Code: AC16/AT13   **Subject: SOFTWARE ENGINEERING**

AMIETE – CS/IT (OLD SCHEME)

Time: 3 Hours   **DECEMBER 2011**   Max. Marks: 100

NOTE: There are 9 Questions in all.

- **Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.**
- **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 phase of Waterfall model decides whether the system is worthwhile executing or not?

(A) Requirement Analysis   (B) Feasibility Analysis
(C) Coding   (D) System Design

b.   Running the system under a live environment using live data in order to find errors is known as

(A) Beta Testing   (B) Alpha Testing
(C) Acceptance Testing   (D) System Testing

c.   In an ER-Diagram, a weak entity is defined as

(A) An Entity which is not dependent on any key
(B) An Entity, which is neither a key nor a part of a key
(C) An Entity, which is not a key itself but a part of a key
(D) An Entity, which is a key as well as part of a key

d.   A Design concept which is natural extension of the information hiding concept and is defined as the strength of different elements within a module: -.

(A) Coupling   (B) Cohesion
(C) Abstraction   (D) Problem Partitioning

e.   The solution to the problem of Risk analysis is attributed to -

(A) Iterative Model   (B) Spiral Model
(C) Waterfall Model   (D) Fountain Model

f. Which of the following is *not* a software process?

(A) Waterfall Model   **(B)** The Fountain Model
(C) The Spiral Model   **(D)** The Redwine Model

g. Integration is important because

(A) it ensures that the software is familiar to those who will use it
(B) it ensures that the software is "friendly" to those who will use it
(C) it ensures that the software works where it is to be used
(D) it ensures that the software replaces the existing system
     simultaneously everywhere it is to be used

h. In McCabe's cyclomatic complexity metric code is first represented as

(A) A syntax graph   **(B)** A data-flow graph
(C) A flow control graph   **(D)** A control-vs-command graph

i. The testing phase of software development **doesn't** require

(A) testing that the implementation compiles correctly
(B) testing that the implementation matches the design
(C) testing that the implementation matches the requirements
(D) testing that the components of the implementation work separately and
     together

j. "Lines of code" is a poor metric because

(A) it is language independent
(B) it penalizes efficient, compact coding
(C) it measures what matters, not what can be measured
(D) it was developed as a metric in the 1960's

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

Q.2 a. Zero Defects – Do you agree? Substantiate with reasons.   **(4)**

   b. Distinguish between initial investigation and feasibility study. In what
       way are they related to each other?   **(6)**

   c. Elaborate the technical and interpersonal skills required for a system analyst.
                                                                              (6)

Q.3 a. Who is responsible for keeping track of changes in the software? Who has the
       authority to change? How do you ensure that change control is properly carried
       out?   **(8)**

b. Explain logarithmic Poisson Model of Reliability. How it is different from basic model? **(8)**

Q.4 a. Define module cohesion and explain different types of cohesion. **(6)**

b. What is software metrics? Why do you require it? **(6)**

c. List and illustrate the primary uses and elements of a decision table with rules, which should be followed in constructing decision tables. **(4)**

Q.5 a. What is LOC and FPA, and how are they used to assess the size and cost of a software project? **(8)**

b. What are the various categories of cost estimation approaches? Compare the SEL model with Walston and Felix Model. **(8)**

Q.6 a. What are the Object Oriented Project metrics? Describe the steps required to manage an object-oriented software project. **(6)**

b. Design an ER diagram for the Retail store. Make assumptions, if any. List all the entries (Corresponding attributes), their relationships and also mention their cardinality. **(6)**

c. What do you mean by Debugging? Explain. **(4)**

Q.7 a. What are the characteristics of SRS? **(4)**

b. Explain the concept of bottom up design and top down design. **(6)**

c. Define coupling, and explain the following types of coupling:
(i) Data coupling
(ii) Stamp coupling
(iii) Control coupling **(6)**

Q.8 a. Write the objectives of the following systems tests:
(i) Peak load test   (ii) Recovery testing
(iii) Storage testing   (iv) Procedure testing **(8)**

b. Explain the cyclomatic complexity with a suitable example. **(4)**

c   What are the steps that you would follow while doing Regression testing? **(4)**

Q.9 a. How is re-engineering different from reverse engineering? Explain the restructuring technique for re-engineering with the help of an example **(8)**

b. What is the importance of Risk Management? Explain any five risk management techniques. **(4)**

c. Define Software reliability and hardware reliability. **(4)**