

Unless mentioned otherwise, all coding questions reference the Java 8 language.

1. In html or jsp files, the <input ... > element can have several attributes.

Which attribute should you use for JavaScript's getElementById(...) id ?

Which attribute should you use for Java's request.getParameter(...) name ?

2. Name three types of Java comments and give syntax examples.

a. //rest of line //end of try/catch

b. /* ... */ multi-line

c. /** ... */ javadoc

3. In Java, statements with what type of modifier(s) should have Javadoc comments coded? public

4. Which of the following is *not* true regarding legal java identifiers?

- ☒ (a) A java identifier can start with an underscore (_)
- ☒ (b) A java identifier can start with a currency character (\$)
- ☒ (c) A java identifier can start with a number
- d. A java identifier can start with an uppercase letter

5. An object can be a person, place, thing, or event.

6. In Java, can you have a final abstract class? Why or why not?

No because final makes it so it cannot be subclassed

7. Methods which are marked protected can be accessed by classes in different packages.

- ☒ (a) True only subclasses
- b. False

8. Methods that do not have any access modifier can be accessed by classes in other packages.

- a. True
- ☒ (b) False

9. According to BCBSSC standards, what javadoc annotation(s) should be coded before a method that returns a value? @return

10. According to BCBSSC standards, what annotation should be coded before a toString() method in a bean?

@Override

11. Making a member private means that it is only visible to methods in the same class.

12. Methods that are marked as "private" can be accessed by the subclasses of that class.

- a. True
- ☒ (b) False

Non-Host 30 (2019) Mid-Term

13. Making a member final means that there is only one instance of that particular member variable.
14. Making a member static means that it can only be assigned once, making the compiler more optimized, since it knows the value of the variable will never change once assigned.

15. Giving the following line of code, where the parameter will never be changed within the method, add just one word that will make it more efficient:

```
public String myMethod(BigDecimal cost) { . . . }
```

16. Given the following code:

```
private static final Person myPerson = new Person("John", "Smith", 1234, "May 3");
```

...where Person is a bean with the four attributes (firstName, lastName, bankBalance, and birthDate), and getters and setters, is it possible to change bankBalance for the instance named myPerson? Explain your answer.

a. Yes, you're only changing the reference

b. No, _____

17. Referencing the code in the previous question, create a JUnit test that will test the bankBalance in the Person class. Start your code with the appropriate JUnit annotation.

```
@Test
public void testBalance() {
    Person myPerson = new Person("John", "Smith", 1234, "May 3");
    assertEquals("Test Balance", 1234, myPerson.getBalance());
}
```

18. Show the code for two constructors that illustrate "cascading" (aka "telescoping"). The first constructor receives two Strings and validates both. The second constructor only receives the first string, and validates it. Assume these two methods exist for validating these Strings: **validate1** and **validate2**. Your class name is MyBean.

```
public class MyBean {
    private String validate1;
    private String validate2;
    public validateFirst(String one, String two) {
        this.validate(one);
        this.validate(two);
    }
    public validateSecond(String one) {
        this.validate(one);
    }
}
```

19. Code an enum that lists up to four URL pages that you have created so far. You should list the constant name as well as the associated value. Code the entire enum, including constructor, methods, and variables.

```
public enum URLEnums {  
    LOGON("logon.jsp"), MAIN-MENU("Main menu.jsp"), FOOTER("footer.jsp"),  
    TERMS-OF-USE("terms of use.jsp");  
  
    private String URL;  
  
    private URLEnums(String URL) {  
        URL=URL;  
    }  
  
    public String getURL() {  
        return this.URL;  
    }  
}
```

20. Suppose you have an ArrayList named 'studentCount' that holds four Integer values. Write a line of code to create this ArrayList and a second line that changes the first element in the ArrayList to 10.

```
ArrayList<Integer> studentCount = new ArrayList<Integer>();  
studentCount.set(0, 10);
```

21. It is a best practice to follow what two rules in regards to naming a constant?

- a. Upper Case
- b. Use underscores for spaces

22. To create text strings that are mutable, you can use what two classes?

String Buffer or String Builder

23. What does "mutable" mean?

Mutable objects have fields that can be changed
after creation

Non-Host 30 (2019) Mid-Term

24. Class 'Baseball' extends class 'Ball'. The throwBall() method is coded in both, with the one in the Baseball overriding the one in the 'Ball' class. Which method gets invoked in the following code?

```
Ball sport = new Baseball();  
sport.throwBall();
```

- a. throwBall() in Ball
 - b. compiler error
 - c. runtime error
 - ☒ d. throwBall() in Baseball
25. In Java 7 and earlier, assume that class Sport implements the interface SportInterface, and that class Baseball extends Sport.

