

(2½ 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 (Each of 5Marks)**(15)****(a) Multiple Choice Questions:**

- (i) What type of web services do not keep any memory of what happens to it between requests?
 - (A) stateful
 - (B) stateless
 - (C) singleton
 - (D) none of these
- (ii) Which element is a single root of every SOAP message?
 - (A) <Envelope>
 - (B) <Entity>
 - (C) <soap>
 - (D) <soapEnvelope>
- (iii) Which of the following HTTP method should be used to create resource using RESTful web service?
 - (A) GET
 - (B) DELETE
 - (C) PUT
 - (D) OPTIONS
- (iv) Which of the following is correct about URI in RESTful web services?
 - (A) Each resource in REST is identified by its URI
 - (B) Purpose of URI is to locate resource on the server hosting the web service
 - (C) Both (A) and (B)
 - (D) Neither (A) nor (B)
- (v) WCF supports which transport schema?
 - (A) HTTP
 - (B) TCP
 - (C) MSMQ
 - (D) All of these

(b) Fill in the blanks:

(@QueryParam, SOAP, Reverse State Transfer, WSDL, UDDI, @Param, Representational State Transfer, Named, MSMQ)

- (i) _____ is a de facto standard messaging protocol used by web services.
- (ii) Web services can be published and discovered using _____.
- (iii) _____ annotation of JAX-RS API binds the parameter passed to method to a query parameter in path.

- (iv) REST stands for _____.
- (v) In WCF, _____ pipes are used for one-way or duplex communication between different WCF applications on a single computer.
- (c) Answer in 1 – 2 sentences:
 - (i) What is SOA?
 - (ii) What is JAX-WS?
 - (iii) Describe the purpose of @javax.ws.rs.Produces annotation.
 - (iv) What is OAUTH protocol used for?
 - (v) What is the purpose of FaultContract in WCF?

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

- (a) What are web services? How do web services differ from web-based applications?
- (b) Explain various types of information that can be published in UDDI registry.
- (c) Explain SOAP communication model.
- (d) Explain any 5 key capabilities of ESB.
- (e) Write a note on portfolio analysis in Web Services Development Lifecycle.
- (f) Give example and illustrate the steps for creating a web service using JAX-WS.

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

- (a) Explain how HTTP GET Method is used to perform READ data action in RESTful Web Services.
- (b) Explain various grant types available in OAuth 2.0 protocol.
- (c) Describe the core constraints of RESTful system.
- (d) Explain the concept of HATEOS.
- (e) What are annotations? Explain @Path annotation used for defining RESTful resource.
- (f) How is JSON data processed in RESTful web services? Describe various Java APIs available for processing JSON.

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

- (a) Explain the following terms:
 - (i) Endpoint
 - (ii) Binding
- (b) Write a note on WCF Architecture.
- (c) Explain various hosting options available for WCF Web Services.
- (d) What do you understand by a contract in WCF? Explain the purpose and usage of ServiceContract attribute.
- (e) Write the steps involved in creating web service using WCF. Illustrate with a suitable example.
- (f) Describe any five features of WCF.

Q. 5 Attempt the following (Any THREE)

(15)

- (a) Describe various advantages of SOAP.
- (b) Explain various message patterns that can be used with WSDL.
- (c) Write a note on Web Application Description Language (WADL).
- (d) Explain the following core architectural elements of a RESTful system:
 - (i) Resource
 - (ii) Representation of a Resource
- (e) Explain the following Business Service Realization options:
 - (i) Green-field development
 - (ii) Meet-in-the-middle development
