

TEST 1

CS 1014

2:00-3:15 PM
SPRING 1999
Instructor: Dulal Kar

Name: _____

ID: _____

Total Points: 100

Time : 1 hour

Read carefully and follow the following exam policies:

- 1. This is a closed book exam. You are not allowed to use any books, notes, or course materials in any form.**
- 2. No calculators or computing devices are allowed.**
- 3. All work must be done by you alone.**
- 4. You are not allowed to use any scratch paper; instead, use the backsides of the sheets of the test paper.**
- 5. You are not allowed to take copies of the questions or the answers with you in any form (written, electronic, or otherwise) after the test.**
- 6. The test has all multiple-choice questions. Choose the single best answer for each question.**
- 7. Return the Scantron sheet as well as the question paper before you leave the examination room.**

Note that it is an honor code violation to have a copy of this examination in your possession outside of the examination (written, electronic, or otherwise) room.

1. The component of the computer that temporarily holds data and instructions during some actual computing or processing is called the _____.

- a) Memory b) Central Processing Unit c) Input-output device d) Control unit

2. A(n) _____ is a set of instructions written in some computer language.

- a) Algorithm b) Program c) File d) Data

3. A program written in some machine language is readily understandable to a human.

- a) True b) False

4. One of the properties of an algorithm is _____.

- a) ambiguity b) finiteness c) efficiency d) None of them

5. The task(s) carried out by the compiler is (are) _____.

- a) checking syntax b) producing an object (or executable) program
c) checking logic of the program d) a and b only
e) a and c only f) None of the above

6. A collection of programs is called _____.

- a) hardware b) software c) information d) file system e) None of them

7. A comment line in Fortran 90 begins with the character _____.

- a) * b) | c) ! d) / e) None of them

8. Fortran 90 is a case-sensitive language, i.e., the word "READ" is different from the word "Read".

- a) True b) False

For questions 9 through 12, mark A on the opscan sheet if the variable name is valid in Fortran 90; otherwise mark B.

9. Total_Population_Of_State_Of_Virginia

10. Item#

11. Commission-Rate

12. Average_Income

For questions 13 through 16, select the best answer after evaluating the Fortran expression or indicate that the expression is not legal in Fortran. Note that the decimal point indicates a floating-point number.

13. $7 / 2.0 + 7 / 2$

- a) 6.0 b) 6 c) 6.3 d) 7.0 e) Not legal f) None of them

14. $6 / 5 + 4 / 5$

- a) 2 b) 2.0 c) 1 d) 1.0 e) Not legal f) None of them

15. $11 / 3 * 3.0 / 2$

- a) 4.5 b) 5.5 c) 4 d) 5 e) Not legal f) None of them

16. $10.0 - 6.0 / 2.0 + 5.0$

- a) 2.0 b) 6.0 c) 12.0 d) 14.0 e) Not legal f) None of them

For questions 17 through 20, mark A on the opscan sheet if the statement is syntactically correct in Fortran; otherwise mark B. Assume all variables are of type INTEGER.

17. $x * y + 3 = x$

18. $x = x ** 2 + 2 * x + 5$

19. READ (*, *) x, y / z, w

20. OPEN ("payroll.dat")

For questions 21 through 24, select the value that will be assigned to the relevant variable. Note that a decimal point indicates a floating-point result. Assume the following declarations.

INTEGER :: i
REAL :: x

21. $i = 15.0 / 2.0$

- a) 7 b) 7.0 c) 7.5 d) 0 e) Not legal f) None of them

22. $x = 1 / 4 * 2 + 3.5$

- a) 3.5 b) 4.0 c) 4 d) 3 e) Not legal f) None of them

23. $x = 5.0 / 2 + 3 ** (5 / 2)$

- a) 11 b) 11.0 c) 11.5 d) 9.0 e) Not legal f) None of them

24. $i = 5.0 / 2 - 1.6 + 1.0$

- a) 1.9 b) 0 c) 1 d) 2 e) Not legal f) None of them

For questions 25 through 28, consider the following as the input for all READ (and FORMAT) statements (note: □ indicates space)

Columns ----->	12345678901234567
Data ----->	25□59823.23□34245

and also assume the following declarations:

INTEGER :: i, j

REAL :: x, y

25. The value of x after execution of the following statement will be _____.

READ (9, *) i, x, j

- a) 59828.23 b) 59823.23 c) 59823.0 d) 250598 e) None of them

26. The value of j after execution of the following formatted READ statement will be _____.

READ (9, 50) i, j
50 FORMAT (I3, TR6, I4)