- ☒ a. 'Sport' must contain concrete methods for all methods in SportInterface
- b. 'Baseball' must contain concrete methods for all methods in SportInterface
- ☒ c. Baseball must contain concrete methods for the methods that have not been coded in as concrete (not abstract) in Sport.

26. A final method can be overridden.

- a. True
- ☒ b. False

27. Code a ternary operator in Java to make the word "**ducks**" singular or plural, based on the value in the int countOfDucks. This should work for zero, one, two, minus one, etc.

Var countOfDucks == 1 ? ducks : ducks

28. You can use the increment and decrement operators with the byte type.

- ☒ a. True
- b. False

29. Which of the following is true regarding constructors in Java?

- ☒ a. They are called to initialize an object when the object is instantiated
- b. They must have the same name as the name of the class they're in
- c. They have no return type, including 'void'
- d. All of the above

30. A constructor is used to create a/an object.

31. In Java, will the following statement compare as true or false?

```
String stringA = new String("Hello World! ");  
String stringB = new String("Hello World! ");  
if (stringA == stringB) . . .
```

- a. True
- ☒ b. False

32. In Java, will the following statement usually compare as true or false?

```
String stringA = "Hello World! ";  
String stringB = "Hello World! ";  
if (stringA == stringB) . . .
```

- ☒ a. True
- b. False

33. What are the values of `x` and `y` after executing the following statements?

```
int myIntA;  
int myIntB;  
myIntA = 3;  
myIntB = myIntA++;
```

- a. `myIntA = 3, myIntB = 3`
- b. `myIntA = 4, myIntB = 4`
- ☒ c. `myIntA = 4, myIntB = 3`
- d. `myIntA = 3, myIntB = 4`

34. Which of the following statements is true about exceptions?

- ☒ a. All exceptions must be caught or handled in your Java program
- b. Only unchecked exceptions must be caught or handled in your Java program
- c. Only checked exceptions must be caught or handled in your Java program
- d. All of the above
- e. None of the above

35. Which of the following is illegal when defining a class in Java?

- a. `class ClassA implements ClassB, ClassC...`
- b. `class ClassA extends ClassB...`
- ☒ c. `class ClassA extends ClassB, ClassC...`
- d. `class ClassA extends ClassB, implements ClassC`

Non-Host 30 (2019) Mid-Term

36. When is it permitted to code the following?

```
ClassA obj = new ClassB();
```

- a. When ClassA is a subclass of ClassB
- ☒ b. When ClassB is a subclass of ClassA
- c. When ClassA and ClassB are both subclasses of the same superclass
- d. The statement is never legal

37. If a class is declared final, then:

- a. You cannot instantiate it
- ☒ b. You cannot extend it
- c. You cannot implement it
- d. "final" is invalid for a class

38. instanceof is a(n):

- a. Operator
- ☒ b. Method of an object
- c. Variable

39. Is it legal to access a static method using an instance of the class?

- a. Yes. It is the best way to access such a method.
- ☒ b. Yes, but it is strongly discouraged.
- c. No

40. What is the primary difference between a hash map and a tree map?

Tree map is sorted by default using Red-Black Tree

41. In an ArrayList, if you don't specify the initial capacity, what will the default capacity be set to? 20

42. Can a subclass access the private member variables of its own superclass?

- a. Yes
- ☒ b. No

43. How do you code a comment in HTML?

- a. <- comment >
- b. <-- comment -->
- ☒ c. <!-- comment -->
- d. <comment />

44. What is the recommended way to code a comment in a JSP? <%-- Comment -- %>

Non-Host 30 (2019) Mid-Term

45. The HTML `<form>` element is a block level element, so browsers create a line break before and after the form.

- ☒ a. True
- b. False

46. List three different uses of the `<meta>` tag in an HTML page.

- a. Specify keywords
- b. Document Description
- c. Document Refreshing

47. Given the HTML code below, fill in the missing CSS so that the text 'My Link' is assigned the color red.

Assume there are other unordered lists in the webpage, and you want just this link in this list to be red.

css:

```
ul {  
    color: red;  
}
```

html:

```
<ul id="list2">  
    <li><a href=" . . . ">My Link</a></li>  
</ul>
```

