Q1: Write a programme in FORTRAN to read the matrix A (100) and find the maximum number in the matrix then find the factorial of the maximum.

```fortran
Dimension A(100)
Read*, (A(I),I=1,100)
Maximum=A(1)
Do 10 I=2,100
  If (Maximum LT. A(I)) Maximum=A(I)
10 Continue
N=Maximum
F=1
Do 15 b=1,N
  F=F*b
15 Print*, N, F
Stop
End
```

Q2: Write a programme in FORTRAN to find the sum of the following series then print the sum using suitable format.

\[
\frac{\text{Sum}}{2x} = \frac{x^3}{2} - \frac{x^5}{3} + \frac{x^7}{4} - \frac{x^9}{5} + \frac{x^{11}}{6} - \frac{x^{13}}{7}
\]

```fortran
Read*, x
A=0
Do 10 I=1,7
  A=A+((-1)**(I+1)*x**(2*I+1))/I
10 Sum = A *2*x
Print*, 'The value of Sum =', sum
Stop
End
```

Q3: Write a programme in Fortran to read the Matrix A (15, 15), then print it after making the value of each number in major axis equal to zero.

```fortran
Dimension A(15,15)
Read*, ((A(I,J),J=1,15),I=1,15)
Do 10 I = 1, 15
  Do 10 J =1, 15
    If (I .EQ. J) A(I,J)=0
 10 Continue
Write (*,15)((A(I,J),J=1,15),I=1,15)
15 Format (3x,225F5.2)
Stop
End
```
Q4: Write a programme in FORTRAN to read the variables x then find Y value according to following equation

Note: Print the results in 5th line of screen starting with fifth column as y = .

\[
y = \begin{cases} 
3.5X^2 + \frac{5x}{\pi} & \text{IF } X = 20 \\
|X| + 3.5 + \sqrt{X} & \text{IF } 20 > X > 15 \\
5.0 + X^4 & \text{IF } 15 > X > 5 \\
\cos(X) + 2 & \text{IF } X = 0 
\end{cases}
\]

READ *, x
IF(X.EQ.20) THEN
  Y=3.5*X**2+5*X/3.14
ELSE IF (X.LT. 20 .AND.X .GT. 15.0 ) THEN
  Y=ABS(X) +3.5+SQRT(X)
ELSE IF (X.LT. 15.0 .AND.X .GT. 5.0 ) THEN
  Y = 5.0 + X**4
ELSE IF (X.EQ. 0.0) THEN
  Y = COS(X)+2
END IF
WRITE (*,50) X, Y
50 Format ('X=', F6.2, 'Y=', F8.3)
STOP
END

(25 Marks)

Good Luck

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