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King Saud University
College of Engineering
Department Of Chemical Engineering

GE 209 Computer Programming
1st Semester 1429/1430 H
Time Allowed: 2 Hours



FINAL EXAMINATION

Question#	Mark
1	
2	
3	
4	
Total	

QUESTION (1) [10 Pts](i) **For the following equation:**

$$y = \frac{\sin x}{\sqrt{\frac{x+z}{z \cdot x}}}$$

CIRCLE the correct equivalent FORTRAN statement:

- (a) $y = \sin(x) / \text{sqrt}(x+z/z*x)$
 (b) $y = \sin(x) / \text{sqrt}((x+z)/x/z)$
 (c) $y = \sin(x) / \text{sqrt}(x+z/(z*x))$
 (d) $y = \sin(x) / \text{sqrt}((x+z)/z*x)$

(ii) **Write the output of the following program:**

```

K=9
N=4
K=K/N+K*REAL((N*4+3)/3)/3
N=K/N+N*INT((K*4.0+3.0)/3.0)/3
PRINT *,K,N
STOP
END

```

ANSWER:

K= 20	N= 19
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(iii) **Write the output of the following program:**

```

INTEGER:: Y
LOGICAL:: AFLAG, BFLAG
AFLAG=.TRUE.
BFLAG=.FALSE.
IF(BFLAG.OR.AFLAG.AND.BFLAG)THEN
Y=4.5
ELSE IF(AFLAG.NEQV.BFLAG) THEN
Y=10.9
ELSE
Y=13.1
END IF
PRINT *,Y
STOP
END

```

ANSWER:

Y= 10

QUESTION 4 [10 Pts]

Write a FORTRAN program that does the following:

- (a) Reads from a data file called **Input.dat**, the size of a real 2-D array, the elements of each row of the array will be found on a single line of the input file.
- (b) Calculates the sum of each row.
- (c) Calculates the sum of each column.
- (d) Writes the results into a **new** output data file called **Output.dat**, in the form:

```
Sum of row  1=  
Sum of row  2=  
Sum of col  1=  
Sum of col  2=  
Sum of col  3=  
Sum of col  4=
```

Input.dat

```
2  4  
-34.0 -112.0  765.0  4.0  
35.6   8.1  135.3  17.0
```

```
Real:: A(10,10), sumr(10), sumc(10), sum  
Integer:: R,C  
Open(unit=10,file='input.dat',status='old')  
Open(unit=11,file='output.dat',status='new')  
Read 10, R,C  
DO I=1,R  
    Read 10, (A(I,J), J=1,C)  
Enddo  
DO I=1,R  
    Sum=0.0  
    DO J=1,C  
        Sum=Sum+A(I,J)  
    Enddo  
    Sumr(I)=Sum  
    Write (11,20), I,Sumr(I)  
Enddo  
DO J=1,C  
    Sum=0.0  
    DO I=1,R  
        Sum=Sum+A(I,J)  
    Enddo  
    Sumc(J)=Sum  
    Write (11,30), I,Sumc(J)  
Enddo  
20 Format(1x, 'Sum of Row  ',I2,'=',F6.1)  
30 Format(1x, 'Sum of Col  ',I2,'=',F6.1)
```