1. For an applications program, program documentation external to the program (as opposed to comments embedded in the code) should:
2. be brief, be written in telegraphic style, use ample diagrams, and be designed for use by the original programmer only
3. be comprehensive, including information for users as well as technical information, to facilitate future revisions
4. be discarded once the program is finished, in order to protect the copyright
5. be written only if required by the job supervisor
6. never be written by the original programmer
7. Consider the following poorly formatted Java program fragment.

if (A == 7) if (C == 6) { C = 9; D = 9;

 } else { T = 10; if (C == 6) C = 5; }

else P = 9;

If A = 7 and C = 6 before the fragment is executed, which of the following indicates the values of A, C, D, P and T after the fragment is executed. (An undetermined value is indicated by a question mark.

1. A = 7, C = 9, D = 9, P = ?, T = ?
2. A = 7, C = 5, D = ?, P = ?, T = 10
3. A = 7, C = 6, D = ?, P = ?, T = ?
4. A = 7, C = 5, D = 9, P = ?, T = 10
5. A = 7, C = 6, D = ?, P = 9, T = ?
6. A program uses a plotting board in the form of a Cartesian plane with the center of the board at (0,0). A pen is suspended over the board and can be controlled by the following instructions:

RP – raise pen

LP – lower pen

MP(x, y) – move pen to point (x, y)

If the pen is up when MP(x, y) is executed, it will stay up; otherwise, it will draw a line segment from its current position to (x, y). Which of the following sequences of instructions will cause the capital letter T, and nothing else, to be drawn?

1. RP**,** MP(0,0), LP, MP(0,20), MP(-5, 20), MP(5,20)
2. RP, MP(0,0), MP(0,20), MP(-5, 20), MP(5,20)
3. RP, MP(0,0), LP, MP(0,20), RP, MP(-5, 20), MP(5,20)
4. RP, MP(0,0), LP, MP(0,20), RP, MP(-100, 20), MP(100,20)
5. RP, MP(0,0), LP, MP(-5,20), MP(5, 20), MP(0,20), MP(0,0)
6. An operator is “right associative” if successive appearances of the operator result in operands being combined right to left. For example, the expression a @ b @ c would mean a @ ( b @ c ) if the operator is right associative. What is the value of the expression

32 – 16 / 8 – 4 / 2

 if all operators are right associative and if the operation of subtraction has higher precedence than

 that of division?

1. 2
2. 8
3. 28
4. 29 + 1 / 3
5. 32

Question 13 is based on the following information: Grades for students in a class are stored in a sequential file. The file contains a student’s last name and that student’s scores on three exams. All names are unique. For example, the file might look like this:

 Adams 85 96 92 Jefferson 90 93 89 etc…

13. To compute the average grade for a student named Smith , a program must read

a. the entire file

b. all data in the file up to and including Smith’s name and test scores, but no other data

c. those items in the file that would be encountered by a binary search for Smith’s name but no other items

d. Smith’s name and test scores but no other data

e. the data in the file starting with Smith’s name and test scores and continuing to the end of the file but data items that come before Smith’s name

14. A method is to be written to search an array for a specified item and return its index. The problem specifications do not indicate what should be returned if the item sought appears in more than one place in the array. Which of the following actions would be most appropriate?

1. the programmer should write the method assuming that there will be no duplicate entries
2. the method should be written so as to return the index of all instances of the item
3. the specifications should be modified to indicate what should be done if there are duplicate entries
4. the method should be written so as to output an error message if there are duplicate entries
5. the method should be written so as to delete duplicate entries if any are found
6. In a certain program, two integers will be input. Their quotient will be determined. The programmer forgot to include a test that would check for division by zero. When will the error be detected?
7. at edit time
8. at compile time
9. as soon as the value of A is entered
10. during execution of the program
11. when an incorrect result is outp

21. Consider the following code segment:

 x = NOT y;

 y = NOT x;

Assume that x and y are initialized variables of type boolean. Which of the following statements is (are) true?

 I. the final value of x is the same as the initial value of x

 II. the final value of y is the same as the initial value of y

 III. the final value of x is the same as the initial value of y

a) I only

b) II only

c) III only

d) I and II only

e) II and III only