



PES University, Bangalore
(Established under Karnataka Act No. 16 of 2013)

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UE15/16/17/18/19CS151

DECEMBER 2020: END SEMESTER ASSESSMENT (ESA) B.TECH. 2nd SEMESTER

UE15/16/17/18/19CS151-Problem Solving with C

Time: 3 Hrs.		Answer All Questions	Max Marks: 100
1.	a)	i) What is the output? <pre>#include<stdio.h> int main(){ int x=1;int y=1;int z; if(z=y<0) x=2; else if(y==0) x=3; else x=4; printf("x=%d y=%d z=%d\n",x,y,z); return 0; }</pre> ii) List the different loops in C?	3+3
	b)	What is l and r value given an example for each.	2+2
	c)	List the steps involved in the execution of a C program along with gcc commands.	5
	d)	Find the output of the below program: <pre>#include<stdio.h> int main(){ int a=3; int b=2;int res; res=a+b=b+a; printf("%d ",res); printf("%d ",a & b); printf("%d ",a b); printf("%d",a==b); printf("%d",a>b?a:b); return 0; }</pre>	5
	e)	Find the output of the below program: <pre>#include<stdio.h> int main(){ int a=3; int b=2;int res; res=a+b=b+a; printf("%d ",res); printf("%d ",a & b); printf("%d ",a b); printf("%d",a==b); printf("%d",a>b?a:b); return 0; }</pre>	5
2	a)	i) What is the output? and why? <pre>#include<stdio.h> int main(){ printf("%lu\n",strlen("c\nprogramming!")); return 0; }</pre> ii) What is the output and what will change? <pre>int a[] = {11, 22, 33, 44}; int p = a + 2; printf("%d", (*p)++);</pre> iii) Identify the error (if any) else write output. <pre>char s1[]="PES"; char s2[4]; s2=s1; s2[0]='M'; printf("s1=%s\n",s1);</pre>	2+2+2
	b)	Given in interface, write a function to concatenate two strings without using built-in strcat().	5

c)	i) State three pointer operations. ii) Give an example of memory leak.	5
d)	Complete the below program by filling the todo part: <pre>#include<stdio.h> int main(){ int a[]={11,22,33,44,55}; int n=sizeof(a)/ todo___; int i=0; while(i<n){ printf("a[%d] is %d\n",todo___,todo___); //todo___ } return 0; }</pre>	4
3 a)	Explain malloc and calloc functions. And also mention in which case both of them used.	5
b)	i) Write a function to subtract two 2D matrix of N size. ii) Fill the blanks in the below given code: <pre>#include<stdio.h> struct test{ int i; float j; }; void read_data(struct test *d){ printf("Enter value of i\n"); scanf("%d",_____); printf("Enter value of j\n"); scanf("%f",_____); } int main(){ struct test t; read_data(&t); return 0; }</pre>	4 + 2
c)	Write a function to find the sum of digits of a given number using recursion.	4
d)	What is structure? And refer to the structure given and write display function to display the elements of a linked list, by referring the interface given for disp function. <pre>#include<stdio.h> #include<stdlib.h> struct Node{</pre>	5

		<pre> int data; struct Node *next; }; int main(){ struct Node* first = NULL; struct Node* second = NULL; struct Node* third = NULL; first = (struct Node*)malloc(sizeof(struct Node)); second = (struct Node*)malloc(sizeof(struct Node)); third = (struct Node*)malloc(sizeof(struct Node)); first->data = 1; first->next = second; second->data = 2; second->next = third; third->data = 3; third->next = NULL; disp(first); return 0; } </pre>	
4	a)	Write a function to Sort the given array of integers in increasing order using bubble sort technique.	5
	b)	Write a program to find the minimum element using variable number of arguments.	5
	c)	i) Write the definition of the structure Node type, with the relevant members of the structure. ii) Comment about the below program: <pre> #include<stdio.h> int main() { int i=50; const int * p=&i; *p=90; printf("%d\n", *p); return 0; } </pre>	4
	d)	Why file is used for? Write a program to read a content from a file and display on terminal.	6
5	a)	i) What is enum in C? Give an Example. ii) What is the output of the code? <pre> #define mul(x, y) x * y #define MAX 10 #define MIN 5 #include<stdio.h> int main() { printf("val : %d\n", mul(MAX + 1, MIN - 1)); #define MAX 20 printf("val : %d\n", mul((MAX + 1), MIN - 1)); } </pre>	3+2

[illegible]

b)	What is storage class? List all the storage classes in C. And with an example explain auto storage class..	5
c)	<p>What is union and when to use unions in c?</p> <p>What is the Output of the below program and justify your answer.</p> <pre>#include<stdio.h> union test{ int a; char b; }; int main(){ union test t={10,'A'}; printf("%d,%c",t.a, t.b); return 0; }</pre>	5
d)	What is Command line arguments in C? Write a C program to check whether the given number is odd or even using command line arguments.	5