

**ICS 101 – Computer Programming
Spring Semester 2006 (072)**

Section 9
Homework – I

Read the following statement and write it is TRUE or FALSE:

- 1- FORT\$ is a valid FORTRAN variable name.
- 2- $K = AB/C - 2$ in FORTRAN it can written as $K = (A * B)/C - (2/1)$
- 3- PRINT *, 'X =', X (where X =3) is the valid FORTRAN statement
- 4- .NOT. 5**3 .EQ. 5*3 .AND. 0 .GT. 5 .OR. 5*3 + 3 .GT. 0 is equal to TRUE.
- 5- Linking error comes when 'compiler software given code' could not attached with the 'programmer written program'.

Select from correct answers:

- 6- We can write the one statement selection using
 - a) IF construct
 - b) IF ELSE construct
 - c) Simple IF
 - d) None of the above
- 7- For menu selection in a program, the best option is to use
 - a) IF construct
 - b) IF ELSEIF construct
 - c) Simple IF
 - d) None of the above

Find the outputs:

- 8- The output of following program is

```
Logical A, B
Integer K1, K2
K1 = 10
K2 = 12
A = K1.LT.K2
B = .TRUE.
IF (A) B = .FALSE.
PRINT*, A, B
END
```

- 9- What is the output of the following program

```
PROGRAM Sphere
REAL PI , VOLUME, R
```

```

PI = 3.14159
R = 3.0
VOLUME = 4.0 / 3.0 * PI * R ** 3
PRINT*, VOLUME
END

```

10- What is the output of the following program

```

REAL A, B, C
A=1
B=2
C=3
IF ( A .LT. B ) THEN
PRINT*, A + B
IF ( B .GT. 4.0 ) THEN
PRINT*, B*C
ELSE
PRINT*, C
ENDIF
ELSE
PRINT*, A*B*C
ENDIF
END

```

11- Write a program to prompt for the length and width of a room in meters and work out how many square meters of carpet are required to cover it. Display the result.

12- Write a program for taking inputs a, b and c for the coefficients of the standard quadratic equation i.e. $\mathbf{a x^2 + b x + c=0}$ ($\mathbf{a \neq 0}$) and use these coefficient to find the solution set of this equation. Where the standard solution set of this equation are as follows:

$$x_1 = (-b + \sqrt{b^2 - 4ac}) / 2a$$

$$x_2 = (-b - \sqrt{b^2 - 4ac}) / 2a$$

Use the IF construct to first check the discriminate i.e. $\mathbf{D = b^2 - 4ac}$ of the equation then predict the roots are real and distinct (if $\mathbf{D > 0}$), real and equal (if $\mathbf{D = 0}$) and roots are complex (if $\mathbf{D < 0}$). Further find the roots on the condition when $\mathbf{D > 0}$ and $\mathbf{D = 0}$. Display your results properly.