

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-I Semester (CSE/IT/ECE/CE/BT/BI)

COURSE CODE (CREDITS): 24B11CI111 (3)

MAX. MARKS: 25

COURSE NAME: Problem solving and Programming

COURSE INSTRUCTORS: PKG, AKJ, KSL, AMN, MNK, MGD, FSL, PLK

MAX. TIME: 1.5 Hour

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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Q. No	Question	CO	Marks																
Q1	Write the code for checking if a 3 by 3 matrix is symmetric.	5	3																
Q2	Write a program that swaps two numbers using a function named swap(), which is called from main() to exchange the values of the variables defined in main(). This should be done without a temp/third variable.	5	3																
Q3.	For the array ARR[7] beginning at address 0x1F with content 2,1,2,7,6,7,5. Draw the memory map of the array assuming integers occupy 2 Bytes. What will be the output of the following: printf("%p %p %p", 0[ARR], &ARR[0], &ARR+1);	5	4																
Q4.	Give the pseudocode for Bubble Sort. Mention the maximum number of steps required to sort an array of size n. Identify the best and worst permutations of data for Bubble Sort. Apply Bubble Sort on ARR[7] (as mentioned in Q3) and show the contents of ARR after each pass.	5	5																
Q5	Give two integers A and B (float *A, *B;) stored at memory location 204 and 200 respectively. Given sizeof(int) evaluates to 2. Fill in the entries of the table below. Write NA if not valid operation. <table><tr><th>A+B</th><th>A-B</th><th>A%B</th><th>A/B</th><th>A+1</th><th>1-B</th><th>A++</th><th>*A</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	A+B	A-B	A%B	A/B	A+1	1-B	A++	*A									5	2
A+B	A-B	A%B	A/B	A+1	1-B	A++	*A												
Q6	Give pseudocode of Binary Search, its best and worst case, and show by an example application of Binary Search to a success and failure case.	4	4																

Q7.	Predict the output of the following code snippets, or write the name of the error if they don't compile. Assume that the code will work fine without the return 0 statement and int prefixed to main().	5	4
A) main() { int arr[5]={1,2,3,4,5,6}; int *ptr1=arr; int *ptr2=arr+3; printf("%d",ptr2-ptr1); } 		B) main() { int arr[]={1,2,3}; arr[0,1,2]=10; printf("%d %d",arr[1],arr[2]); } 	
C) main() { int arr[6]={1,2,3,4}; int i; for(i=0;i<6;i++) printf("%d ",arr[i]); } 		D)main() { int *ptr=10; printf("%p",ptr); } 	
E) main() { char*p1,p2; printf("%d %d",sizeof(p1),sizeof(p2)); } 		F) main() { int a=10; int *ptr=&a; printf("%d %d",*ptr++,++*ptr); } 	
G)void fun(int a) { printf("inside fun is %d\n",a); } main() { int a=10,b; b=fun(a); printf("b after call to fun is %d",b); } 		H) main() { int a=10,b=20,c; c=add(a,b); printf("after addition is %d",c); } int add(int a, int b) { return a+b; } 	