



UNIVERSITY OF GHANA

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BACHELOR OF SCIENCE IN ENGINEERING SECOND SEMESTER EXAMINATION 2014/2015

CPEN 312: OBJECT ORIENTED PROGRAMMING USING JAVA (3 Credits)

TIME ALLOWED: TWO HOURS

INSTRUCTION: Answer all questions on the question paper. No ANSWER BOOKLET needed for this paper.

SECTION A [23 MARKS]

True/False

Indicate whether the statement is true or false in the spaces (____) provided before the questions.

- ____ 1. Application classes frequently instantiate objects that use the objects of other classes.
- ____ 2. You can identify a class that is an application because it contains a `public static void main()` method.
- ____ 3. You can write your own constructor methods; but when you don't write a constructor method for a class object, Java writes one for you.
- ____ 4. A method's identifier must be more than one word, must have no embedded spaces, and cannot be a Java keyword.
- ____ 5. Parentheses in a method declaration contain parameters that are funneled into the method.
- ____ 6. When a value is returned from a method, you are required to use the value when the method is called.
- ____ 7. When you overload a Java method, you write multiple methods with a shared name.
- ____ 8. When you write your own constructors, you cannot write versions that receive parameters.
- ____ 9. An alternative to importing a class is to import an entire package of classes.
- ____ 10. If you give the same name to a class's instance field and to a local method variable, the instance variable overrides the method's local variable.
- ____ 11. When you use the method name with a child object, the parent's version of the method is used.

- ___ 12. If a superclass contains only constructors that require arguments, you do not need to create a subclass constructor.
- ___ 13. A `static` method cannot be overridden in a subclass.
- ___ 14. In a UML diagram, minus signs are inserted in front of each private field or method, and plus signs are inserted in front of each public field or method.
- ___ 15. Superclasses can be distinguished from their subclasses because a subclass is generally smaller than a superclass; it usually has fewer fields and methods.
- ___ 16. It is useful to override the parent class members when the superclass data fields and methods are not completely appropriate for the subclass objects.
- ___ 17. When a protected data field or method is created, it can be used within its own class or in any classes extended from that class; but it cannot be used by outside classes.
- ___ 18. An error is generated by the compiler when you attempt to override a `static` method with a nonstatic method.
- ___ 19. When you create a subclass of an abstract class, it's important to understand that you are required to code a subclass method to override the empty superclass method that is inherited.
- ___ 20. When you create a class that uses an interface, you include the keyword `extends`.
- ___ 21. Abstract classes and interfaces are similar in that you cannot instantiate concrete objects from either one.
- ___ 22. While a class can inherit from any abstract superclass, it can only implement one interface.
- ___ 23. Java does not allow a class to inherit directly from two or more parents.

SECTION B [77 MARKS]

Multiple Choice

Identify the choice that best completes the statement or answers the question. Write the LETTER (A, B, C or D) of your choice in the spaces provided before the questions.

- _____ 1. When you create a class by making it inherit from another class, you are provided with data fields and _____ automatically.
 - a. fonts
 - b. methods
 - c. class names
 - d. arrays
- _____ 2. The class used as a basis for inheritance is the _____ class.
 - a. child
 - b. extends
 - c. base
 - d. derived
- _____ 3. You use the keyword _____ to achieve inheritance in Java.
 - a. inherit
 - b. extends
 - c. super
 - d. public
- _____ 4. If a programming language does not support _____, the language is not considered object-oriented.
 - a. syntax
 - b. applets
 - c. loops
 - d. polymorphism
- _____ 5. When you create a class and do not provide a(n) _____, Java automatically supplies you with a default one.
 - a. constructor
 - b. argument
 - c. header
 - d. name
- _____ 6. Usually, the subclass constructor only needs to initialize the _____ that are specific to the subclass.
 - a. objects
 - b. data fields
 - c. methods
 - d. constructors
- _____ 7. Within a subclass, you can think of the keyword _____ as the opposite of super.
 - a. sub
 - b. this
 - c. protected
 - d. not
- _____ 8. When you employ _____, your data can be altered only by the methods you choose and only in ways that you can control.
 - a. virtual method calls
 - b. polymorphism
 - c. information hiding
 - d. inlining
- _____ 9. Using the keyword _____ provides you with an intermediate level of security between public and private access.
 - a. protected
 - b. this
 - c. super
 - d. secure
- _____ 10. The methods in a subclass can use all of the data fields and methods that belong to its parent, with one exception: _____ members of the parent class are not accessible within a child class's methods.
 - a. private
 - b. public
 - c. final
 - d. protected
- _____ 11. If a _____ method has the same name as a parent class method and you use the name with a child class object, the child method hides the original.
 - a. final
 - b. super
 - c. protected
 - d. this

