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C022511(022)

B. Tech. (Fifth Semester) Examination,
Nov.-Dec. 2023

(AICTE Scheme)

(CSE Branch)

MICROPROCESSORS & INTERFACES

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) carries 4 marks and is compulsory. Attempt any* ***two*** *from part (b), (c) and (d) carrying 8 marks.*

Unit-I

1. (a) Explain the flag register of 8085. 4

   (b) Explain the internal architecture of 8085 microprocessor. 8

   (c) Explain the functions of the following signals of 8085. 8

(i) $\overline{RD}$

(ii) $\overline{RESET\ IN}$

(iii) RST 6·5

(iv) HLDA

(v) A_8-A_{15}

(vi) IO/$\bar{M}$

(vii) ALE

(viii) READY

(d) Compare the Harvard and Princeton architecture. 8

Unit-II

2. (a) What are string manipulation instructions? 4

(b) Draw and explain the internal architecture of 8086. 8

(c) WAP to find the smallest number among a string of 10 data bytes starting from location 2000H:3000H. 8

(d) What do you mean by assembler directives? Explain the following asembler directives : 8

(i) ASSUME

(ii) EQU

(iii) SEGMENT

(iv) DB

Unit-III

3. (a) What are Maskable and Non maskable interrupts? 4

(b) Explain the interrupt vector table of 8086 microprocessor. 8

(c) Draw the timing diagram of the read and write cycle in minimum mode. 8

(d) Write a program that uses a character string defined with and display it so that each word is listed on a separate line. 8

Unit-IV

4. (a) Explain the role of DMA in interfacing. 4

(b) Explain the internal architecture of DMA 8057 and also its control word. 8

(c) Interface two chips of 16K×8EPROM and two chips of 32K×8RAM with 8086 by selecting a suitable map. RAM address must start at 00000H. 8

(d) Design a programmable timer using 8253/54 to generate a square wave. 8

Unit-V

5. (a) What do you mean by paging? 4

(b) Compare the properties and specifications of core i3, i5 and i7 processors. 8

(c) What are segment descriptors? Explain its working. 8

(d) Compare the various modes of 80386 micro-processor real, protected and virtual mode. 8

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C022512(022)

B. Tech. (Fifth Semester) Examination,

Nov.-Dec. 2023

(New Scheme)

(Computer Science & Engineering Branch)

COMPUTER NETWORK

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) is compulsory & carry 4 marks. Solve any* **two** *from (b), (c) & (d) of each questions and carry 8 marks.*

Unit-I

1. (a) Explain LAN, WAN and MAN.

(b) Design full ISO/OSI model and explain the function of each layer.

(c) Describe features of various transmission medium.

(d) Define switching. Write the differences between various switching methods.

Unit-II

2. (a) Write the functions of ARP and RARP protocols.

(b) Explain various error detection methods with example.

(c) Explain the stop and wait and sliding windown protocols with diagrams.

(d) Describe the functioning of various layers of Asynchronous transfer mode reference model.

Unit-III

3. (a) Define subnetting and supernetting.

(b) Discuss IPv4 classful Addressing scheme.

(c) Explain link state Routing mechanism in detail/

(d) Explain the Multicasting routing protocol. Expain DVMRP and MOSPF.

Unit-IV

4. (a) Discuss flow control in Transport layer.

(b) Explain TCP segmnt structure along with description of various fields.

(c) Describe various steps of TCP connection management.

(d) Explain the Integrated and differntiaed services (Intserv and Diffserv) of transport layer.

Unit-V

5. (a) Define Email and MIME.

(b) Write in detail about World Wide Web and its components.

(c) Define Cryptography. Expalin Private key and Public key cryptography.

(d) Describe RTP and RTCP multimedia networking protocols.