48. If you want to preserve the spacing in your HTML code, what tag could you use?
 ← am persane

49. If you want three spaces between two values in your JSP, what entity can you code? *← 3 spaces*

50. Referencing the following CSS code, fill in the blanks with either 5px, 25px, or 40px.

```
border-width: 25px 5px 40px;
```

- a. Left-border 5px
- b. Bottom-border 40px
- c. Top-border 25px
- d. Right-border 5px

51. One em is equal to the current font size (specify the CSS measurement value).

52. In JavaScript, what is the value of 'myVariable' in the following code? true

```
var myVariable = !isNaN("12.345");
```

53. Given a Date object named dueDate, which statement(s) set(s) the month to February?

- ☒ a. dueDate.setMonth(1);
- b. dueDate.setMonth(2);
- c. dueDate.setMonth("Feb");
- d. dueDate.setMonth("February");
- e. dueDate.setMonth(Calendar.FEBRUARY);

54. What are the three primitive data types in JavaScript (code the correct upper/lower case)?

- a. String
- b. Boolean
- c. Number

55. Show an example to create an insurancePolicy using JavaScript in a JSP file.

```
function insurancePolicy(name, policyNumber, premium, deductible){  
    this.name = name;  
    this.policyNumber = policyNumber;  
    this.premium = premium;  
    this.deductible = deductible;  
}
```

56. Show the code to place the cursor in an input text field with id=price.

```
<input type="text" id="price" autofocus />
```

57. According to the BCBSSC standards, which is the valid way to access a form in your JavaScript?

- ☒ a) document.forms[0]
- ☐ b) document.formname

58. Given the HTML code below, write the JavaScript function so that if the checkbox isn't checked, an alert will prompt the user to make a selection. If the checkbox is checked, an alert will let the user know that their order will be processed. Follow BCBSSC standards.

```
<form name="orderForm">  
    <input type="checkbox" name="processOrder">Process my order..  
    <input type="button" value="Click to continue" onClick="goProcess();" />  
</form>
```

```
function checkBox(){  
    var checkValue = document.getElementById('checkbox').value;  
    if(checkValue == true){  
        window.alert("Order will be processed");  
    }else{  
        window.alert("make a selection");  
    }  
}
```

59. When should you use JavaScript validation, and when should you use server validation?

Use JS to validate before submission (check if email is valid)
Use server validation to protect from malicious users

60. Assume you are in the doPost method of a servlet. Write the code to forward a URL request to a JSP page, named mainmenu.jsp that is in a folder named jsp, where both are in the context named web5.

`request.getRequestDispatcher("web5/jsp/mainmenu.jsp").forward(request, response);`

61. One of the advantages of the post method over the get method is that it is easier to bookmark.

a. True

☒ b. False

62. What is wrong with the following JSP footer code?

```
<% page import="java.util.*" %>
```

```
<%
```

```
    Calendar currentDate = new GregorianCalendar( );
```

```
    int    currentYear = currentDate.get(Calendar.YEAR);
```

```
%>
```

Should not import all of java.util

63. Which of the following JSP expressions is valid?

a. `<%= request.getParameter("occupation"); %>`

b. `<%= request.getParameter("occupation") %>`

c. `<%= String occupation = request.getParameter("occupation"); %>`

☒ d. `<%= String occupation = request.getParameter("occupation") %>`

e. none of the above

64. Which of the following JSP expression(s) is equivalent to

```
<jsp: getProperty name="book" property="title" />
```

a. `<%= book.getTitle() %>`

b. `<%= bean.getBook("title") %>`

c. `<%= bean.getTitle("book") %>`

d. `<%= book.getBook() %>`

65. Write the EL code for accessing the 'time' property in a session attribute named 'clock'.

`${ clock.time }`

66. Write the EL code for accessing the 'time' property in an attribute named 'clock' of the request object (explicitly specify the scope).

`${ requestScope.clock.time }`

Non-Host 30 (2019) Mid-Term

67. To get the effect of a Java nested if/else-if/else-if or switch, code this JSTL tag in your JSP:

C: Choose.

