10)

$$(a^n b^n c^n \mid n \geq 1)$$

(b) Explain Chomsky's Hierarchy (10)

Q 4 (a) Define context free grammar. Obtain the CFG for the following regular

expression: (10)

$$(110 + 11)^* (10)^*$$

Turn Over

(b) Convert given CFG to CNF

(10)

$S \rightarrow ASB \mid \epsilon$

$B \rightarrow Sbs \mid A \mid bb$

$A \rightarrow aAS \mid a$

Q 5 (a) Design a PDA to accept the language $\{L = a^m b^m c^n \mid m, n \geq 1\}$

(10)

(b) Construct TM for $L = \{a^n b^n c^n \mid n \geq 1\}$

(10)

Q 6 Write short notes on (Any two)

(20)

(a) Post Correspondence Problem

(b) Recursive and Recursively enumerable languages

(c) Halting Problem

Q.P. Code :09812

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

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

- Q.1 a) What is a Web Server and why are they needed. 05
b) Explain three tier architecture of web application. 05
c) Explain PHP string functions. 05
d) What is the purpose of XML? 05
- Q.2 a) Differentiate between the following: 12
i. Session and cookies
ii. Client-Side and Server-Side Programming
iii. JSP and Servlet
iv. Static and Dynamic pages
- b) Describe the situations of using External Style Sheets, Embedded (Internal) Style Sheets and Inline Styles. 08
Use both CSS and HTML code to explain how to use each type of the styles.
- Q.3 a) What is JQUERY? Illustrate the use of JQUERY for form validation. 10
b) Write a Java script to open a new window when clicking on a button. 10
- Q.4 a) Discuss the life cycle of Servlet. 10
b) Explain with example code how cookies are handled in JSP. 10
- Q.5 a) What is ADO.Net? How to connect to a database using ADO.NET. 10
b) Explain XML, XSL and XSLT with example. 10
- Q.6 Write short note on (any four) 20
i. Web site design issues
ii. Building web application using PHP
iii. Different types of controls used in creation of ASP.NET pages
iv. JDBC
v. Session tracking
vi. Objects in JavaScript

Duration: 3 Hours

Max. Marks: 80

Instructions:

- (1) Question no 1 is Compulsory
- (2) Write any Three from Remaining
- (3) Assume suitable data if necessary

Question No.		Max. Marks
Q 1 (a)	Explain Prefix code and Kraft Inequality	04
Q 1 (b)	Write difference between GIF and JPEG	04
Q 1 (c)	Define following terms 1.Code Efficiency 2.Hamming Distance 3.Minium Distance (d_{min}) 4.Hamming Weight	04
Q 1 (d)	Three Security Goals in Cryptography.Explain	04
Q 1 (e)	State and explain Fermat,s Little theorem with suitable example and use	04
Q2 (a)	State Chinese Remainder Theorem using it solve for X. $X = 2 \text{ MOD } 3$ $X = 3 \text{ MOD } 5$ $X = 2 \text{ MOD } 7$	10
Q2 (b)	Describe DES	05
Q2 (c)	What is Information rate And write properties of Information	05
Q3 (a)	For (7,4) linear block code $H = \begin{pmatrix} 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 1 & 0 & 0 & 1 \end{pmatrix}$ Find 1. Generator matrix 2. All code vectors 3. Number of error that can be detected and corrected	10
Q3 (b)	Differentiate between block cipher and stream cipher	05
Q3 (c)	With block diagram explain JPEG Encoder	05
Q4 (a)	Derive Huffman code for the source having $p(x) = \{0.07, 0.08, 0.04, 0.26, 0.14, 0.09, 0.07, 0.25\}$. Find coding efficiency and redundancy.	10
Q4 (b)	With example explain Convolution code	05
Q4 (c)	Explain Diffie- Hellman Algorithm .Which attack it is vulnerable to?	05
Q5 (a)	Encode the string using LZW Technique abracadaba	10
Q5 (b)	Compare Symmetric and Asymmetric key cryptography.	05
Q5 (c)	Use the Euclidean,s algorithm to find gcd (1819,3587).	05
	Write short notes	
Q6 (a)	RSA algorithm	05
Q6 (b)	Cyclic and Prefix codes	05
Q6 (c)	Lossy and Lossless Compression	05
Q6 (d)	Shannon's Limit	05

Q.P. Code : 09892

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. Attempt any THREE out of the remaining questions.
 3. Assume suitable data if necessary.

- Q.1 Solve any Four sub questions
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|---|----|
| a) Draw and explain Memory hierarchy. | 05 |
| b) Represent $(12.25)_{10}$ in double precision IEEE 754 binary floating point representation format. | 05 |
| c) Draw and explain basic instruction execution cycle. | 05 |
| d) What are the types of pipeline hazards? | 05 |
| e) What are the major functions of an I/O module? | 05 |
- Q.2 a) Explain the functioning of Wijke's Microprogrammed control unit with its advantages. 10
 b) Draw the flowchart of Booths algorithm and multiply $(4) \times (-3)$ using Booths algorithm. 10
- Q.3 a) Differentiate between RISC and CISC in detail with example. 10
 b) Draw flowchart of binary Restoring division and use it to divide $16/4$. 10
- Q.4 a) Calculate the number of page hits and faults using FIFO, LRU and OPTIMAL page replacement algorithms for the following page frame sequence : 2, 3, 1, 2, 4, 3, 2, 5, 3, 6, 7, 9, 3, 7. (FRAME SIZE = 3). 10
 b) What is instruction pipelining? Explain with suitable diagram. 10
- Q.5 a) What are the elements of a cache design? 10
 b) Explain DMA in detail. 10
- Q.6 Write detailed notes on (any two) 20
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|---------------------------------------|
| a) Microinstruction formats |
| b) Programmed I/O |
| c) Interleaved and Associative memory |
| d) Evolution of Computers |

