

P1165

[3864] - 413

**B.E. (Computer / I.T) (Common)**  
**SOFTWARE ARCHITECTURE**  
**(410451) (2003 Course) (Elective - II)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Figures to right indicate full marks.*
- 2) *Answers to two sections should be written in separate answer books.*
- 3) *From section I, Answer (Q1 or Q2) and (Q3 or Q4) and (Q5 or Q6).*
- 4) *From section II, Answer (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).*
- 5) *Make suitable assumptions wherever appropriate and relevant.*

**SECTION-I**

- Q1) a)** When and why will a software Architect choose following technology choices for any system, Justify with examples.
- i) Building applications from scratch versus composing/assembling applications from reusable components/APIs.
  - ii) C++ over C [6]
- b)** Write short Notes on Architecture Business Cycle. [6]
- c)** What do you understand by following concepts
- i) Components and Connectors.
  - ii) Stakeholders for architecture and their needs/expectations. [6]

**OR**

- Q2) a)** Software Architect typically has to take decisions related to following aspects. With example show how would he decide and what kind of decisions will he take in following cases. [6]
- i) Making a technology choice for developing a web application.
  - ii) Modular decomposition of system and drawing package diagrams.
- Illustrate your answers with appropriate examples.

- b) Write short notes on Model View Controller architecture (MVC) and its applications. [6]
  - c) Considering civil engineering/Architects profession of designing and constructing residential/office buildings, bridges, townships etc, clearly write with examples the role, need for an Architect and kind of design decisions an architect takes that lead to quality of building like aesthetics, style, foundation, light/air etc. Similarly a software architect also helps build software with quality like security, performance etc. Explain with examples how software architect and architecture contributes to any software System's quality. [6]
- Q3)** a) List out some common user friendly features common to all WINDOWS based applications like WORD, IE browser etc and explain why these features are good usability examples (Hint : example usability features are menus, undo...) [6]
- b) What do you understand by quality aspect 'Availability' and discuss availability tactics like Redundancy and ping/echo. [6]
  - c) What do you understand by security of a web application. [4]

OR

- Q4)** Explain and illustrate the following concepts (in context of quality attribute/tactics) with examples, in brief. [16]
- a) Various quality factors important for a software system.
  - b) Components/Interfaces and reusability.
  - c) Response time, performance of website.
  - d) Intrusion detection.
- Q5)** a) What is a proxy pattern. What is remote proxy pattern? Show how remote proxy helps in two aspects: transparency and marshalling/unmarshalling. Draw a diagram to show how remote proxy pattern works. [8]
- b) What are design patterns. How are they documented using a template (Hint intent, motivation (forces), applicability, structure; consequences etc)? Explain the way they are documented with examples to illustrate from ITERATOR pattern. [8]

OR

- Q6)** a) Give intent, applications, advantages of following patterns: Factory, Event Listener Adaptor patterns. [10]  
 b) Write short notes on Design pattern 'Facade pattern' [6]

### **SECTION - II**

- Q7)** a) What is XML, peer to peer architecture. What is the role of following J2EE technologies JXTA. [4]  
 b) What are enterprise java beans and entity beans. [4]  
 c) Compare and contrast J2SE and J2EE. [4]  
 d) What are some of the standard packages that accompany Java standard platform, what are they useful for. [4]

OR

- Q8)** a) What are EJBs. Compare and Contrast stateless and stateful Session beans. [4]  
 b) Discuss how various Java based client and server side TECHNOLOGIES, that are part of J2EE/advanced java can be combined to develop an Application. [6]  
 c) Explain what you understand by database applications, transactions and role of JDBC in database queries. [6]

- Q9)** Explain following Web Client side concepts through simple examples [16]  
 a) Cookies and personalization/session management.  
 b) Plugins for browsers.  
 c) HTML forms and JavaScript validations.  
 d) Java applets, with an example code/application.

OR

- Q10)** a) Consider an online BOOK STORE application, show what concerns/ functionality of the online web based book store, will you distribute to presentation, business, data layers in 3 tier architecture. Make suitable assumptions about the features/scope of online bookstore. [4]  
 b) What is XML, give an example of user defined tags for student's personal information and a sample XML, file to depict use of those tags. [4]  
 c) What are JSPs and how do they separate presentation, business logic. [4]  
 d) How does one manage http requests/responses in Servlets. [4]

**Q11) Write short notes on ANY THREE:**

**[18]**

- a) Interfaces in general and IUnknown Interface specifically.
- b) Web service and protocols XML, SOAP, UDDI, and WSDL.
- c) .NET and Advantages of .NET.
- d) ASP.NET.

**OR**

**Q12) Explain in context of COM/.NET the following briefly:**

**[18]**

- a) Dynamic WebPages and Active X control.
- b) Heterogeneity/Interoperability and need for standards like COM, .NET.
- c) Abstract classes.
- d) .NET Remoting.
- e) Components versus Classes.
- f) DLLs versus static library.

