

**Subject: COMPUTER FUNDAMENTALS & C PROGRAMMING**

Time: 3 Hours

**DECEMBER 2010**

Max. Marks: 100

**NOTE: There are 9 Questions in all.**

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after half an hour of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions, selecting TWO questions from part A and THREE questions from part B. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

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**Q.1 Choose the correct or the best alternative in the following: (2×10)**

a. Operating system

- (A) Link a program with the subroutines it references
- (B) Provides a layered, user-friendly interface
- (C) Enables a programmer to draw a flowchart
- (D) None of the above

b. Execution of two or more programs by a single CPU is known as

- (A) Multiprocessing
- (B) Time sharing
- (C) Multiprogramming
- (D) None of the above

c. How do printf()'s format specifiers %e and %f differ in their treatment of floating-point numbers?

- (A) %e displays an argument of type double with trailing zeros; %f never displays trailing zeros.
- (B) %e displays a double in engineering notation if the number is very small or very large.
- (C) %e expects a corresponding argument of type double; %f expects a corresponding argument of type double.
- (D) %e expects a corresponding argument of type float; %f expects a corresponding argument of type float.

d. A translator is best described as

- (A) An Application software
- (B) A system software
- (C) A hardware component
- (D) none of the above

e. What is the difference between a declaration and a definition of a variable?

- (A) Both can occur multiple times, but a declaration must occur first.
- (B) There is no difference between them.
- (C) A declaration occurs once, but a definition may occur many times.
- (D) Both can occur multiple times, but a definition must occur first.

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- f. #define MAX\_NUM 15;  
Referring to the sample above, what is MAX\_NUM?
- (A) MAX\_NUM is an integer variable.  
(B) MAX\_NUM is a linker constant.  
(C) MAX\_NUM is a precompiler constant.  
(D) MAX\_NUM is a preprocessor macro.
- g. Pick out the wrong definition
- (A) Access time – time needed to access the output  
(B) EDP- acronym for Electronic Data Processing  
(C) COBOL – a language used for business data processing  
(D) Control unit – heart of a computer
- h. Array is collection of
- (A) Declared data                      (B) Undeclared data  
(C) Homogeneous data                (D) Heterogeneous data
- i. 2's complement of -8 is
- (A) 0111                                (B) 101000  
(C) 01000                               (D) 1000
- j. What function will read a specified number of elements from a file?
- (A) fileread()                          (B) getline()  
(C) readfile()                          (D) fread()
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**PART A**

**Answer any TWO questions. Each question carries 16 marks.**

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- Q.2** a. Draw the block diagram of a computer and briefly explain role of each part. (6)
- b. Write a note on "Error Detection and Correction". (6)
- c. Convert the following numbers into decimal numbers:-
- (i)  $(10000111)_2$
- (ii)  $(23AD)_{16}$  (4)
- Q.3** a. Differentiate between the low level languages and high level languages. (4)
- b. Explain the memory organization. Which memory is the fastest? (6)
- c. List various functions of an operating system? How does an Operating System perform process management? Explain. (6)

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- Q.4** a. Explain the four classes of interrupts in detail. (6)
- b. Write a short note on the internal bus architecture of a microprocessor. Explain the three types of buses. (6)
- c. Write a note on Internet and Intranet. (4)
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**PART B**  
**Answer any THREE questions. Each question carries 16 marks.**

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- Q.5** a. It is said that 'C' is a middle level assembly language. Mention those features of 'C' which justify this description. (4)
- b. What is an execution error? Differentiate it from syntactic error. Give examples. (4)
- c. Write short notes, with examples, on
- (i) Syntax of printf()
  - (ii) Precedence of arithmetic operators. (8)
- Q.6** a. Differentiate between **if-then-else** and a **switch** statement by giving a suitable example. (6)
- b. Identify all the compound statements which appear in the following program segment: (2)
- ```
{
sum=0;
do {
scanf("%d", &i);
if (i < 0)
{
i=-i;
++flag;
}
sum += i;
} while (i != 0);
}
```
- c. Develop a program to calculate sum of n even integers starting from a given even integer. (8)
- Q.7** a. How are arrays processed in 'C'? Illustrate by taking two-dimensional arrays as examples. (6)
- b. What are subscripts? How are they specified? What restrictions apply to the values that can be assigned to subscripts in 'C' language? (4)

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- c. Write a 'C' program that will enter a line of text, store in an array and then display backwards. The length of the line should be undefined, (being terminated by ENTER key), but less than 80 characters. (6)
- Q.8**
- a. Draw a flowchart and then develop an interactive 'C' program which finds whether a given integer number is prime or not. Make use of a function subprogram. (6)
- b. Differentiate between a function call and a function prototype. (4)
- c. What is the return type of main()? (2)
- d. Give a subroutine on calculation of a factorial of a given number. (4)
- Q.9**
- a. What is a pointer in 'C'? How is a pointer variable declared? Give examples and explain. Enumerate the utility of pointer variables. (5)
- b. A program in 'C' language contains the following declaration:
- ```
static int x[8] = {1,2,3,4,5,6,7,8};
```
- (i) What is the meaning of x?  
(ii) What is the meaning of (x + 2)?  
(iii) What is the meaning of \*x?  
(iv) What is the meaning of (\*x + 2)?  
(v) What is the meaning of \*(x + 2)? (5)
- c. Explain the following functions and give the proper syntax. getw(), putw(), getc(), putc() (6)