

1ST SEM./ COMMON TO ALL /2023(W) NEW

Th-1 Computer Application

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** questions 2 x 10
 - a. Write the function of CPU.
 - b. Differentiate between analog computer and digital computer
 - c. Define time sharing operating system.
 - d. What are the benefits of e-mail?
 - e. What is the difference between file and folder?
 - f. State the logical operators provided by 'C' Compiler.
 - g. Define flowchart.
 - h. What is an array?
 - i. Define Compiler.
 - j. State four major areas in which internet are used?

2. Answer **Any Six** Questions 6 x 5
 - a. Explain different components of computer with block diagram.
 - b. Differentiate between Application and System software.
 - c. Define operating system. Explain different types of operating system.
 - d. Draw a flowchart to find sum of 10 random numbers.
 - e. Define virus. What are the symptoms and prevention of virus attack?
 - f. Write a program to find factorial of a number.
 - g. Define network and explain different types of network.

3. Answer Any Three Questions
- 3 Define memory hierarchy. Explain the main features of various types of memory present at different levels of this hierarchy. 10
- 4 What is file access? Explain various types of file access method. 10
- 5 Define topology. Describe various types of topology with diagram. 10
- 6 Draw a flowchart and write a C program to find out largest among Three numbers. 10
- 7 Write Short notes on (any two): 10
 - I. Generations of Computer
 - II. Loops in C language
 - III. Data transmission mode.

3RD SEM /AI & ML/ CS & E / IT/2023(W) NEW

Th-1 Computer System & Architecture

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** questions 2 x 10
- a. Define address bus.
 - b. Define SISD & SIMD.
 - c. What is cache?
 - d. Mention what are the different types of fields that are part of an instruction?
 - e. What is the function of I/O channel?
 - f. What is the function of memory unit?
 - g. What do you mean by Interrupt?
 - h. What is the function of a register?
 - i. Define paging.
 - j. Differentiate between response time and elapsed time.
2. Answer **Any Six** Questions 6 x 5
- a. Explain the basic parameters of bus design.
 - b. Define opcode and operand. Explain the instruction formats.
 - c. What do you mean by virtual memory? Explain.
 - d. Differentiate between RISC and CISC.
 - e. Identify the components of computer system and explain. Write the performance measure.
 - f. Define ROM. Describe the ROM integrated circuit with diagram.
 - g. Define I/O Processor. Explain the characteristics of IOP.
3. What do you mean by memory hierarchy? Describe different types of memory used. Explain their characteristics. 10
4. Define the function of control unit. What do you mean by microprogram control? How it is different from hardware control? 10
5. Identify the techniques/modes which make data transfer to and from peripherals. Explain DMA method of data transfer by a suitable diagram. 10
6. Identify the advantages of parallel processing. What is a pipeline? Draw a space time diagram to show how an instruction is executed. 10
7. Write short notes(any two) 10
- I) Multiprocessor
 - II) Interleaved memory
 - III) Addressing mode
 - IV) Flynn's Classification

TH-2 DATA STRUCTURE

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** questions 2 x 10
- a. Define Abstract Datatype. Give two examples of Abstract Data type.
 - b. What is the need of time space trade off in algorithm design?
 - c.

```
char str1[]="Data";  
printf("%d%d", sizeof(str1), strlen(str1));
```


Considering the above instructions, determine the output of the above code?
 - d. Give an example of sparse matrix.
 - e. Define Recursion.
 - f. Write at least four applications of priority queue.
 - g. Given an expression:
(a+b)*(c-d)
Convert the above expression in postfix and prefix expressions.
 - h. Design a binary tree by taking the following item:
52, 12, 56,78,9,67,10
 - i. Give examples of a Weighted and a complete graph.
 - j. What do you mean by hashing and hash function?
2. Answer **Any Six** Questions 6 x 5
- a. Explain the allocation of memory of a 2D array in row major order with suitable example.
 - b. Write the algorithm of pop operation of stack data structure.
 - c. Analyse the advantages of circular queue over queue.
 - d. Illustrate the insert operation in a single linked list with a suitable example.
 - e. How to search an element in BST.
 - f. Explain the adjacency and path matrix of a graph by taking an example.
 - g. Discuss different file access methods.
3. Describe at least five string library functions with suitable examples. 10
4. Write a program to calculate the sum of all even numbers between 1 to 100 using array. 10
5. Discuss the insert and delete operation of queue with suitable example. 10
6. Explain bubble sort algorithm to sort the following items: 10
23,3,5,78,54,23
7. Write short notes on (any two): 10
- i) Operator Precedence
 - ii) Polish Notation
 - iii) Garbage Collection
 - iv) Non-linear data structure

