DipIETE – CS

Time: 3 Hours   **JUNE 2014**   **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

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 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

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

a. Which of the following .NET components can be used to remove unused references from the managed heap?

(**A**) Common language Infrastructure (**B**) CLR
(**C**) Garbage Collector   (**D**) Class Loader

b. Which of the following is the root of the .NET type hierarchy?

(**A**) System.Object   (**B**) System.Type
(**C**) System.Base   (**D**) System.Parent

c. Which of the following statements is correct about Bitwise / operator used in C#.NET?

(**A**) The / operator can be used to put OFF a bit.
(**B**) The / operator can be used to Invert a bit.
(**C**) The / operator can be used to check whether a bit is ON.
(**D**) The / operator can be used to put ON a bit.

d. Which of the following statement is correct about a String in C#.NET?

(**A**) A String is mutable because it can be modified once it has been created.
(**B**) Methods of the *String* class can be used to modify the string.
(**C**) A number CANNOT be represented in the form of a String.
(**D**) A String has a zero-based index.

e. A derived class can stop virtual inheritance by declaring an override as

(**A**) Sealed   (**B**) Extends
(**C**) Inheritable   (**D**) not inheritable

f. Which of the following is the necessary condition for implementing delegates?

(A) Class declaration   (B) Inheritance
(C) Run-time Polymorphism   (D) Exceptions

g. A class implements two interfaces each containing three methods. The class contains no instance data. Which of the following correctly indicate the size of the object created from this class?

(A) 12 bytes   (B) 24 bytes
(C) 0 byte   (D) 8 bytes

h. Which of the following statements is correct about Interfaces used in C#.NET?

(A) All interfaces are derived from an *Object* class.
(B) Interfaces can be inherited.
(C) All interfaces are derived from an *Object* interface.
(D) Interfaces can contain only method declaration.

i. Which of the following statements is correct?

(A) Procedural Programming paradigm is different than structured programming paradigm.
(B) Object Oriented Programming paradigm stresses on dividing the logic into smaller parts and writing procedures for each part.
(C) Classes and objects are corner stones of structured programming paradigm.
(D) Object Oriented Programming paradigm gives equal importance to data and the procedures that work on the data.

j. Which of the following statements is correct about classes and objects in C#.NET?

(A) Class is a value type.
(B) Since objects are typically big in size, they are created on the stack.
(C) Objects of smaller size are created on the heap.
(D) Objects are always nameless.

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. What is C#? Discuss its features in brief.   **(8)**

b. Draw the .NET framework architecture & explain in detail.   **(8)**

Q.3 a. Write a program that employs nested *if...else* statements to determine that largest of three given numbers.   **(8)**

b. What are increment and decrement operators in C#?   Illustrate increment operator with a program.   **(3+5)**

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Q.4   a.   What are methods? Write down the basic characteristics of methods?   **(8)**

b.   How to use Hash Table, Array List in c#? Explain with example.   **(8)**

Q.5   a.   Write a program to reverse a string in C#.Net.   **(8)**

b.   What is enumeration expression in C#? Illustrate through example.   **(8)**

Q.6   a.   Explain the three basic principles of OOPs.   **(3×3)**

b.   What is the difference between class & subclass?   **(2)**

c.   Write a program to illustrate a simple inheritance.   **(5)**

Q.7   Explain the following:

(i)   Delegate declaration
(ii)   Delegate methods
(iii)   Delegate instantiation
(iv)   Delegate invocation   **(4×4)**

Q.8   a.   What is the need of operator overloading? Give examples of overloading unary operators, overloading binary operators, overloading comparison operators. **(8)**

b.   What is interface? Write a simple interface that defines a single method.   **(8)**

Q.9   a.   What is exception in C#? Write a program to illustrate the use of try & catch blocks to handle an arithmetic exception.   **(8)**

b.   What is thread? What does it do? What is the use of threading in C#? **(2+2+4)**