5TH SEM./AI & ML./CS & E./IT/ 2024(W)

Mobile Computing TH5

Full Marks: 80

Time- 3 Hrs

2 x 10

5 x 6

2 x 5

Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks

1. Answer All guestions

- Define Network mobility. a.
- Mention the name of the layers present in N-tier architecture. b.
- What is the role of Base Transceiver Station in mobile communication system c.
- Differentiate between Ground Wave Propagation and Sky Wave Propagation. d.
- Which technology is used in 4th Generation of Mobile Communication? e.
- f. What is the role of WAP PUSH process?
- Mention the name of the components of Mobile IP. g.
- Differentiate between Home Location Register and Foreign Location Register. h. 25012716
- i. Define Near and Far terminal.
- j. What does W-CDMA Stands for?

2. Answer Any Six Questions

- Differentiate between Amplitude Modulation and Frequency Modulation. a.
- Briefly explain UMTS architecture with a neat diagram. b.
- Define Bluetooth Technology. Differentiate between Piconet and Scatternet in c. Bluetooth communication. (Any five)
- Illustrate WWW architecture for Mobile Computing with proper diagram. d.
- Describe the components of GSM with proper diagram. e.
- f. Explain about the entities of Mobile IP.
- Describe the working principal of MMS. g

Answer Any Three Questions

- ,0127161614 Explain about the various standards of IEEE 80211. 3. 10
 - Define Multiplexing. Elaborate different types of Multiplexing techniques used 2+8in Mobile Computing. 10
 - Briefly explain the generation of Mobile Communication.
- 6. Write the benefits of WAP. Give any three examples where WAP is used. Draw 2+4+4and explain the architecture of WAP.

7. Write short notes on

3203-2

5.

i.	IS-95	ii. CDMA 2000	iii. Wireless Sensor Network
iv.	GPRS	v. GPRS architectu	re

5TH SEM./CS & E/ 2024(W)

		TH4 Computer Hardware and Maintenance	
F	^r ull M	Tir	ne- 3 Hrs
		Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks	
1.		Answer All questions	2 x 10
	a.	Define POST.	
	b.	Write the Function of SMPS.	
	c.	Write the Four Major Vendors in Computer Hardware & Software.	
	d.	What is Virus?	
	e.	Name different types of Network cable?	
	f.	Write the use of PCI slot in Mother Board.	
	g.	Define PLASMA.	
	h.	Define the various types of File System.	
. 0	i.	What is NIC?	
	j.	Define the function of South Bridge.	
2.		Answer Any Six Questions	5 x 6
	a.	Explain the hierarchy of Personnel engaged in different levels in	
	b.	organisations and their duties. Write the Difference between Core 2 Duo and Quad Core Processor	
	с.	Describe briefly about different types of file system.	
	d.	Explain Hardware BIOS interaction.	
	e.	Describe the procedure for partitioning and formatting of HDD.	
	f.	Explain the different types of networking devices.	
	g	What are the Bus Standards? Write any one of them.	
	U	Answer Any Three Questions	
3.		Describe the different components and slots of Mother Board.	10
4.		What is Trouble shooting? Describe the methods of Trouble shooting.	2+8
2.5.		Describe about the Memories in Memory hierarchy.	10
6 .		Explain the procedure for partitioning and installation of Operating System in	10
5		Laptop/Desktop.	F . F
7.		Write short notes on any two. i.BIOS	5+5
		ii.Network Connector	

iii.RAM

5TH SEM./AI & ML./CS & E./IT./2024(W)