Th-3 Digital Electronics

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** questions 2 x 10
 - a. Convert the decimal number $(78.4)_{10}$ to binary and octal number system.
 - b. Find the 1's and 2's complement of $(10010011.0101)_2$.
 - c. State Demorgan's Theorem.
 - d. Draw the logic circuit of Half Subtractor and write its truth table.
 - e. If $F(A, B, C) = \sum m(1,5,6)$ then write its SOP.
 - f. Write the excitation table of JK -flop flop.
 - g. List different types of shift registers.
 - h. A clock pulse of 10KHz is applied to a decade counter. Find the frequency of output wave form (assuming output is taken at the MSB).
 - i. Define resolution of a DAC.
 - j. Define Propagation Delay with reference to logic families.

2. Answer **Any Six** Questions 6 x 5
 - a. Design a 4-bit binary to gray convertor.
 - b. Implement all the logic gates (NOT,OR,AND,NOR,XOR,XNOR) using NAND gate.
 - c. With neat logic diagram explain the function of 4: 1 Multiplexer.
 - d. With neat logic diagram and truth table explain the working of full adder.
 - e. Differentiate between combinational and sequential logic circuits.(any 5)
 - f. Describe the working of a 5-bit Ring Counter.
 - g Draw CMOS logic circuit of two input (a) NAND gate 2.5
(b) NOR gate 2.5

- 3
 - a) Minimize the following Boolean function using K-map 7
 $F(A,B,C,D) = \sum m(0,1,2,4,5,6,8,11,12) + d(9,13)$
 - b) Implement the minimized expression obtained above with NAND gates only. 3

- 4 Design a 3-bit magnitude comparator circuit whose outputs are $A > B$, $A = B$, $A < B$, where A and B are two 3-bit numbers. 10

- 5 Convert a T flip flop to (a) D flip flop 5
(b) JK flip flop 5

- 6
 - a) Design 4-bit asynchronous up counter and explain its working. 6
 - b) Draw the output wave forms of each flip-flop 4

- 7 Explain the working of a counter type analog to digital convertor (ADC). 10

TH-4 OBJECT ORIENTED METHODOLOGY

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** questions 2 x 10
 - a. List at least two differences between Object Oriented Programming approach and Procedure Oriented Programming approach.
 - b. What do you mean by encapsulation?
 - c. Define JVM.
 - d. Write a statement to declare an integer variable in java.
 - e. What do you mean by primitive data type.
 - f. Define class and object.
 - g. Differentiate between access specifier and access modifier.
 - h. List at least two advantages of inheritance.
 - i. What do you mean by run time Polymorphism?
 - j. Write the syntax to create a package.

2. Answer **Any Six** Questions 6 x 5
 - a. Explain all the concepts of object oriented programming.
 - b. Discuss the execution model of Java.
 - c. Illustrate static member and static member function in java.
 - d. Explain the ways of parameter passing in function through examples.
 - e. Compare between function overloading and function overriding.
 - f. Write a java program to print the sum of all the numbers present in an array.
 - g. How an exception is handled in java.

