Enrollment No......................................

Faculty of Science
End Sem Examination Dec 2024
FS3EG01 Computer Science

Programme: B.Sc.   Branch/Specialisation: Forensic Science

Duration: 3 Hrs.   **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	Which of the following is not a basic component of a digital computer? (a) Arithmetic Logic Unit (ALU) (b) Control unit (c) Keyboard (d) Operating system	1	1	4	1	
	ii.	What does the CPU primarily consist of? (a) ALU and control unit (b) Input and output devices (c) Secondary storage (d) Display unit	1	1	4	1	
	iii.	What is the binary equivalent of the decimal number 5? (a) 101 (b) 110 (c) 111 (d) 100	1	1	4	2	
	iv.	Which number system uses a base of 16? (a) Binary (b) Octal (c) Decimal (d) Hexadecimal	1	1	1	2	
	v.	Which type of memory is known as volatile memory? (a) ROM (b) Hard Disk (c) RAM (d) CD	1	1	1	3	

vi. What type of storage is typically used for long-term data storage? **1** [1] [1] [3]
(a) RAM   (b) Cache
(c) Secondary Storage   (d) Register

vii. Which of the following is not a data type in C? **1** [1] [1,4] [4]
(a) int   (b) float
(c) real   (d) char

viii. Which of the following loops will always execute at least once? **1** [1] [2] [4]
(a) for loop   (b) while loop
(c) do-while loop   (d) if loop

ix. What is the index of the first element in a C array? **1** [1] [1] [5]
(a) -1
(b) 0
(c) 1
(d) Depends on the array type

x. Which of the following functions allows a function in C to call itself? **1** [1] [1] [5]
(a) Iteration   (b) Recursion
(c) Looping   (d) Enumeration

Q.2 i. Define a computer and list two basic components of a digital computer. **2** [1] [1] [1]

ii. Explain the different classifications of computers based on size and functionality. **3** [2] [1] [1]

iii. Draw a block diagram of a digital computer and explain its main components. **5** [3] [1] [1]

OR iv. Describe the evolution of computers across different generations, mentioning key developments in each generation. **5** [2] [1] [1]

Q.3 i. What is the binary number system, and how is it different from the decimal number system? **2** [3] [1] [2]

ii. Explain the different number systems (decimal, binary, octal, and hexadecimal) used in computers. Provide examples of how to convert a decimal number to each of these systems. **8** [1] [1,4] [2]

OR iii. Discuss 1's and 2's complement representations in binary numbers. Explain how to perform addition and subtraction using 2's complement, with examples. **8** [1] [1,4] [2]

Q.4 i. What is the memory hierarchy in a computer system? List the types of memory in order from fastest to slowest. **3** [1] [2,4] [3]

ii. Explain the differences between RAM and ROM, including their characteristics and uses in a computer system. **7** [1] [2,4] [3]

OR iii. Describe the main types of secondary storage devices. Explain how they differ from primary memory in terms of functionality and storage capacity. **7** [1] [2,4] [3]

Q.5 i. What are data types in C programming? List any 2 basic data types. **4** [1] [2,4] [4]

ii. Explain the different control statements in C (if, switch, for, while, do-while) with a simple example for each. **6** [1] [2,4] [4]

OR iii. Describe the concept of operators in C. Explain the types of operators (arithmetic, relational, logical, and assignment). **6** [1] [2,4] [4]

Q.6 Attempt any two:

i. What is an array in C? Explain the difference between 1D and 2D arrays with simple examples. **5** [1] [2,4] [5]

ii. Define a function in C. Explain the concept of parameter passing. **5** [1] [2,4] [5]

iii. What are strings in C? Describe any three basic operations on strings. **5** [1] [2,4] [5]

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Marking Scheme
FS3EG01 (T) Computer science (T)

Q.1   i)   C) Keyboard   1
      ii)   A) ALU and Control Unit   1
      iii)   A) 101   1
      iv)   D) Hexadecimal   1
      v)   C) RAM   1
      vi)   C) Secondary Storage   1
      vii)   C) real   1
      viii) C) do-while loop   1
      ix)   B) 0   1
      x)   B) Recursion   1

Q.2   i.   Define a computer and list two basic components of a digital   **2**
             computer.
             Definition of a computer – 1 mark
             Listing two basic components – 0.5 mark each
      ii.   Explain the different classifications of computers based on size and   **3**
             functionality.
             Classification by size – 1.5 marks
             Classification by functionality – 1.5 marks
      iii.   Draw a block diagram of a digital computer and explain its main   **5**
             components.
             Accurate block diagram – 2 marks
             Explanation of main components – 3 marks
OR   iv.   Describe the evolution of computers across different generations,   **5**
             mentioning key developments in each generation.
             Mentioning each generation – 1 mark per generation (up to 5
             generations)

Q.3   i.   What is the binary number system, and how is it different from the   **2**
             decimal number system?
             Explanation of binary number system – 1 mark
             Difference from decimal system – 1 mark

ii.   Explain the different number systems (decimal, binary, octal, and   **8**
       hexadecimal) used in computers. Provide examples of how to
       convert a decimal number to each of these systems.
       Explanation of each number system – 1 mark each (4 marks total)
       Conversion example for each system – 1 mark each (4 marks total)
OR   iii.   Discuss 1's and 2's complement representations in binary numbers.   **8**
             Explain how to perform addition and subtraction using 2's
             complement, with examples.
             Explanation of 1's complement – 2 marks
             Explanation of 2's complement – 2 marks
             Example of addition using 2's complement – 2 marks
             Example of subtraction using 2's complement – 2 marks

Q.4   i.   What is the memory hierarchy in a computer system? List the types   **3**
             of memory in order from fastest to slowest.
             Explanation of memory hierarchy – 1 mark
             Listing types of memory in correct order – 2 marks
      ii.   Explain the differences between RAM and ROM, including their   **7**
             characteristics and uses in a computer system.
             Explanation of RAM and its characteristics – 3.5 marks
             Explanation of ROM and its characteristics – 3.5 marks
OR   iii.   Describe the main types of secondary storage devices. Explain how   **7**
             they differ from primary memory in terms of functionality and
             storage capacity.
             Description of main secondary storage devices – 3.5 marks
             Differences from primary memory – 3.5 marks

Q.5   i.   What are data types in C programming? List any 2 basic data types.   **4**
             Definition of data types – 2 marks
             Listing two basic data types – 1 mark each
      ii.   Explain the different control statements in C (if, switch, for, while,   **6**
             do-while) with a simple example for each.
             Explanation and example of each control statement (1.2 marks per
             statement)
OR   iii.   Describe the concept of operators in C. Explain the types of   **6**
             operators (arithmetic, relational, logical, and assignment).
             Explanation of each type of operator – 1.5 marks each

Q.6

    i.   What is an array in C? Explain the difference between 1D and 2D   **5**
arrays with simple examples.
Definition of an array – 1 mark
Difference between 1D and 2D arrays – 2 marks
Example for each array type – 1 mark each

    ii.   Define a function in C. Explain the concept of parameter passing.   **5**
Definition of a function – 1 mark
Explanation of parameter passing by value – 2 marks
Explanation of parameter passing by reference – 2 marks

    iii.   What are strings in C? Describe any three basic operations on   **5**
strings.
Definition of strings – 1 mark
Description of each operation – 1.33 marks per operation

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