



UTHM

Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION SEMESTER II SESSION 2021/2022

- COURSE NAME : TECHNOLOGY OF WEB SERVICES
- COURSE CODE : BIW 20404
- PROGRAMME CODE : BIW
- EXAMINATION DATE : JULY 2022
- DURATION : 3 HOURS
- INSTRUCTION :
1. ANSWER ALL QUESTIONS
 2. THIS FINAL EXAMINATION IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **CLOSED BOOK**.
 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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- Q1** (a) List **FOUR (4)** layers of the Web Services stack. (4 marks)
- (b) What do you understand about Service Description? Include the function of Service Description in your explanation. (4 marks)
- (c) Simple Object Access Protocol (SOAP) and Representational State Transfer (REST) Web services are the two main types of Web services. Outline the general distinctions between SOAP-based and REST-based Web services. (2 marks)
- (d) In your view, is it possible to bind SOAP and Web Services Description Language (WSDL)? Justify your answer in detail. (4 marks)

- Q2** (a) Produce an XML document for the given scenario in **Figure Q2**. (7 marks)

The ICE Company wishes to save product information in an XML file. The situation below can aid in the creation of the XML document.

The root tag will be products. Each product will have its own entry with the product_id, production_date, category, and description. A product can be intended for either international or domestic market. Country, shipping_option, and supplier will be available for international products. Then there's the supplier and state for the domestic product.

Figure Q2

- (b) Demonstrate how internal Document Type Definition (DTD) will work based on your answer to **Q2(a)**. (6 marks)

- Q3** (a) **Figure Q3(a)(i)** depicts the general structure of a SOAP XML request. Write an appropriate structure file for the SOAP XML response using the given input body structure, as provided in **Figure Q3(a)(ii)**. (8 marks)

[Faint, illegible text]

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```

2
3  □<Envelope xmlns=?http://schemas.xmlsoap.org/soap/envelop/?>
4  □<Body>
5  □   <getCourseDetailRequest xmlns=?http://uthm.com/fsktm/course?>
6  □     <id>course1</id>
7  □   </getCourseDetailRequest>
8  □ </Body>
9  □ </Envelope>
10

```

Figure Q3(a)(i)

```

<ns2:course>
  <ns2:id>course1</ns2:id>
  <ns2:name>Web Technology Trends</ns2:name>
  <ns1:description>Future</ns1:description>
</ns2:course>

```

Figure Q3(a)(ii)

- (b) If a request file contains an invalid course ID, a SOAP fault message could be returned. It may contain messages that assist the client in resolving an error or unexpected condition.

Create a SOAP fault file that displays the error message "NO COURSE ID".

(8 marks)

- (c) Discuss how a client can ensure that an XML request is sent to a server while keeping the communication secure and confidential.

(5 marks)

Q4 (a) Illustrate the Web service discovery process based on the scenario in **Figure Q4**.

(8 marks)

In the education loan programme offered by OCBC Bank, the education loan service needs to discover the Best Rate (BR) service before using it. The BR is a reference rate established by Bank Negara Malaysia. The BR Web service is listed in the UDDI registry as a Web service capable of offering information about the OCBC bank's BR. When the loan service is initiated, the UDDI registry is retrieved and searched for a Web service that providing the bank's BR information. The UDDI registry returned the BR service's Uniform Resource Identifier (URI) and details about how to access the BR service, which are derived from the WSDL interface.

Figure Q4

- (b) Describe the discovery process in detail based on your answer in Q4(a).

(6 marks)

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- (c) Demonstrate the possible WSDL document to describe the service. You are only required to write down the elements that come with tags `<message></message>` and `<portType></portType>`.
(8 marks)
- (d) There are several options for securing Web service messages. In your opinion, what is the most appropriate method for securing data messaging for user validation prior to applying for an education loan? Justify your answer.
(5 marks)
- (e) What is the best technology that could be adopted for the Web service application depicted in **Figure Q4** based on your knowledge of current web technology trends? Explain your answer.
(5 marks)

- END OF QUESTIONS -

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