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C022513(022)

B. Tech. (Fifth Semester) Examination,

Nov.-Dec. 2023

(New Scheme)

(CS Engg. Branch)

FORMAL LANGUAGES and AUTOMATA THEORY

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

***Note** : Attempt all questions carry equal marks. Part (a) is compulsory from each question & carries 04 marks. Attempt any two parts from part (b) (c) and (d) of each question which carries 08 marks. The figures in the right hand margin indicate marks.*

Unit-I

1. (a) What is finite automata? Design a finite automata for the set of all string over {0, 1} ending in 00. 4

   (b) Write a difference between NDFA and DFA. 8

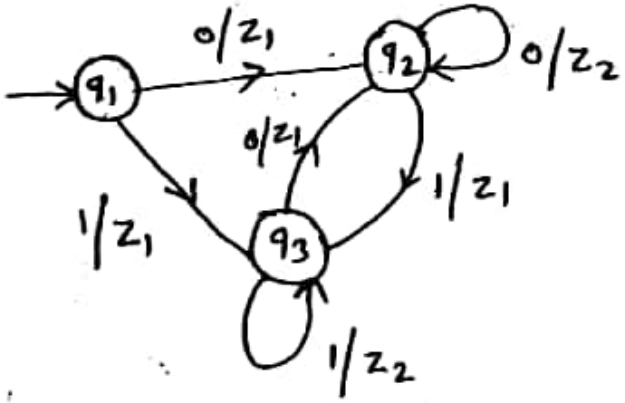
   (c) Construct a deterministic finite automata equivalent to

$$M = (\{q_0, q_1, q_2, q_3\}, \{0, 1\}, \delta, q_0, \{q_3\})$$

where δ is given by table :

State/ Σ	a	b
$\rightarrow q_0$	q_0, q_1	q_0
q_1	q_2	q_1
q_2	q_3	q_3
(q_3)	—	q_2

(d) Consider a Mealy Machine represent by given figure. Construct a moore machine equivalent to this Mealy machin.



Unit-II

2. (a) Define Regular Expression? Write its properties. 4

(b) What is Pumping Lemma? Write its application show that $L = \{0^n 1^n \mid n \geq 1\}$ is not regular. 8

(c) Construct a DFA with reduced states equivalent to the regular expression i.e. 10 + (0 + 11) 0 * 1. 8

(d) Write Arden's theorem for regular expression. 8

Unit-III

3. (a) Explain Chomsky hierarchy of grammar. 4

(b) Reduce the following grammar G to CNF. G is

$S \rightarrow aAD$

$A \rightarrow aB/bAB$

$B \rightarrow b, D \rightarrow d$ 8

(c) $E \rightarrow E+T/T$

$T \rightarrow T*F/F$

$F \rightarrow (E)/a$

Convert in GNF.

(d) What is context free grammar? Write closure property of CFL. 8

Unit-IV

4. (a) Write definition of Push Down Automata and differentiate between PDA and FA.

(b) Define a Turing machine M that recognizes the language. 8

$$L = \{1^n\ 2^n\ 3^n \mid n \geq 1\}$$

(c) Design a PDA which accepts a language. 8

$$L = \{a^n\ b^n \mid n \geq 0\}$$

(d) Write short notes on : (any **two**) 8

(i) Church's Hypothesis

(ii) Halting problem of turing machine

(iii) Universal turing machine

Unit-V

5. (a) Define recursive function with example. 4

(b) Write short notes on : (any **two**) 8

(i) Ackerman's function

(ii) Partial function

(iii) Initial function

(c) Explain space and time complexity with example. 8

(d) What is computation? Explain turing model of computation. 8

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C022514(022)

B. Tech. (Fifth Semester) Examination,
Nov.-Dec. 2023

(New Scheme)

(Computer Science Engg. Branch)

DATA ANALYTICS with PYTHON

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) from each question is compulsory and carries 4 marks. Attempt any two parts from (b), (c) and (d) of each parts carring 8 marks.*

Unit-I

1. (a) Write about keyword & identifier in Python.

   (b) List out the operators in Python with example.

(c) Differenciate Tuple and List with example.

(d) Explain file Handling in Python. List out methods used for file Handling.

Unit-II

2. (a) Define Data Analysis. Write objectives for Data Analysis.

(b) What are the knowledge Domains of the Data Analyst? Discuss in detail.

(c) Write about the steps Involved in the Data Analysis Process.

(d) Give a comparison between Quantitative and qualitative approaches.

Unit-III

3. (a) How do Load and save Data in Binary file. Give one example.

(b). Write down the Basic Operations to be performed on the Numpy Array.