68. If the following code is used to parse an attribute named 'emailAddress' that contains a value of 'jjones@net@asset.com', what is displayed in the browser?

```
<p>
  <c:forEach var="part" items="${emailAddress}" delims="@">
    ${part}<br>
  </c:forEach>
</p>
```

a. jjones

net

asset

com

☒ b. jjones

net

asset.com

c. jjones

net@asset

com

d. jjones

net@asset.com

69. Another name for web.xml is pom.xml.

70. Identify five items in the code below that break Java coding convention standards at BCBSSC.

```
package com.bcbssc.eltp.dbconn;  
  
public class TestStuff {  
  
    public static void main (String args[])  
    {  
        int count1, count2;  
        count1 = 10;  
        count2 = 5;  
        if(count1 != count2)  
            System.out.println("Count's don't equal!");  
    }  
}
```

- a. Bad naming (class name)
- b. Creating count1 and count2 on the same line
- c. NO brackets for if statement
- d. Bad variable names
- e. Constants should be in caps

71. Given these values for a Java array {3,8,12,5,9,21,6,10}, write a loop that will display just the odd numbers. ^{use mod division}

```
for(int i=0; i < numbers.length; i++) {  
    int result = numbers[i] % 2;  
    if(result > 0) {  
        System.out.println(numbers[i]);  
    }  
}
```

72. What is the Singleton design pattern?

Only one instantiation of a class to one object

73. Give an advantage to using BigDecimal over float or double

More precise accurate rounding

74. Give a disadvantage to using BigDecimal over float or double (other than that it is more difficult to code).

BigDecimal is slower

75. On which lines does autoboxing/unboxing occur in the following code?

```
Integer count = 5;  
count++;  
if (count.equals(6)) {  
    System.out.println(count + " is equal to 6");  
}
```

Unboxing occurs when `count++` is executed because it is converted from wrapper class to primitive.

76. What is an advantage to using a factory?

Allows for easy change of the design of the application

77. What is another advantage to using a factory?

Hides creation from the user

78. In Java, name 4 ways to loop thru lines of code in Java?

while
do while
for
for each

79. In Java, name 3 ways to code conditional processing, other than the conditions on loops?

if
ternary
switch

NOTE: The following may have multiple answers

80. In Java, is **Employee** a variable, constructor, class, interface, or method? Class, interface

81. In Java, is **employee** a variable, constructor, class, interface, or method? Variable

82. In Java, is **employee()** a variable, constructor, class, interface, or method? Method

Constructor

83. In Java, is **Employee()** a variable, constructor, class, interface, or method? Class

84. In Java, Contrast a primitive and an object. Give at least three differences.

- a. An object can contain primitives ~~kw~~
- b. Primitives have values, objects have references
- c. Primitives are immutable by default

85. In Java, what is a null?

Indicates that the variable does not refer to any object

86. What type of variables can have null values in Java

~~Variables~~ Non-primitives

87. What is the difference between a static variable and a static final variable?

Static variables can be changed

Final cannot

88. What is a static method?

Belongs to the class rather than the instance of a class

89. What is the difference between a static method and a static final method?

A static method can be used independently

Final means it cannot be changed

90. What restriction does "final" place on a method?

It cannot be overridden

91. What is a method signature?

The method name and the number, type, and order of its parameters

92. What is method overloading?

Allows a class to have more than one method with the same name but with different arguments.

Useful for constructors

93. What is method overriding?

Allows a subclass to provide a specific implementation of a method that is in the superclass. used a lot with toString.

94. A primitive array holds values while an array of objects holds references.

95. What is an advantage to using an interface?

Provide a template for coding classes

96. What is another advantage to using an interface?

Support polymorphism w/o a superclass

97. What is a third advantage to using an interface?

Can auto generate code in Eclipse

98. Name three places where css can be coded for an html or JSP file

external
in line
embedded

99. Name three places where JavaScript can be coded for an html or JSP file.

external
embedded ~~script~~ (script tag)
- head
- body

100. What is the DOM?

Document Object Model

Object based representation of the HTML

Non-Host 30 (2019) Mid-Term

101. Name three events that you can use to trigger a JavaScript function?

On Click

On Load

On Change

102. Describe is the MVC design pattern?

MVC stands for model view controller, each part of the application must be separated into a different object

103. JSPs look like HTML. What are two huge differences between a JSP and HTML?

JSPs can have other languages coded inside such as java

JSPs run on server while html runs in the browser

104. (6 points) What is the non-host equivalent of each of the following host terms:

a. Dataset - Array

b. JCL - Java

c. Compiler - javac

d. Endeavor - Eclipse

e. Abend - Exception

f. PERFORM - calling a method

105. What is your favorite thing that you have learned and/or accomplished so far in the ELTP-Java class?

SalesPerson 2 is my favorite accomplishment so far