- a) 23 b) 230 c) 2303 d) will cause an error f) None of them

27. What will be the value of y after execution of the following code?

READ (9, 60) i, x, y
60 FORMAT (TR2, I2, F5.2, F5.3)

- a) 23.03 b) 28.030 c) 23.23 d) 23.034 e) None of them

28. What will be the value of y after execution of the following code?

READ (9, 70) x, y
70 FORMAT (2F5.2)

- a) 823.2 b) 823.23 c) 23.23 d) will cause an error e) None of them

29. What does the following statement print out? (Don't worry about spaces)

WRITE (*,*) "The product is ", 9 * 3

- a) The product is 9 * 3 b) The product is 27 c) The product is 27.0
d) Nothing --- It causes an error e) None of the above

For questions 30 through 32, consider the following declarations

REAL :: a = 324.5556, b = 78.7143, c = 4216.1434

INTEGER :: i = 524

30. What will be printed after execution of the following code? (Note: □ indicates space)

WRITE (*, 100) a, b
100 FORMAT(F6.2, F7.2)

- a) 324.55□78.71 b) 324.55□□78.71 c) □324.5□□□78.714

- d) 324.56□□78.71 e) will cause error f) None of them

31. What will be printed after execution of the following code? (Note: □ indicates space)

```
WRITE (*, 110) i, c
110 FORMAT (I5,TR3, F7.2)
```

- a) □□524□□4216.14 b) □□5244216.14 c) □□524□□□4216.14
d) will cause error e) None of them

32. What will be printed after execution of the following code? (Note: □ indicates space)

```
WRITE (*, 120) b, c
120 FORMAT (2F7.2)
```

- a) □□78.71□□4216.14 b) □□78.714216.14 c) □□78.71□4216.14
d) will cause error e) None of them

For questions 33 through 35, consider the following program segment:

```
PROGRAM      test                      ! line 1
  IMPLICIT NONE                          ! line 2
  INTEGER :: i = -4, j = 6, k           ! line 3
  REAL :: x = 25.0, y                   ! line 4

  y = x / i                             ! line 5
  WRITE (*,10) y                        ! line 6

  k = i * j                             ! line 7
  k = x / k                             ! line 8
  WRITE (*,20) k                        ! line 9

  x = 42 / j**2 / 2 * 5                 ! line 10
  WRITE (*,30) x                       ! line 11
  STOP                                  ! line 12
10  FORMAT(F6.2)                       ! line 13
20  FORMAT(I4)                         ! line 14
30  FORMAT(F6.2)                       ! line 15
END PROGRAM test                       ! line 16
```

33. The output from line 6 will be _____.
a) -6.25 b) -6 c) -6.00 d) 0.00 e) None of them
34. The output from line 9 will be _____.
a) 0 b) 1 c) 1.0 d) -1 e) None of them
35. The output from line 11 will be _____.
a) 0 b) 0.00 c) 2.5 d) 5.0 e) None of them

For questions 36 through 40, indicate the correct Fortran arithmetic expression for the given algebraic expression.

36. $\frac{1}{x} + \frac{1}{y}$

- a) $1 / (x + y)$ b) $1 / x + 1 / y$ c) $1 / x + y$ d) $x + 1 / y$
 e) None of them

37. $\frac{1}{x^2} + \frac{1}{y^2}$

- a) $1 / (x * x + y * y)$ b) $1 / x^{**2} + 1 / y^{**2}$ c) $1 / x * x + 1 / y * y$
 d) $1 / x^2 + 1 / y^2$ e) None of them

38. $\frac{x^{10}}{y}$

- a) $(x / y)^{**10}$ b) x^{**10} / y c) $x^{** (10 * y)}$ d) $x * 10 / y$
 e) None of them

39. $\frac{ax^4}{b} + \frac{cy^5}{ax^3} - 3$

- a) $a * x^{**4} / b + c * y^{**5} / (a * x^{**3}) - 3$ b) $a * x^{**4} / b + c * y^{**5} / a * x^{**3} - 3$
 c) $(a * x^{**4} / b + c * y^{**5}) / (a * x^{**3}) - 3$ d) $a * x^4 / b + c * y^5 / (a * x^{**3}) - 3$
 e) None of them

40. $\frac{\frac{x+y}{3} - \frac{x-y}{5}}{4x}$

- a) $((x + y) / 3 - (x - y) / 5) / 4x$ b) $((x + y) / 3 - (x - y) / 5) / (4x)$ c) $(x + y / 3 - x - y / 5) / 4x$
 d) $((x + y) / 3 - (x - y) / 5) / (4 * x)$ e) None of them