(c) Explain Indexing, slicing, Interating in Numpy Array.

(d) Explain joining array X splitting Array with suirtable example.

Unit-IV

4. (a) Define data frame also create a simple data frame.

(b) Explain categorical data in detail with example using pardox library.

(c) What are the window static function in Pandas library. Explain with example.

(d) Describe function of element and function of Row, column.

Unit-V

5. (a) List the layers in Matplotlib Architecture.

(b) Write down the steps for Generation of scatter plot.

(c) Create a horizontal bar chart.

(d) Write short note on :

(i) Adding Text to Chart

(ii) Adding Grid to Chart

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C022531(022)

B. Tech. (Fifth Semester) Examination,
April-May 2023

(Computer Science Engg. Branch)

COMPUTER GRAPHICS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) of each question is compulsory and carry equal 4 marks. Attempt any two parts from (b) (c) and (d) of each unit and carries equal 8 marks.*

Unit-I

1. (a) What is Depth of pixel?

(b) Explain of raster scan Display with its architecture diagram.

(c) Discuss various Input and Output devices.

(d) Comparisons between DDA and Bresenham Line Drawing algorithm.

Unit-II

2. (a) What do you mean by Scaling?

(b) Write matrix representation and homogenous co-ordinates for translation, scaling, rotation, reflection and shear transformation.

(c) What is 3d transformation? Also give its types. And explain any one type with example.

(d) Explain Window to Viewport Transformation in Computer Graphics with example.

Unit-III

3. (a) What is Cyrus-beck line clipping? Why it is used?

(b) Explain cohen sutherland line clipping algorithm example.

(c) What is z-Buffer Algorithm? Describe it with suitable example.

(d) Explain Painter's algorithms.

Unit-IV

4. (a) Describe Bezier surfaces.

(b) Explain B-spline and Bezier curves. And also give difference between B-Spline and Bezier Curves.

(c) Explain the different types of curve.

(d) What is B-Spline Curves? Explain the properties of B-Spline Curves.

Unit-V

5. (a) What raster animation?

(b) Explain Koch Curves with suitable diagrams.

(c) Explain Space-filling Curve.

(d) Write short notes on any **four** :

(i) Ray tracing

(ii) Turtle graphics

(iii) Fractals

(iv) Space filling curves

(v) Dragon

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C022534(022)

B. Tech. (Fifth Semester) Examination,
Nov.-Dec. 2023

(CSE Branch)

MULTIMEDIA & VIRTUAL REALITY

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) of each question is compulsory and carries 4 marks. Attempt any* ***two*** *parts from (b), (c) and (d) & carrying 8 marks.*

Unit-I

1. (a) What do you mean by Internet? Discuss applications of the internet in brief. 4

(b) Explain the internet and security firewall in detail. 8

(c) What do you mean by protocol? Explain the functionality of the ARP and RARP 8

(d) What is the difference between connection-oriented protocol and connection less protocols. Explain UDP and TCP in detail. 8

Unit-II

2. (a) What is cable media? Explain the Telephone network in brief. 4

(b) Explain different layers of the internet and the functions and services of each layer in detail 8

(c) Explain ISDN and its services, and applications in detail. 8

(d) Write short notes on : 8

(i) DIAS network

(ii) ATM

Unit-III

3. (a) Explain Un-Bounded Media for the Internet in brief. 4

(b) Discuss Ultra-Wideband Technology in detail. 8

(c) Explain WLL Architecture with a suitable diagram in detail. 8

(d) Write short notes on : 8

(i) Local Multipoint Distribution Service (LMDS)

(ii) Ad-hoc networks.

Unit-IV

4. (a) Write the difference between hypertext and hypermedia in brief. 4

(b) Explain Temporal and non-temporal median in detail.

(c) What is the significance of compression? Explain different compression techniques in detail.

(d) Write short notes on :

(i) Video compression

(ii) Compresion of synthetic graphical objects.

Unit-V

5. (a) Describe Overview of MPEG-7 in brief. 4

(b) Explain data types and characteristics of MMX

instruction set in detail. 8

(c) Explain operational architecture of the video on-demand system in detail. 8

(d) Write short notes on : 8

(i) Motion specification

(ii) Koch Curves