Code: AC63/ AT63   **Subject: SOFTWARE ENGINEERING**

AMIETE – CS/IT

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. Name the risks that affect the quality or performance of the software being developed:

   (**A**) Product risks   (**B**) Project risks
   (**C**) Business risks   (**D**) Technology risks

b. Which system model shows the principle sub-systems that make up a system?

   (**A**) Composition model
   (**B**) Classification model
   (**C**) Architectural model
   (**D**) Technology risks

c. Which of the following techniques are most cost-effective in the development of critical systems where safety, reliability and security are particularly important?

   (**A**) Formal specification techniques (**B**) Algebraic techniques
   (**C**) Model-based techniques   (**D**) Behavioural specification techniques

d. The protocol that defines how the interfaces of web services can be represented is _____.

   (**A**) SOAP   (**B**) CORBA
   (**C**) UDDI   (**D**) WSDL

e. Styles of interaction with software system include _____
   (**A**) Direct manipulation
   (**B**) Menu systems
   (**C**) Command languages and natural languages
   (**D**) All of these

f. _____ consist of a set of standards and associated object classes that support component communication and information exchange.

(A) System infrastructure framework
(B) Middleware integration framework
(C) Enterprise application framework
(D) Object component framework

g. Name the characteristics of dependable process where "the process should be understandable by people apart from process participants who can check that process standards are being followed and make suggestions for process improvement."

(A) Documentable   **(B)** Standardized
(C) Auditable   **(D)** Diverse

h. Software inspection is a _____ V & V process in which a software system is reviewed to find errors, omissions and anamolies.

 (A) Static   **(B)** Continuous
 (C) Dynamic   **(D)** Incremental

i. Chose the incorrect one:

(A) UFC =Σ (number of elements of given type) x (weight)
(B) Effort = A x Size x M
(C) ESLOC = ASLOC x (1 – AT/100) x AAM
(D) Code size = AVC x Number of function points

j. _____ is the process of assembling systems components into executable program to run on some target computer system.

(A) System adding   **(B)** System integrating
(C) System building   **(D)** System binding

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

Q.2   a.   What is Rational Unified Process? With the help of suitable figure, explain the different phases of rational unified process.   **(8)**

b.   Define Legacy system. With the help of figure, explain the logical parts of a legacy system and their relationships.   **(8)**

Q.3   a.   What are the different types of requirements? Distinguish between function and non-functional requirements.   **(3+3)**

b.   What is Data dictionary? What are the advantages of using data dictionary? **(5)**

c.   Write short notes on Ethnography.   **(5)**

Q.4 a. Explain what is a software prototype. Identify three reasons for the necessity of developing a prototype during software development. Identify when a prototype needs to be developed.   **(10)**

     b. What is Extreme programming (XP)? What are the numbers of practices based on which extreme programming fits into the principles of agile method?   **(6)**

Q.5 a. Write the advantages and disadvantages of a shared-repository model?   **(5)**

     b. What are the differences between the service model and the distributed object approach to distributed systems architectures?   **(5)**

     c. Give two application uses for each of the following client-server architectures:
        (i) Two-tier C/S architecture with thin client
        (ii) Two-tier C/S architecture with fat client
        (iii)Three-tier or multi-tier C/S architecture   **(2×3)**

Q.6 a. "Boehm and Abts" discuss four problems with COTS system integration. What are those four problems?   **(4)**

     b. What is design model? What are the two types of design models used to describe an object-oriented design?   **(6)**

     c. Define component? How components are different from objects, taking account into account that component are generally developed using object-oriented approach?   **(6)**

Q.7 a. What do you mean by UI design process? With the help of suitable figure, describe the core activities of UI design process.   **(5)**

     b. What are the different approaches that can be used for user interface prototyping?   **(4)**

     c. What is fault tolerance? What are the different aspects related to fault-tolerance? Describe the two approaches to software fault tolerance.   **(2+2+3)**

Q.8 a. What is Cleanroom software development approach? Discuss the key strategies on which the Cleanroom software development is based. Also describe the different teams involved when the Cleanroom process is used for large system development.   **(2+4+4)**

     b. With the help of a figure, describe COCOMO II sub-model and explain where they are used.   **(6)**

Q.9 a. What is static product metrics? Describe static product metrics that have used for quality assessment.   **(2+6)**

     b. What is Software configuration management? Explain major tasks and important concepts of SCM.   **(8)**