Code: AC73/AT73   **Subject: C# AND .NET**

AMIETE – CS/IT

Time: 3 Hours   **DECEMBER 2012**   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 statements are TRUE about the .NET CLR?
  (i) It provides a language-neutral development & execution environment.
  (ii) It ensures that an application would not be able to access memory that it is
       not authorized to access.
  (iii) It provides services to run "managed" applications.
  (iv) It provides services to run "unmanaged" applications.

  (A) Only (i) and (ii)   **(B)** Only (i), (ii) and (iv)
  (C) (i), (ii), and (iii)   **(D)** Only (iv)

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

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

c. In C#.NET if we do not catch the exception thrown at runtime then which of the
   following will catch it?

  (A) Compiler   **(B)** CLR
  (C) Linker   **(D)** Loader

d. In which of the following collections is the Input/Output index-based?
   (i) Stack
   (ii) Queue
   (iii) BitArray
   (iv) ArrayList
   (v) HashTable

  (A) (i) and (ii) only   **(B)** (iii) and (iv) only
  (C) (v) only   **(D)** All of these

e. 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

f. Which of the following modifier is used when a virtual method is redefined by a derived class?

(**A**) overloads   (**B**) override
(**C**) virtual   (**D**) base

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

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

h. Which of the following is NOT a Bitwise operator in C#.NET?

(**A**) &   (**B**) |
(**C**) <<   (**D**) ^

i. Which of the following are reuse mechanisms available in C#.NET?

(**A**) Inheritance & Polymorphism   (**B**) Encapsulation & Polymorphism
(**C**) Templates & Encapsulation   (**D**) Polymorphism

j. Which of the following statements is correct?

(**A**) A constructor can be used to set default values and limit instantiation.
(**B**) C# provides a copy constructor.
(**C**) Destructors are used with classes as well as structures.
(**D**) A class can have more than one destructor.

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

Q.2   a.   What is CLR? Explain the role of CLR in Dot NET Framework?   **(6)**

b.   C# is type-safe language. Comment.   **(4)**

c.   Explain any three CTS class characteristics.   **(6)**

Q.3   a.   Explain the role of the Command Line Compiler. Build a basic application on C#. Define its elements.   **(5)**

b.   Write five command line flags of cordbg.exe along with their meaning,   **(5)**

c. How can you generate a warning or error using pre-processor directives? Explain using suitable example.   **(6)**

Q.4   a. Explain the members of System.Object Class.   **(5)**

b. How do we execute a program having more than one class with the Main Methods? Explain with example.   **(6)**

c. What is a delegate? Enumerate the steps involved in creating and using a delegate.   **(5)**

Q.5   a. What do you mean by Encapsulation? How encapsulation is enforced at the syntactic level in C#? Write a C# program to illustrate.   **(8)**

b. What are abstract methods? Where are these used? Using a suitable C# program, illustrate how abstract methods are used to enforce a polymorphic trait on each descendent.   **(8)**

Q.6   a. List out the exception handling statements supported in C# and explain with an example.   **(10)**

b. What do you understand by interfaces in C#? what are the advantages of using interfaces? Explain.   **(6)**

Q.7   a. Explain the meaning of following interfaces of System.Collections:
ICollection, IComparer, IEnumerable, IEnumerator and IList.   **(10)**

b. What is an "event" in C#? Show by an example how it is fired.   **(6)**

Q.8   a. Why do we need Asynchronous delegates? Explain how methods are invoked a synchronously.   **(6)**

b. Write notes on any **TWO** of the following by using appropriate C# code to illustrate: **(10)**
(i)   Versioning shared assemblies
(ii)   Building a shared assembly
(iii)   Using the multifile assembly

Q.9   a. Explain the role of DOT Net Assemblies.   **(4)**

b. Write a program in C# to generate Fibonacci Series.   **(6)**

c. What is the role of CLR in garbage collection? Explain.   **(6)**