



Answer all questions

يمنع استخدام الحاسبة اليدوية بجميع أنواعها.

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 program by FORTRAN language to check the number (n) if is elementary or not elementary. (10marks)
- B) What will be printed by the following program (10marks)

```
CHARACTER TEXT*7
TEXT = 'BASIM'
PRINT 20, TEXT, .FALSE., TEXT, TEXT
20 FORMAT(' ', A, 2X, L3, 2X, A9, A1)
END
```

Q3)

- A) Write a program in FORTRAN90 to calculate the value of **S** from the equation below: $S = \sum_{i=1}^3 \sum_{k=1}^5 i * k$ (10marks)

- B) Write a program by FORTRAN90 language to find the value of 'y' from the following equations: (10marks)

$$y = \begin{cases} \sqrt{\sin(x) + e^{\sqrt{x}}} & \dots\dots\dots z = a & \text{or} & z = A \\ 0.0 & \dots\dots\dots z = 0 \\ \sinh(x)\sqrt{e^{\sin(x)}} & \dots\dots\dots z = b & \text{or} & z = B \end{cases}$$

Q4)

A-Write a program in **Fortran** language to calculate the resultant matrix $C(I, J)$ from $[C(I, J)=A(I, J) + B(I, J)]$ when: **(10marks)**

$$A(I, J) := \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

$$B(I, J) := \begin{pmatrix} 10 & 20 & 30 \\ 40 & 50 & 60 \\ 70 & 80 & 90 \end{pmatrix}$$

B- 1- Write the necessary equations to draw a circle at point (3,-3) and have diameter (5) by Mathcad. **(5marks)**

2- What is the types of Expansion Cards ? (Explain briefly). **(5marks)**

Good Luck



Examiner



Head of department