			TH2 Internet & Web Technology	
	Full	Ma	rks: 80 Ti	ime- 3 Hrs
			Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks	
	1.		Answer All guestions	2 x 10
		a.	Define Internet and World Wide Web.	
		b.	Write the simple structure of HTML document.	
		c.	Define internet addressing.	
		d.	Write down the difference between cell spacing and cell padding.	
		e.	Name the two java script functions that convert strings to numbers. How o	oc
			you give the function a string value to convert to a number?	
		f.	What is javascript DOM?	
		g.	What is the use of MAC address in connecting a computer to internet?	
		h.	What is CSS?	
	. 1	i.	Name two server side scripting languages.	
		j.	What is DNS?	
	2.		Answer Any Six questions	5 x 6
		a.	i. What is the role of ISP?	1 x 5
			ii. Mention different types of connectivity.	
			iii. What is botnet?	
			iv. What is X.509?	
			v. What is the difference between HTTP&HTTPS?	
		b.	Differentiate between internet & intranet.	
		c.	Define scripting. Write down the advantages of scripting languages.	
		d.	Compare POP & IMAP.	
		e.	Define website. Classify different types of website.	22
		f.	Explain how SSL works.	
		g.	Define URL? How a URL is structured? Describe different parts of URL.	
			Answer Any Three questions	
	3.		Define original classful addressing scheme. State the different forms of IP	3+3+4
			address. How it is different from classless addressing scheme.	
3-	4.		Define E-mail. Explain the format of an E-mail message.	2+8
272	5.		Write a program in javascript to calculate the factorial of a number.	10
	6.		Define HTML. Discuss different HTML tags with example. Explain the	10
			disadvantages of HTML.	
	7.		Define array in PHP. Classify the types of array in PHP with example.	2+8

5TH SEM./ COMMON./2024(W)

TH1 ENTREPRENEURSHIP AND MANAGEMENT & SMART TECHNOLOGY

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks

- 1. Answer **All** guestions
 - Classify entrepreneur. a.
 - What is the function of SIDBI? b.
 - c. Define ancillary and tiny units.
 - d. List out the principles of management.
 - What is IPR? e.
 - 10163815 f. Write down the name of the personal protection equipment.
 - Define staffing and directing. g.
 - Why inventory management is needed? h.
 - Mention the application of IoT. **i**.
 - j. Write down four functions of production management.

2. Answer Any Six Questions

- Explain the function of entrepreneur. a.
- Give brief description of the detail project report. b.
- With a neat diagram, explain the Maslow's hierarchy of needs. c.
- d. Define entrepreneur. Write down the difference between entrepreneur and manager.
- Discuss the qualities and functions of a leader. e.
- f. What is Total Quality Management ? Explain the quality policy and quality management.
- Write down the features of factories act, 1948.

Answer Any Three Questions

3203-2

What are the levels of management in an Organization? Describe the function 10of each level.

- Explain the process of manpower planning, recruitment, selection process, 4. 10 method of testing and training & development.
- 5. What are the barriers to entrepreneurship? Explain them briefly. 10
- 6. Describe the process of identification of business opportunities. 10
- 7. Discuss the different types of marketing techniques.

5 X 6

10

2 x 10

3RD SEM./AI & ML./CS & E/ IT/ 2024(W)

TH4 OBJECT ORIENTED METHODOLOGY

Full Marks: 80

Time- 3 Hrs

2 x 10

Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks

- 1. Answer **All** questions
 - a. Define Encapsulation.
 - b. What is the output of the following program

class A

{

public static void main(String args[])

System.out.println(10+20+"Java");

- c. What is Interface in Java? Write the syntax to create an interface.
- d. How "public" access specifier different from "default" access specifier?
- e. Write the importance of final keyword in Java.
- f. Give at least two benefits of inheritance.
- g. What do you mean by widening typecasting in OOM. Give one Example.
- h. Write the functions of JVM.
- i. What do you mean by platform independency in Java?
- j. What is the use of super keyword in Java?
- 2. Answer **Any Six** Questions

5 x 6

2.5 x 4

- a. Why main() in java is public, static and void not simply void main()?
- b. Can we overload constructor? Justify your answer with example.
- c. How do we declare a static data member? How it differs from non static data member?
- d. What is String class. Give three examples of in-built methods of String class with their syntax.
- e. How to declare and initialize a 1-D array in java? Describe it with an example.
- f. Define Stream. Explain the types of Stream.
- g What is polymorphism? Distinguish between Static and dynamic polymorphism.

Answer Any Three Questions

- Briefly describe the basic characteristics of Object Oriented Methodology. 10
- Define Inheritance. Explain the types of inheritance with example. 2+8

What do you mean by a package? Create a package named student and import 2+8 the package in a program.

