



**DHARMSINH DESAI UNIVERSITY, NADIAD**  
**FACULTY OF TECHNOLOGY**  
**B.TECH. SEMESTER II [EC/IC/CE/IT]**  
**SUBJECT: C PROGRAMMING - II**

**Examination : Third Sessional**  
**Date : 13 April 2016**  
**Time : 03:45 to 05:00**

**Seat No. :**  
**Day : Wednesday**  
**Max. Marks : 36**

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**INSTRUCTIONS:**

1. Figures to the right indicate maximum marks for that question.
  2. The symbols used carry their usual meanings.
  3. Assume suitable data, if required & mention them clearly.
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**Q.1 Do as directed.**

**[12]**

- (a) What do you mean by self-referential structure? Give an example of it. [02]
- (b) How many times *free ( )* function has to be called to free memory of 10 integers? Justify your answer. [02]
- (c) What is the output of following code? [02]  

```
main ()
{
    int i,*p;
    p = (int *) calloc (4, sizeof(int));
    for(i=0;i<4;i++) *p++ = i*i;
    for(i=0;i<4;i++) printf("%d\n",*--p);
}
```
- (d) Write a macro SWAP which will swap the content of two integer numbers. [02]
- (e) Distinguish the *feof ( )* and *ferror ( )* function. [01]
- (f) List any four typical errors that may occur during I/O operations on a file. [01]
- (g) What is the difference between the statement *rewind(fp);* and *fseek(fp,0L,0);* in terms of their working? [01]
- (h) In *#include* directives, some file names are enclosed in angle brackets while others are enclosed in double quotation marks. Why? [01]

**Q.2 Attempt ANY TWO from the following questions.**

**[12]**

- (a) What is a linked list? What are the advantages of a linked list over an array? Discuss the types of linked list in brief. [06]
- (b) Write a user-defined function *insert ( )* which will insert a particular element in an already created linked list. [06]
- (c) Write a program to allocate memory for storing the marks of 50 students at run time and read the marks from the user. After storing the marks, now we want to store the marks of 100 students. So we require more memory space. Use *realloc ( )* to increase the memory and print the marks of 100 students. Can we use *malloc ( )* instead of *realloc ( )*? Justify your answer. [06]

**Q.3 Do as directed.**

**[12]**

- (a) Write a program which will read a file called INPUT which contains 10 integer numbers and appends the maximum and minimum value among them at the end of the same file. [06]
- (b) (1) Write a macro which will print the sum of the squares of five integer numbers. [03]  
(2) Write a program which will create a file whose name is supplied as a command line argument. [03]

**OR**

**Q.3 Do as directed.**

**[12]**

- (a) Write a program which will read a file called INPUT which contains a paragraph and appends the total count of vowels and consonants present in it at the end of the file. [06]
- (b) (1) Write a macro which will print the sum of the cubes of five integer numbers. [03]  
(2) Write a program which contains a macro called *sphere* which will compute the volume of a sphere where radius is supplied as an argument to a macro. [03]