COMPUTER PROGRAMMING CONCEPTS
(390)

—OPEN EVENT—

REGIONAL – 2017

DO NOT WRITE ON TEST BOOKLET

TOTAL POINTS _____ ***(100 points)***

Failure to adhere to any of the following rules will result in disqualification:

1. **Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.**
2. **No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.**
3. **Electronic devices will be monitored according to ACT standards.**

No more than sixty (60) minutes
testing time

Identify the letter of the choice that best completes the statement or answers the question. Mark A if the statement is True. Mark B if the statement is False.

1. _____ refers to the process of hiding the internal details of objects and their methods.
   a. Abstraction
   b. Encapsulation
   c. Assumption
   d. Polymorphism

2. Declarative languages are commonly used for production applications.
   a. True
   b. False

3. A(n) _____ changes the order in which instructions are carried out by directing the computer to execute an instruction elsewhere in the program.
   a. sequential execution
   b. formal method
   c. programming paradigm
   d. sequence control structure

4. An important characteristic of third-generation programming languages is that the source code can be written with simple tools, such as a word processor, and this code can be easily understood by programmers.
   a. True
   b. False

5. In a problem statement, you can *limit* complexity by making _____.
   a. objects
   b. variables
   c. constants
   d. Assumptions

6. Structured English is a subset of the English language with a limited selection of sentence structures that reflect processing activities.
   a. True
   b. False

7. Which of the following is a scripting language?
   a. Ruby
   b. Perl
   c. PHP
   d. all of the above

8. The _____ paradigm is based on the idea that the solution for a problem can be visualized in terms of objects that interact with each other.
   a. declarative
   b. object-oriented
   c. procedural
   d. none of the above

9. A(n) _____ for a computer program is a set of steps that explains how to begin with known information specified in a problem statement and how to manipulate that information to arrive at a solution.
   a. control
   b. algorithm
   c. syntax
   d. parameter

10. _____-generation languages, such as COBOL and FORTRAN, were used extensively for business and scientific applications.
   a. First
   b. Second
   c. Third
   d. Fourth

11. Prolog allows users to ask open-ended questions by replacing constants with _____.
   a. parameters
   b. variables
   c. functions
   d. rules

12. What is the term that refers to the sequence in which a computer executes program instructions?
   a. control structure
   b. flow control
   c. walkthrough
   d. none of the above

13. The _____ paradigm describes aspects of a problem that lead to a solution.
    a. procedural
    b. declarative
    c. object-oriented
    d. none of the above

14. In a repetition control structure, the computer is directed to repeat one or more instructions until a certain condition is met. The section of code that repeats is usually referred to as a(n) _____.
    a. algorithm
    b. compiler
    c. iteration
    d. rule

15. In the context of Prolog programming, a(n) _____ is a tabular method for visualizing and specifying rules based on multiple factors.
    a. selection control structure
    b. decision table
    c. formal method
    d. storyboard

16. A(n) _____ is a graphical representation of the way a computer should progress from one instruction to the next when it performs a task.
    a. paradigm
    b. flowchart
    c. pseudocode
    d. VDE

17. A(n) _____ is available for use by any routine in the program while a(n) _____ can be accessed only from the routine in which it is defined.
    a. public attribute, class attribute
    b. private attribute, class attribute
    c. public attribute, private attribute
    d. class attribute, public attribute

18. Algorithms are usually written in a format that is specific to a particular programming language.
    a. True
    b. False

19. _____ provides OO programs with easy extensibility and can help simplify program control structures.
    a. Polymorphism
    b. Inheritance
    c. Encapsulation
    d. Abstraction

20. The _____ in a problem statement is the information that is supplied to the computer to help it solve a problem.
    a. known information
    b. assumption
    c. algorithm
    d. predicate

21. As a general rule, declarative programming languages are most suitable for problems that pertain to words and concepts rather than to numbers.
    a. True
    b. False

22. In 1969, computer scientists began to develop high-level languages called _____-generation languages, which more closely resembled human languages.
    a. second
    b. third
    c. fourth
    d. none of the above

23. A(n) _____ is a factor that remains the same throughout a program.
    a. algorithm
    b. variable
    c. object
    d. constant

24. The goto command is rarely used by skilled programmers because it can lead to programs that are difficult to understand and maintain.
    a. True
    b. False

25. Which programming language is used for artificial intelligence applications and expert systems?
    a. Prolog
    b. COBOL
    c. C++
    d. Objective C

26. Prolog programming is all about facts and rules.
    a. True
    b. False

27. The human-readable version of a program created in a high-level language by a programmer is called _____.
    a. source code
    b. op code
    c. object code
    d. structured English

28. Programmers insert documentation called facts into the program code.
    a. True
    b. False

29. Regarding OO programming, which of the following terms best matches with the term "method"?
    a. algorithm
    b. pseudocode
    c. syntax
    d. main()

30. Prolog and other declarative languages were classified as fifth-generation languages.
    a. True
    b. False

31. Which of the following is *not* a characteristic for a good problem statement?
    a. It specifies any assumptions that define the scope of the problem.
    b. It contains detailed descriptions of the processes and tools that need to be developed.
    c. It clearly specifies the known information.
    d. It specifies when the problem has been solved.

32. Application programmers specialize in developing system software such as operating systems, device drivers, security modules, and communications software.
    a. True
    b. False

33. Which of the following is *not* a programming paradigm?
    a. Declarative
    b. Procedural
    c. Object-Oriented
    d. Predictive

34. Generally speaking, in an object-oriented program, the objects don't interact.
    a. True
    b. False

35. A(n) _____ tells a computer what to do based on whether a condition is true or false.
    a. sequence control structure
    b. selection control structure
    c. repetition control structure
    d. walkthrough

36. Microprocessors only understand machine language, so there has to be some way to convert assembly language instructions into 1's and 0's.
    a. True
    b. False

37. Computer historians believe that _____ was the first programming language to work with objects, classes, inheritance, and methods.
    a. COBOL
    b. SIMULA
    c. Python
    d. Java

38. The facts in a Prolog program are useful even without any rules.
    a. True
    b. False

39. An API is a set of application or operating system functions that programmers can add to the programs they create.
    a. True
    b. False

40. A(n) _____ converts all the statements in a program in a single batch, and the resulting collection of instructions, called _____, is placed in a new file.
    a. constant, variable
    b. object code, compiler
    c. compiler, object code
    d. interpreter, compiler

41. A programming language that supports the procedural paradigm is called a declarative language.
    a. True
    b. False

42. A(n) _____ is a section of code that is part of a program, but is *not* included in the main sequential execution path.
    a. function
    b. goto
    c. method
    d. iteration

43. The order or sequence of rules in a Prolog program is usually critical.
    a. True
    b. False

44. The instructions that make up a computer program are sometimes referred to as _____.
    a. code
    b. control
    c. encapsulation
    d. function

45. When taking the object-oriented approach to a problem, one of the first steps is to identify the objects that pertain to a solution.
    a. True
    b. False

46. A(n) _____ defines the characteristics of a set of objects.
    a. class attribute
    b. control structure
    c. function
    d. method

47. Another way to express an algorithm is with pseudocode.
    a. True
    b. False

48. Which programming language is an interpreted language most commonly used for client-side web scripting, such as animating page elements and validating input on HTML forms?
    a. Prolog
    b. Pythod
    c. Java
    d. Javascript

49. A simple example of a repetition control structure is the if...else command.
    a. True
    b. False

50. Finding a value for a variable is referred to as _____.
    a. instantiation
    b. abstraction
    c. argument
    d. inheritance