- 6. Write a program to create a class named Account. Create two objects of 10 Account class holding acc_no, acc_holder_name, bank_name as instance variable and two methods such as input() and display() to initialize and display the members.
- 7. Write short notes on :

3.

3203-21

a) Constructor, b) Finally statement, c) Exception handling, d) String Buffer class.

3RD SEM./AE & IE./AI & ML./CS & E./EE(INST.& CONT.)/ ETC & COM./ E&TC./ IT/MECHATRONICS./2024(W)

TH3 Digital Electronics

Full Marks: 80

Time- 3 Hrs

2 x 10

5 x 6

2.5

Answer any five Questions including Q No.1& 2 Figures in the right-hand margin indicates marks

1. Answer All questions

- a. Convert the given binary number $(10011001.101)_2$ to decimal and octal number system.
- b. Draw the symbol and truth table of Ex-OR gate.
- c. Find the 2's complement and gray code equivalent of a binary number $(11001100)_2$.
- d. Mention the number of selection lines, input lines and output lines present in
 - I. 4x1 multiplexer
 - II. 1x4 demultiplexer
- e. Write the truth table of 4:2 encoder.
- f. Define race around condition in sequential circuits.
- g. Specify which type of registers are used to design a ring counter. How many number of such registers are required to implement a 5-bit ring counter.
- h. Define modulus of a counter.
- i. List different electronic components present inside a counter type ADC.
- j. Implement NAND gate using CMOS logic.
- 2. Answer **Any Six** Questions

3203-202

- a. Simplify the Boolean expression $Y = \overline{(A\overline{B} + \overline{C})(A + C) + BC}$ and implement it using basic logic gates.
- b. Implement 4-bit binary to gray code converter.
- c. Write the truth table of a full adder and obtain the Boolean expression for sum and carryout using k-map.
- d. With neat logic diagram explain the function of 2: 4 Decoder.
- e. Differentiate between combinational and sequential logic circuits.
- f. Describe the working of a SISO shift register with the help of a suitable logic diagram.
- g Define the following parameters

(i) Resolution of ADC 2.5

(ii) Noise Margin

	1165508	
	Answer Any Three Questions	
3.	 i) Minimize the following Boolean function using K-map F (A, B, C, D) =∑m (0,2,3,5,7,9,10) +d (1,12,13) ii) Implement the minimized expression with NAND gates only. 	6 4
4.	Implement all logic gates i.e. NOT, OR, AND, NAND, NOR, Ex-OR, Ex-NOR using i) only NAND gates ii) only NOP actes	5 5
5.	Design a 3-bit digital comparator and implement it using basic logic gates.	10
6.137	Design a 4-bit binary ripple up counter and explain its working with a neat timing diagram. With a neat circuit diagram, explain the working of a weighted resistor type Digital	10 10
3203-20250	Analog Converter (DAC). 1913203508 1913255	

2

3RD SEM./AI & ML/CS & E/ IT/2024(W)

TH2 Data Structure

Full Marks: 80

Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks

- 1. Answer **All** questions
 - a. Differentiate linear and nonlinear data structures.
 - b. Write down any two applications of stacks.
 - c. State two advantages of linked list over array?
 - d. Write down the output of following code segment.

char str1[20]="ALL THE BEST";

printf("%d\n",strlen(str1));

- e. Define complete binary tree.
- f. Differentiate between of linear search and binary search.
- g. Define weighted graph.
- h. Differentiate between row major order and column major order.
- i. Define hashing.
- j. Define recursion.
- 2. Answer **Any Six** Questions
 - a. Discuss about the best case, worst case and average case complexity.
 - b. Define linked list and its types. Explain how linked list can be represented in memory with suitable example.
 - c. Define collision. Discuss different collision resolution technique.
 - d. Define stack. Write down push and pop algorithms.
 - e. Define tree. Discuss different types of tree traversal algorithms with examples.
 - f. Define array. Write an algorithm for insertion of a new element in an array.
 - g. Construct the adjacency matrix for the weighted graph given below.



