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Question Paper Code: 51281

B.E. / B.Tech. DEGREE EXAMINATION, JUNE 2016

Second Semester

Information Technology

15UIT209 - PROBLEM SOLVING AND PROGRAMMING TECHNIQUES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Find the output.

```
main()
{
extern int i;
i=20;
printf("%d",i);
}
```

- (a) Linker error
(c) Syntax Error

- (b) Compiler error
(d) None of these

2. The scope and visibility of register variable is in

- (a) Main (b) Function (c) Structure (d) Block

3. List the storage classes in C language

- (a) Auto, register, static, extern (b) General purpose register
(c) Pointers (d) Arrays

4. In the following code, the P2 is integer pointer or integer?

```
typedef int *ptr;
ptr p1, p2;
```

- (a) Integer
(c) Error in declaration

- (b) Integer pointer
(d) None of these

5. Whether the style of structures containing arrays can be implement?

- (a) No (b) yes (c) may be (d) none of these

6. *main()*

```
{  
char *p="hai friends",*p1;  
p1=p;  
while(*p!='\0') ++*p++;  
printf("%s %s",p,p1);  
}
```

what will be displayed for the strings?

- (a) ibj!gsjfoet (b) hai friends hai friends
(c) hai friends (d) hhaaii ffrriieennddss

7. Find out

```
extern struct student  
{  
int a;  
int b;  
int c;  
int d;  
}s={6,7,8,9};  
void main()  
{  
clrscr();  
printf("%d %d %d %d",s.a,s.b,s.c,s.d);  
getch();  
}
```

What will be the output when you compile and run the above code?

- (a) 6789 (b) 9876 (c) 0000 (d) Compiler error

8. In the following code:

```
#include"stdio.h";  
int main(){  
FILE *fp;  
fp= fopen("trial","r");  
}  
fp points to:
```

- (a) The first character in the file
- (b) A structure which contains a "char" pointer which points to the first character in the file
- (c) The name of the file
- (d) None of the these

9. Which of the following is not a stable sorting algorithm?

- (a) Insertion sort
- (b) Selection sort
- (c) Bubble sort
- (d) Merge sort

10. Merge sort uses

- (a) Divide-and-conquer
- (b) Backtracking
- (c) Heuristic approach
- (d) Greedy approach

PART - B (5 x 2 = 10 Marks)

11. Check whether the entered character is uppercase letter or not without using C library function.

12. Explain the following

```

struct xx
{
int x=3;
char name[ 10];
};

struct xx *s=malloc(sizeof(struct xx));

```

13. Is this the correct way for pointing to the first element of an array, $ptr = arr$?

14. Reverse any string while string is passed through command line?

15. What will be output if you will compile and execute the following C code?

```

void main()
{
printf("%s", "c" "question" "bank");
}

```

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Write a C program to reverse a given string without using string handling library functions. (8)

(ii) Explain about the external variables and their scope in C language. (8)

Or

(b) (i) List the various preprocessors used in C with suitable examples. (8)

(ii) Write a C program to implement the tower of hanoi using recursion. (8)

17. (a) Describe how to define a self referential data structure in C. Create a linked list to represent a tree structure. (16)

Or

(b) Distinguish between structure and union with suitable examples. (16)

18. (a) Explain the following with C program

(i) Pointer to Pointer (8)

(ii) Pointer to Function (8)

Or

(b) (i) Write a C program to implement a swap function using pointers. (8)

(ii) Write a C program to implement a swap function without using any other variable. (8)

19. (a) Elaborately explain various functions to handle the FILE operation. (16)

Or

(b) (i) List the format specifier used in the *printf()*. (10)

(ii) Find the output of the following

```
void main()
{
    int a=10,b=2;
    float c;
    c=a/b;
    printf("%f",c);
}
```

20. (a) (i) Write a procedure to implement the heap sort. (6)

(ii) Given an array of 6 elements: 15, 19, 10, 7, 17, 16, sort it in ascending order using heap sort. (8)

Or

(b) (i) Write a procedure to implement the algorithm of binary search. (8)

(ii) Sort the following numbers 54, 26, 93, 17, 77, 31, 44, 55, 20 using merge sort. (8)