



Faculty of Science

End Semester Examination May 2025

BT3SE01 Computer For Biologists

Programme	:	B. Sc.	Branch/Specialisation	:	BT
Duration	:	3 hours	Maximum Marks	:	60

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))					Marks	CO	BL
Q1.	Which unit of a digital computer is responsible for performing arithmetic and logical operations?				1	1	2
	<input type="radio"/> Control unit	<input type="radio"/> Input unit					
	<input checked="" type="radio"/> ALU	<input type="radio"/> Output unit					
Q2.	What is the role of the control unit in a computer?				1	1	2
	<input type="radio"/> Performs arithmetic calculations	<input checked="" type="radio"/> Controls the flow of data and instructions					
	<input type="radio"/> Stores data permanently	<input type="radio"/> Interacts only with the input devices					
Q3.	What is the 1's complement of the binary number 1010?				1	2	2
	<input type="radio"/> 1010	<input checked="" type="radio"/> 0101					
	<input type="radio"/> 1111	<input type="radio"/> 0000					
Q4.	How is a negative number represented in binary?				1	2	3
	<input type="radio"/> Using 1's complement	<input type="radio"/> Using 2's complement					
	<input type="radio"/> Using sign-magnitude method	<input checked="" type="radio"/> All of the above					
Q5.	What is the primary function of ROM?				1	3	2
	<input type="radio"/> Temporary data storage	<input checked="" type="radio"/> Permanent data storage					
	<input type="radio"/> Processing instructions	<input type="radio"/> Enhancing CPU speed					
Q6.	Which storage device is non-volatile and used for long-term data storage?				1	3	2
	<input checked="" type="radio"/> RAM	<input type="radio"/> Cache					
	<input type="radio"/> Hard disk	<input type="radio"/> Register					
Q7.	Which of the following is a valid C keyword?				1	4	2
	<input type="radio"/> print	<input type="radio"/> data					
	<input checked="" type="radio"/> float	<input type="radio"/> function					
Q8.	Which of the following control statements is used for looping in C?				1	4	2
	<input type="radio"/> if	<input type="radio"/> switch					
	<input checked="" type="radio"/> while	<input type="radio"/> break					
Q9.	How do you declare a 2D array in C?				1	5	3
	<input type="radio"/> int array[10];	<input checked="" type="radio"/> int array[10][10];					
	<input type="radio"/> int array;	<input type="radio"/> array[10,10];					
Q10.	Which keyword is used to define a function in C?				1	5	3
	<input type="radio"/> define	<input type="radio"/> function					
	<input type="radio"/> #define	<input checked="" type="radio"/> void					

Section 2 (Answer all question(s))

Marks CO BL

Q11. Define the term "Algorithm" and explain its importance in problem-solving.

2 1 2

Rubric	Marks
Define the term "Algorithm".	1
explain its importance in problem-solving.	1

Q12. Explain the difference between RAM and ROM.

3 1 2

Rubric	Marks
Difference between RAM and ROM. (1 mark for each difference)	3

Q13. (a) What is the significance of the number system in computer science? Explain with examples.

5 1 3

Rubric	Marks
Significance of the number system in computer science.	2
Explain with examples.	3

(OR)

(b) Explain the concept of "Memory Hierarchy" in a computer system.

Rubric	Marks
Define Memory Hierarchy.	2
Structure "Memory Hierarchy" in a computer system.	3

Section 3 (Answer all question(s))

Marks CO BL

Q14. Write a C program to check if a number is even or odd.

2 2 3

Rubric	Marks
C program for right syntax	1
check if a number is even or odd. (correct Logic)	1

Q15. Explain the concept of "Recursion" in C programming with an example.

3 2 3

Rubric	Marks
concept of "Recursion" in C programming.	1
Recursion program.	2

Q16. (a) Write a C program to generate the Fibonacci series using recursion.

5 2 3

Rubric	Marks
Write a C program to generate the Fibonacci series using recursion.	5

(OR)

(b) Write a C program to swap two numbers without using a third variable.

Rubric	Marks
. Write a C program to swap two numbers without using a third variable.	5

Section 4 (Answer all question(s))

Marks CO BL
2 3 2

Q17. Explain the functional units of a computer system with a block diagram.

Rubric	Marks
Explain Computer system	1
computer system with a block diagram.	1

Q18. What is the role of the ALU in a computer? Explain with an example.

3 3 3

Rubric	Marks
What is the role of the ALU in a computer?	2
Explain with an example.	1

Q19. (a) Explain the different types of computer memory.

5 3 1

Rubric	Marks
Primary memory.	2.5
Secondary Memory.	2.5

(OR)

(b) Discuss the evolution of computers from the first generation to the present day.

Rubric	Marks
1 mark each for each generation.	5

Section 5 (Answer all question(s))

Marks CO BL
2 4 3

Q20. Convert the binary number 10101 to its decimal equivalent.

Rubric	Marks
10101 to its decimal equivalent. Ans: $1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = (1 \times 16) + (0 \times 8) + (1 \times 4) + (0 \times 2) + (1 \times 1) = 21$	2

Q21. Discuss the floating-point representation with an example.

3 4 3

Rubric	Marks
floating-point representation	2
With an example.	1

Q22. (a) Perform the subtraction of 1101 and 1001 using 2's complement method.

5 4 3

Rubric	Marks
Convert numbers to 4-bit binary: • Minuend: 1101 ₂ • Subtrahend: 1001 ₂ Find 2's complement of 1001 ₂ : • 1's complement: 0110 ₂ • Add 1: 0111 ₂ Add Minuend and 2's Complement of Subtrahend: 1101 ₂ + 0111 ₂ ----- 0100 ₂ (Ignore carry) Result: 0100 ₂ (Decimal: 4)	5

(OR)

(b) Explain the ASCII code and its significance in computer systems.

Rubric	Marks
Explain the ASCII code and its significance in computer systems.	5

Section 6 (Answer all question(s))

Marks CO BL

Q23. Write a C program to find the largest element in an array.

2 5 3

Rubric	Marks
Write a C program to find the largest element in an array.	2

Q24. Explain the concept of "Arrays" in C programming with an example.

3 5 2

Rubric	Marks
Explain the concept of Arrays	1
Arrays with an example.	2

Q25. (a) Write a C program to insert an element into an array at a specified position.

5 5 3

Rubric	Marks
Write a C program to insert an element into an array at a specified position.	5

(OR)

(b) Differentiate between passing parameters by value and by reference in C functions with suitable examples.

Rubric	Marks
explanation of passing parameters by value and by reference in C functions.	2
Difference between passing parameters by value and by reference in C functions with suitable examples.	3
