COMPUTER SCIENCE : PAPER-A

(Computer Organization and Architecture)

Time Allowed : Three Hours   Maximum Marks : 65

Note : Attempt any **one** question each from Sections A, B, C and D. Section E is compulsory.

SECTION–A

1. What do you mean by Integer and Floating Point numbers ? How are they represented in digital computer ?   13
2. (a) Explain Parity Bit Method for detecting 1 Bit error.   8
   (b) Write a short note on character codes.   5

SECTION–B

3. What are Micro-operations ? Explain various arithmatic and logical micro-operations performed by ALU.   13
4. What do you mean by Sequential Circuits ? Explain with the help of suitable circuit.   13

SECTION–C

5. Explain the architecture of 8086 microprocessor in detail.   13
6. What are Pseudo instructions in Assembly Language ? Write a program in Assembly to subtract two numbers.   13

SECTION–D

7. List out various physical components of computer. Explain any one component from input category and one from output category in detail.   13
8. What is Virus ? Explain various symptoms of detecting virus in computer and what are the preventive measures against virus.   13

SECTION–E

9. (a) What is flip flop ?   2
   (b) Explain Instruction Register.   2
   (c) List out any 4 Addressing Modes.   2
   (d) What is Card ? Why are they used ?   2
   (e) Draw symbol and truth table of XOR Gate.   2
   (f) Convert $(236)_{10}$ into Binary and $(42.3)_{10}$ into Octal.   3

COMPUTER SCIENCE : PAPER-B

Object Oriented Programming (Using C++)

Time Allowed : Three Hours   Maximum Marks : 65

Note : Attempt **five** questions in all including the compulsory question and taking one question each from Section A to D.

(Compulsory Question)

1. Write short notes on the following :
   (a) What are the benefits of using an object oriented approach in your project ?

(b) What do you mean by static functions ?
(c) What is a destructor ?
(d) How do you define an array of objects ?
(e) What is a binary tree ?
(f) What do you mean by a doubly link list ?   13

SECTION–A

2. (a) Describe the following characteristics of OOP's in detail :
Data encapsulation, Data Hiding, Inheritance, Polymorphism and
Message Passing.   10

(b) How do you take input and display output in C++ program ?   3

3. (a) Define the structure of C++ program with proper example.   4

(b) What are inline functions ? What is the benefit of making a function
inline ? How inline function is different from a pre-processor macro ?
Give example.   6

(c) What is scope resolution operator ? How do you use this operator
to define a function outside the class ?   3

SECTION–B

4. What are classes and objects ? How do you create and access the data
members, member functions and objects of a class ? Explain with proper
C++ code.   13

5. (a) How do you pass parameters to a function in C++ ? Explain.   6

(b) What are constructors ? Why are they used ? Discuss different
types of constructors supported by C++.   7

SECTION–C

6. What do you understand by function overloading ? How is it achieved
in C++ ? Create a program using classes and objects to overload a
function named area ( ) which will compute the area of shapes like
square, circle, rectangle etc.   13

7. (a) What is Inheritance ? Explain the different types of inheritance
supported by C++.   8

(b) How is the visibility of data members (derived from base class)