Answer Any Three Questions

- 3. List various fundamental file organization techniques and explain each in 10 brief.
 - Define BST. Construct a binary search tree with 45, 15, 79, 90, 10, 55, 12, 20 2+4+4 and 50. Write down the inorder and preorder traversal of that BST.
 - Define queue. Write down the algorithm for inserting and deleting an element 2+8 from a queue.
- 6. Explain searching .Write down algorithm for linear search.
- 7. Write short notes on **any four**

a)Hashing b) Sparse matrix c) Garbage collection d) BST e)Stack e)Circular queue

Time- 3 Hrs

2 x 10

5 x 6

10

2 x 5

3RD SEM./AI & ML./CS & E./IT/ 2024(W)

	F	ull M	TH1 Computer System &Architecture	ne- 3 Hrs
			Answer any five Questions including Q No.1& 2 Figures in the right hand margin indicates marks	
	1.		Answer All questions	2 x 10
		a.	Define Hit ratio.	
		b.	What do you mean by RISC and CISC?	
		c.	Define throughput of a system.	
		d.	What is program counter?	
		e.	Write down the functions of ALU.	
		f.	Define USB.	
		g.	What is opcode and operand?	
		h.	Write down two examples of peripheral devices.	
		i.	Write an expression for speed up in pipeline.	
		j.	Define SCSI.	
	2.		Answer Any Six Questions	5 x 6
		a.	Explain difference types of instruction format with example.	
		b.	Compare between I/O mapped I/O and Memory mapped I/O.	
		c.	How an instruction is executed? Explain the steps of each cycle.	
		d.	Explain working principle of cache memory.	
		e.	Define Bus. Write the functions of data bus, address bus and control bus.	
		f.	Distinguish between hardwired control and micro programmed control.	
		g.	Explain the working principle of DMA.	
	3.		Answer Any Three Questions What do you mean by addressing modes? Explain all types of addressing mode.	10
-3-1	4.		Define parallel processing. Briefly describe Flynn's classification.	10
372	5.		Explain memory hierarchy with suitable diagram.	10
	6.		Write short notes on I. Virtual memory II. Interrupt driven I/O	5+5
	7.		Explain the basic functional units of a computer with suitable diagram.	10

1ST SEM./COMMON ./ 2024(W)NEW

	TH1(b)	Intro	luction to IT	Systems	
Full M	farks: 70			Time	e- 3 Hrs
	Answer an	y four Que	stions including	Q No.1& 2	
	Figures in	the right ha	nd margin indi	cates marks	
1.	Answer All questions				2 x 10
a.	Define WWW and URL.				
b.	What do you mean by Dig	gital India?			
с.	Define open-office writer				
d.	Name any four applicatio	ns of interne	et.		
e.	Differentiate between da	ta encryptio	n and decryptio	۱.	
f.	Define search engine. Giv	e two exam	oles.		
g.	Name the HTML tags use	d to add an i	mage and a tab	e to a webpage.	
h.	Define the functions of <	center> tag a	and <u> tag.</u>		
i.	What is the difference be	tween data	and information	?	
, j.	Write any two Unix shell	commands v	vith syntax and	use.	
2.	Answer Any Six Question	S		81.	5 x 6
a.	Discuss different informa	tion security	goals in brief.		
b.	Define web browser. Disc	cuss commo	n features of a w	eb browser.	
с.	Differentiate between SS	D and HDD.			
d.	Differentiate between Ur	nix & Window	vs operating sys	tem.	
e.	Explain different types of	printer brie	fly.		
f.	Define HTML. Discuss diff	ference betw	een and <u< th=""><th>II> tags with examples.</th><th></th></u<>	II> tags with examples.	
g.	Define Computer memory	y. Explain ch	aracteristics of	various types of Computer	
	memory.				
	Answer Any Two Questio	ins			
3.	Explain different compon	ents of com	outer with a suit	able block diagram.	10
4.	Discuss the step by step p	procedure to	install Ubuntu (DS in computer system.	10
5.	Write short notes o	n			5+5
	I. Malware	faco		=0100	
6.	Define tag in HTN	AL. Explain d	ifferent attribut	es of tag. Write	10
05	the HTML code for below	structure.	3-10		
		STUDENT	INFORMATION		
202	SLNO BRANC	н	ROLL NO	MARK	
, 7 =	1 CIVIL		13	89	
	2 CSE		14	98	
	3 MECHA	NICAL	15	78	