3. Answer **Any Three** Questions
Design a Student class in java that include name, branch, sem, contact_no as data members and take methods to initialize the data members and display them. 10

4. Define Inheritance. Describe all the types of inheritance. 10

5. What is an instance of a class? Describe the function of constructor with a programming example? 10

6. Discuss the operations of all the categories of operators in java with example. 10

7. Write short notes on: 10
 - a) Type casting
 - b) Multi-level inheritance
 - c) String Buffer
 - d) Finally statement

3RD SEM./ COMMON TO ALL /2023(W) NEW

Th-5 Environmental Studies

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** questions 2 x 10
- Write down two effects of deforestation.
 - Differentiate between renewable and non-renewable energy sources.
 - Write down two effects of modern agriculture methods on environment.
 - Define decomposers in eco system.
 - What are the types of biodiversity?
 - Define ozone layer depletion.
 - Write down two causes of air pollution in urban areas.
 - What is endangered species?
 - Explain 3'R's in waste management.
 - What are the various objectives of family welfare programme?
2. Answer **Any Six** Questions 6 x 5
- Discuss how urbanisation affects environment.
 - Give a brief description of man wild life conflict.
 - What are the methods protecting soil from erosion.
 - Define rainwater harvesting? State main objective of rain water harvesting?
 - Discuss how marine pollution affects aquatic animals.
 - Write down the role of an individual protecting environment.
 - Write about the disaster management procedures during cyclone.

Answer Any Three Questions

3. Define dam. Discuss the environmental and social impacts during construction of dam. 10
4. Define bio diversity and explain about bio geographical classifications in India. 10
5. Describe pond eco-system. 10
6. Write down the cause, effect and control of water pollution. 10
7. Write short notes on 10
- Value of education
 - Solid waste management

5TH SEM./ COMMON TO ALL/ 2023(W) NEW

Th-1 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** questions 2 x 10
 - a. What is entrepreneurship?
 - b. What is start up ?
 - c. What is project appraisal?
 - d. List the components of project cost.
 - e. Define management.
 - f. Write the need of inventory management.
 - g. List two barriers in business communication.
 - h. Write two methods of maintaining relations with subordinates.
 - i. What is trademark? Write two advantages of having trade marks.
 - j. What is smart technology?

2. Answer **Any Six** Questions 6 x 5
 - a. Explain in brief the qualities of entrepreneur.
 - b. What is Maslow theory of motivation. Explain.
 - c. Explain SSI, Ancillary unit and Tiny units.
 - d. Write a note on staffing as a function of management.
 - e. Explain ABC Analysis (selective inventory control), a model of inventory managements.
 - f. Write the components of IOT.
 - g. Explain different styles of leadership.
 - h. Write five points in payment of wages act.

3. Explain the assessment of demand and supply in potential area of growth. 10
4. Write the important functions of management. 10
5. Explain TQM concept-Quality Policy, Quality Management and quality system. 10
6. Explain the concept of 4Ps in marketing management. 10
7. Explain the application of IOT in smart healthcare and smart agriculture. 10

5TH SEM./CS & E / IT / 2023(W) NEW

TH-2 INTERNET & WEB 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** questions 2 x 10
 - a. Write the two uses of computer network.
 - b. Name the protocols used in metropolitan area network.
 - c. Define MTU.
 - d. What do you mean by Namespace ?
 - e. Write the address range of CLASS B IP address .
 - f. State the difference between HTTP & HTTPs.
 - g. What is RSS Feed?
 - h. Name the different non-primitive datatype used in javascript.
 - i. Write the syntax & purpose of HTML fieldset element of the form.
 - j. Write the syntax & purpose of PHP string function with example.
Explode () , stripslashes ()

2. Answer **Any Six** Questions 6 x 5
 - a. Distinguish between server side scripting & client side scripting.
 - b. State & explain the PHP Session .
 - c. Write a program in javascript to check the string is palindrome or not.
 - d. How does a search engine work? Explain.
 - e. Differentiate between classfull IP address & classless IP address.
 - f. Write the short notes (any two):
 - i. NVT
 - ii. ISP
 - iii. E-Commerce
 - iv. IRC
 - g. Explain the various application level protocol.