- d. general

- ___ 23. Which of the following is NOT true regarding abstract methods?
- a. Abstract methods must be implemented in child classes.
 - b. Abstract methods have no body.
 - c. Abstract methods use the abstract keyword in declarations.
 - d. Abstract methods are inherited by their children.
- ___ 24. The Swing classes are part of a more general set of UI programming capabilities that are collectively called the ____.
- a. JavaX Classes
 - b. Java Foundation Classes
 - c. UI packages
 - d. Java Extension Libraries
- ___ 25. What class is the immediate parent of JFrame?
- a. Container
 - b. Component
 - c. Frame
 - d. Window
- ___ 26. You use the ____ method to obtain the title of a JFrame.
- a. getTitle()
 - b. title()
 - c. setTitle()
 - d. setVisible()
- ___ 27. You can call a JFrame's setDefaultCloseOperation() method and use ____ as an argument to keep the JFrame visible and continue running the program.
- a. JFrame.EXIT_ON_CLOSE
 - b. WindowConstants.DISPOSE_ON_CLOSE
 - c. WindowConstants.DO_NOTHING_ON_CLOSE
 - d. WindowConstants.HIDE_ON_CLOSE
- ___ 28. The JLabel constructor ____ creates a JLabel instance with the specified image and horizontal alignment.
- a. JLabel(String text, int horizontalAlignment)
 - b. JLabel(Icon image)
 - c. JLabel()
 - d. JLabel(Icon image, int horizontalAlignment)
- ___ 29. What is the default layout manager for JFrame?
- a. BorderLayout
 - b. FlowLayout
 - c. FrameLayout
 - d. GridLayout
- ___ 30. What is the immediate parent class of JTextField?
- a. JTextComponent
 - b. JComponent
 - c. Container
 - d. JFrame
- ___ 31. A ____ is a Component the user can click with a mouse to make a selection.
- a. JCheckBox
 - b. JButton
 - c. JLabel
 - d. JComboBox
- ___ 32. You define the text to be displayed in a tool tip by using the setToolTipText() method and passing an appropriate ____ to it.
- a. Integer
 - b. Date
 - c. String
 - d. Boolean
- ___ 33. Within an event-driven program, a component on which an event is generated is the ____ of the event.
- a. handler
 - b. driver
 - c. listener
 - d. source

- ____ 34. The ActionListener interface contains the ____ method specification.
- actionOccurred(Action e)
 - actionPerformed(ActionEvent e)
 - actionEvent(ActionEvent e)
 - action(Event e)
- ____ 35. The ____ responds to keyboard focus events.
- KeyListener
 - ActionListener
 - ChangeListener
 - FocusListener
- ____ 36. The ____ responds to keyboard events.
- KeyListener
 - ActionListener
 - ChangeListener
 - FocusListener
- ____ 37. The JButton, JCheckBox, JComboBox, and JRadioButton components are associated with the ____ method.
- addAdjustmentListener()
 - addChangeListener()
 - addWindowListener()
 - addItemListener()
- ____ 38. A method that executes because it is called automatically when an appropriate event occurs is an event ____.
- responder
 - listener
 - handler
 - source
- ____ 39. The ____ method of JCheckBox sets the state of the JCheckBox to true for selected or false for unselected.
- void setSelected(boolean)
 - boolean isSelected()
 - void setText(String)
 - String getText()
- ____ 40. Within an implementation of the itemStateChanged() method, you can use the ____ method to determine which object generated the event, and the getStateChange() method to determine whether the event was a selection or a deselection.
- getSource()
 - getEvent()
 - getItem()
 - getState()
- ____ 41. When you create a(n) ____, you can group several components, such as JCheckBoxes, so a user can select only one at a time.
- CheckGroup
 - ButtonGroup
 - OptionBox
 - OptionGroup
- ____ 42. A ____ is a component that combines two features: a display area showing an option, and a list box containing additional options.
- JCheckBox
 - JComboBox
 - JButton
 - JTextBox
- ____ 43. The ____ method of JComboBox returns the maximum number of items the combo box can display without a scroll bar.
- getSelectedItem()
 - getItemCount()
 - getMaximumRowCount()
 - getSelectedIndex()
- ____ 44. Which of the following statements will correctly set a JFrame named myFrame to be visible?
- myFrame.Visible = True
 - myFrame.Visibility = True

