



Answer all questions

يمنع استخدام الحاسبة اليدوية بجميع انواعها.

**Q1)** Answer **two** parts only.

- A) Define: Mathcad application? and give seven of its Properties. (10marks)
- B) Declare an integer array ID consisting of 4 rows and 4 columns and initialize array ID row-wise as an identity matrix. (10marks)
- C) Find the result of the following  $(101101)_2 - (100111)_2 = (?)_2$ , then convert the result to decimal system. (10marks)

**Q2)**

- A) Write a Fortran program to calculate the sum of series from one to (n) integer [without using do-loops]. (10marks)
- B) Write a program using Subroutine to find the Surface Area of a Cylinder. (10marks)

**Q3)**

- A) Write a program in Fortran 90 to find the value of ( S ) from sires bellow:

$$S = 1 - \frac{1}{2^2} + \frac{1}{2^4} - \frac{1}{2^6} + \frac{1}{2^8} - \frac{1}{2^{10}} + \frac{1}{2^{12}} \quad (10marks)$$

- B) What is the output of the following program ? (10marks)

```
INTEGER K
REAL X, Y
CHARACTER TEXT*8
K = 5000
X = 77.458
Y = -20.798
TEXT = 'FIRST CLASS'
PRINT 10, X, Y
PRINT 20, Y, K
PRINT 30, TEXT, TEXT
PRINT 40, K
PRINT 50, .TRUE.
10 FORMAT(' ', 4X, 'X=', F5.2, 3X, 'Y=', F5.1)
20 FORMAT(' ', 4X, 'Y=', F6.4, 2X, 'K=', I3)
30 FORMAT('0', 8X, A, 1X, A5)
40 FORMAT('+', 2X, 'K=', I4)
50 FORMAT(' ', 6X, L2)
END
```