

AMIETE – CS/IT (New Scheme)

Time: 3 Hours

December – 2017

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: (10 x 2)

- a. What are three major elements of software architecture?
(A) Prop Loss Model, Reverb Model, Noise Model
(B) Profit Model, Verb Model, Noise Model
(C) Loss Model, Reverb Model, Control Model
(D) Prop Loss Model, Verb Model, Control Model
- b. _____ allows architecture to determine opportunities for parallelism and the locations where resource contention may occur.
(A) Shared data repository (B) Decomposition
(C) Concurrency (D) Pipe Lining
- c. If module A is changed to accomplish a particular modification, then module B is changed only because of the change to module A. This is referred to
(A) Maintainability (B) Change Management
(C) Concurrency (D) Ripple Effect
- d. Assume that MTBF of a computer is 240hrs and MTTR is 2hrs. What is the availability of computer?
(A) 99.17% (B) 100.83%
(C) 100% (D) 120 hrs
- e. _____ is useful for problems for which no deterministic solution strategies are known
(A) Layer Pattern (B) Blackboard Pattern
(C) Pipe Pattern (D) Filter Pattern

- f. In the following examples, which is not using the Model-View-Controller patterns?
 (A) SMALLTALK (B) VISUAL C++
 (C) ET++ (D) C
- g. _____ serves as a fundamental base on which more complexity functionality called policies are constructed
 (A) Atomic services (B) Adapters
 (C) Internal servers (D) External servers
- h. One of the liability of the proxy architectural pattern is
 (A) High latency due to loosely coupling
 (B) Less efficiency due to indirection
 (C) Expensive
 (D) No security
- i. _____ is an approach to defining a software architecture that bases the decomposition process on the quality attributes the software has to fulfill.
 (A) Unified Modeling (B) Proxy based Design
 (C) Attribute Driven Design (D) Model-View-Controller Pattern
- j. _____ provides and requires assumptions that can be changed by changing the value of a variable before the component service is invoked.
 (A) Parameterized interface (B) Component qualification
 (C) Interface integration (D) Off-the-shelf component

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

- Q.2** State and define the three group of architectural structure depending on nature of elements. Explain the elements of each group in detail. (6+10)
- Q.3** a. Define the six types of security services provided to system. (6)
 b. What do you mean by Tactics? Explain the security tactics with neat diagram. (10)
- Q.4** a. Explain the steps involved in implementing the Pipes and Filter architecture (10)
 b. State the benefits and liability of Pipes and Filters architectural patterns (6)
- Q.5** State and explain the various objects involved in a broker system with neat diagram (16)

Code: AC118/AT118**Subject: Software Architecture**

- Q.6** a. What is Microkernel architectural pattern? (2)
- b. Mention the steps involved in implementing the Reflection architectural patterns and explain them. (14)
- Q.7** a. State the seven variant of generic proxy pattern and its application (7)
- b. Consider a smart city in which many wireless sensors are set in and around the smart city to monitor/control the vehicle traffic. There are two control units (CU) in a signal: one is controlling the six traffic light systems and another one is controlling the five camera systems. A centralized control system (CCS) will control these traffic light systems and cameras through the control unit (CU). The centralized control system takes the decision to control the traffic in the signal. Draw the master-slave pattern for the scenario. Any assumption can be made if needed. (9)
- Q.8** a. What do you mean by documenting a view? (2)
- b. Assume that you are a consultant for software industries. An organization approaches you to help them in documenting a view of software architecture. How many sections you suggest for documented view? Explain the each section and its importance. (14)
- Q.9** a. State and explain the three types of techniques for repairing interface mismatch. (6)
- b. What are the advantages of Off-the-shelf components? What is MIVA Empressa Ensemble? State the steps followed while using MIVA Empressa Ensemble. (2+2+6)