- b. `myFrame.setVisible(true)` d. `myFrame.true = Visible`
- ____ 45. Which of the following statements will change the value displayed in a JLabel named hello?
 a. `hello.setText("Hello");` c. `hello = setText("Hello");`
 b. `setText.hello = "Hello"` d. `setText = hello`
- ____ 46. When constructing a Font object, which of the following arguments is NOT required?
 a. typeface c. weight
 b. style d. point size
- ____ 47. A component can be made available or unavailable by passing true or false to the ____ method.
 a. `getSource()` c. `setSelected()`
 b. `setEnabled()` d. `setBounds()`
- ____ 48. A ____ is placed at the top of a container and contains user options.
 a. glass pane c. content pane
 b. menu bar d. containment hierarchy
- ____ 49. Java automatically converts the `add()`, `remove()`, and `setLayoutManager()` statements to more complete versions that include ____.
 a. `getContentPane()` c. `getJFrame()`
 b. `glassPane()` d. `addAll()`
- ____ 50. Use the ____ layout manager when you need to add components that are displayed one at a time.
 a. BorderLayout c. GridBagLayout
 b. GridLayout d. CardLayout
- ____ 51. Use the ____ layout manager when you add components to a maximum of five sections.
 a. BorderLayout c. GridBagLayout
 b. GridLayout d. CardLayout
- ____ 52. What is the parent class of JPanel?
 a. Object c. JComponent
 b. Component d. Container
- ____ 53. When components in a Swing UI require more display area than they have been allocated, you can use a ____ container to hold the components and allow the user to display the components using scroll bars.
 a. JScrollPane c. JPanel
 b. ScrollLayout d. JScrollPane
- ____ 54. The parent class for all event objects is named ____, which descends from the Object class.
 a. EventObject c. ParentEvent
 b. Event d. AWTEvent
- ____ 55. Clicking an item in a list box results in a(n) ____.
 a. ItemEvent c. ActionEvent
 b. WindowEvent d. MouseEvent
- ____ 56. Clicking a component results in a(n) ____.
 a. ItemEvent c. ActionEvent
 b. WindowEvent d. MouseEvent
- ____ 57. The `focusGained(FocusEvent)` handler is defined in the ____ interface.
 a. FocusListener c. AdjustmentListener

- b. `ComponentListener` d. `ActionListener`

____ 58. When you type "A", two ____ key codes are generated: Shift and "a".

- a. action c. event
b. virtual d. default

a. getClick() c. getY()
b. getX() d. getHoriz()

a. String c. int
b. boolean d. double

a. AWTEvent c. InputEvent
b. EventObject d. UserEvent

a. JMenuBar
b. JMenuChildren
c. JSubMenus
d. JMenus

a. addMenu()
b. add()
c. addNewMenu()
d. setMenu()

a. state() c. getSelected()
b. getState() d. isSelected()

a. `stop.setBackground(Color.RED);` c. `red.setBackground(Color.RED);`
b. `stop.Backcolor = RED;` d. `setBack.stop.Color.RED;`

a. `keyTyped()` c. `keyClicked()`
b. `keyPressed()` d. `keyReleased()`

- a. action key
- b. viewport
- c. mnemonic
- d. adapter class

a. `myBar = setJMenuBar`
b. `setJMenuBar(myBar)`
c. `JMenuBar.setJMenuBar(myBar)`
d. `JMenuBar = new
JMenuBar(myBar)`

- ___ 69. The `repaint()` method calls another method named ____, which calls the `paint()` method.
- a. `destroy()`
 - b. `actionPerformed()`
 - c. `update()`
 - d. `super()`
- ___ 70. If a window is 200 pixels wide by 100 pixels tall, you can place a Button named `pressMe` in the approximate center of the window with which of the following statements?
- a. `pressMe.setLocation(100, 50);`
 - b. `pressMe.setPosition(100, 50);`
 - c. `pressMe.setLocation(200, 100);`
 - d. `pressMe.setPosition(200, 100);`
- ___ 71. The ____ method allows you to draw a String in a JFrame window.
- a. `drawString()`
 - b. `setFont()`
 - c. `drawLine()`
 - d. `setString()`
- ___ 72. You can instruct a Graphics object to use a font by inserting the font as the argument in a ____ method.
- a. `setColor()`
 - b. `drawString()`
 - c. `setCharacters()`
 - d. `setFont()`
- ___ 73. The ____ method requires four arguments and draws the outline of a rectangle using the current drawing color.
- a. `clearRect()`
 - b. `drawRect()`
 - c. `fillRect()`
 - d. `paintRect()`
- ___ 74. The ____ method draws what appears to be an empty rectangle.
- a. `clearRect()`
 - b. `emptyRect()`
 - c. `fillRect()`
 - d. `drawRect()`
- ___ 75. The `drawRoundRect()` method requires ____ arguments.
- a. three
 - b. four
 - c. six
 - d. eight
- ___ 76. When using the `drawRoundRect()` method, if you assign ____ to the arc coordinates, the rectangle is not rounded; instead, the corners are square.
- a. -1
 - b. 0
 - c. 10
 - d. 99
- ___ 77. You can instantiate an empty Polygon object using which of the following statements?
- a. `Polygon someFutureShape = new Polygon(0, 0, 0, 0);`
 - b. `Polygon someFutureShape = new Polygon();`
 - c. `Polygon someFutureShape = new Polygon(0);`
 - d. `Polygon someFutureShape = new Polygon(xPoints, yPoints, xPoints.length);`