

(2 ½ Hours)

[Total Marks: 75]

- N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All (15M)

(a) Multiple Choice Questions: (10M)

- (i) Which element is a mandatory sub-element of the SOAP envelope?
(a) <Envelope> (b) <Header>
(c) <Body> (d) <Fault>
- (ii) Which of the following HTTP method should be used to create a new resource using RESTful web service?
(a) GET (b) POST
(c) DELETE (d) OPTIONS
- (iii) Which API is known as an architectural style for developing web services?
(a) REST (b) SOAP
(c) HTTP (d) XML
- (iv) What is the purpose of XML in a web service?
(a) To describe the availability of service
(b) To transfer a message
(c) To tag the data
(d) To discover the services
- (v) Which of the following message exchange pattern is not supported in WCF?
(a) One Way (b) Request Reply
(c) Duplex (d) Multiway
- (vi) Which of the following is NOT a characteristic of service-oriented architecture?
(a) Interoperability (b) Discoverability
(c) Reusability (d) Variability

- (vii) Which is an open industry initiative, XML based standard for describing, publishing and finding web services?
- (a) SOAP (b) UDDI
(c) BEEP (d) HTTP
- (viii) Which type of contract is applicable to interface in WCF?
- (a) Message Contract (b) Service Contract
(c) Operation Contract (d) Data Contract
- (ix) Which is the fusion of Address, Contract and Binding?
- (a) startpoint (b) endpoint
(c) middlepoint (d) Servicepoint
- (x) What is the full form of SOA?
- (a) Service Object Architecture (b) Service Oriented Architecture
(c) Service Oauth Architecture (d) Simple Object Architecture
- (b) Fill in the blanks: (5M)
(WSDL, SOAP, UDDI, RPC Style, XML and JSON, Document Style, HTML and XML, Channels)
- (i) Web Services can be discovered using _____.
- (ii) In _____ SOAP messages carry method name and parameters and it is tightly coupled soap style.
- (iii) _____ are the mark up languages available in REST Services.
- (iv) The messaging layer in a WCF Architecture is composed of _____.
- (v) _____ is the standard messaging protocol used by web services.

Q. 2 Attempt the following (Any THREE) (15M)

- (a) Describe the various tags of WSDL document.
- (b) Write any four features of SOAP and explain the different types of SOAP communication models.
- (c) What are Web Services? List any three features of Web Services.
- (d) What is JAX-WS? Write the steps for creating a web service using JAX-WS.
- (e) How web services are related to distributed computing?
- (f) Write a program to create a simple web service with factorial web method that accepts a number as parameter and returns the factorial of a number as a result of web method.

Q. 3 Attempt the following (Any THREE) (15M)

- (a) What is REST? Explain any three core constraints of RESTful system in detail.
- (b) What is HTTP? Explain the format of HTTP request message.
- (c) What is OAuth2.0? Explain various grant types available in OAuth 2.0 protocol.
- (d) Explain any two java tools and frameworks for building RESTful web services.
- (e) How does data exchange happens using JSON in JAX-RS?
- (f) Explain any two media type annotations used in JAX-RS API.

Q. 4 Attempt the following (Any THREE) (15M)

- (a) Write any five features of WCF.
- (b) Define the terms: (i) Fault Contract (ii) Operation Contract.
- (c) Write the steps involved in creating web service using WCF. Define a calculator service contract with any one operation.
- (d) Write a short note on quality of service for web services.
- (e) Explain different architecture layers of Windows Communication Foundation.
- (f) Write a short note on .NET Framework Client Profile.

Q. 5 Attempt the following (Any FIVE) (15M)

- (a) What are the different phases of Web Service Development Lifecycle? Explain any two phases in brief.
- (b) Explain in detail the data structures used in UDDI.
- (c) Explain JSON object and JSON Array data types with an example.
- (d) Explain any three architectural elements of RESTful System.
- (e) Explain endpoints with respect to WCF.
- (f) Differentiate between simple web services and WCF.
- (g) What are the different roles of SOA?
- (h) Write a short note on Type-I Informational web services.