3. Define html form. Why we use html form? Explain the syntax & purpose of different html form tag with example. 10
4. Briefly explain the basic security principle concept. 10
5. Define firewall. Explain the types of firewall. Describe the working principle of firewall. 10
6. Define cookies . how cookies works in javascript? How to create a cookie in javascript. 10
7. Compare & contrast the Internet , Intranet & Extranet. 10

5TH SEM. / CS & E/ IT / 2023(W) NEW

Th-3 Software Engineering

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** questions 2 x 10
- a. Define phase containment error.
 - b. What do you mean by the “99% complete” syndrome in software development?
 - c. What are the different activities of project manager?
 - d. Why Gantt chart is used?
 - e. Define fan-in and fan-out.
 - f. Why SRS is called as black-box specification of the system.
 - g. Define structure analysis.
 - h. Define debugging.
 - i. List different menu used in menu based interface
 - j. Define software reliability
2. Answer **Any Six** Questions 6 x 5
- a. Discuss about function point metric .
 - b. Briefly discuss the spiral model of software development. Why spiral model is known as a meta model.
 - c. Write characteristics of Good software Engineer.
 - d. What is code inspection? How it is different from code walk through?
 - e. Define DFD. Explain different symbol used in DFD.
 - f. Define SRS. Write about different category of user of SRS document
 - g. Explain team structure with diagram.
3. Discuss about different Empirical Estimation Techniques. 10
4. Define cohesion and coupling. Explain their classification. 10
5. What is testing? Discuss about black box testing with example. 10
6. Discuss about different types of user interface. 10
7. What is prototyping? Under what circumstances it is beneficial to construct a prototype model. Discuss the prototyping mode of software development. 10

Th-4 Computer Hardware and Maintenance

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** questions 2 x 10
- a. Name four Major vendors of Computer Software.
 - b. What is BIOS?
 - c. Define virus.
 - d. Define Memory Access Time.
 - e. Name four Antivirus softwares available in the market.
 - f. What are the different slots in the Mother Board.
 - g. Write the function of North Bridge.
 - h. Define four types of Monitors.
 - i. Write the function of UPS.
 - j. List different types of RAM.
2. Answer **Any Six** Questions 6 x 5
- a. What are the different types of job carried out in an Organisation?
 - b. Explain Basic maintenance Concept.
 - c. Explain the function of ROM-BIOS.
 - d. Describe about the Memory Hierarchy.
 - e. Write the procedure to Assemble a computer.
 - f. Explain the different types of Scanners Available.
 - g. Describe about two Main Chipsets of Mother Board.
- Answer Any **Three** Questions
3. Write the Main Components of Mother Board. Explain the function of each component fitted on the Mother Board. 10
4. Describe the Hard Disk Drive Construction and its working principle. 10
5. Identify the basic concept of Maintenance. Explain how the computer system is Prevented, Corrected and Maintained. 10
6. List out the interconnecting devices in a Computer Network and explain their functions briefly. 10
7. Write short notes on any Two. 10
- POST
NIC
Core2 Duo Processor

5TH SEM./ CS& E/ IT /2023(W) NEW

Th-5 Mobile Computing

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** questions 2 x 10
- a. Write down any four characteristics of Mobile Computing.
 - b. What does MSC stand for?
 - c. Write any two differences between Peer-to-Peer architecture and Client Server architecture.
 - d. What is the role of Mobile Agent?
 - e. Give an example of Hidden and Exposed Terminal.
 - f. Write down any two advantages of Radio Frequency.
 - g. What is the need of correspondent Node in terms of Mobile IP?
 - h. Write down the needs of Wireless Application Protocol.
 - i. Differentiate between CDMA and CDMA-2000.
 - j. What are the various components of UMTS architecture?
2. Answer **Any Six** Questions 6 x 5
- a. Differentiate between CSMA/CA and CSMA/ CD.
 - b. Explain the working principal of Mobile IP.
 - c. Define Antenna. Classify different types of Antenna.
 - d. Differentiate between Piconet and Scatternet in Bluetooth communication.
 - e. Illustrate WWW architecture for Mobile Computing with proper diagram. .
 - f. Explain about the functional components of Global System for Mobile Communication.
 - g. Differentiate between SMS and MMS
- Answer Any **Three** Questions
- 3 Briefly explain about all the generations of Mobile Communication. 10
- 4 Define Modulation. Elaborate different types of Modulation used in Mobile Computing. 10
- 5 Explain about the various standards of IEEE 802.11. 10
- 6 What does IS-95 stands for? Describe the architecture of IS-95. 10
- 7 Write short notes on- (Any two) 10
- i. Wireless Sensor Network
 - ii. N-Tier architecture
 - iii. Near and Far Terminal
 - iv. GPRS