Faculty of Mechanical Engineering
Universiti Teknologi Malaysia
Semester 2-2005/2006

SME 1013 Programming for Engineers — Test 2
Date : 25 March 2006 — Duration : 1 hour 30 minutes

1. For each variable name indicate whether the variable is valid or invalid.

(a) AMT DUE	(d) AMT_DUE	(g) $OWED	(j) 2ABC
(b) GENTU	(e) RM$	(h) READ	
(c) 'JOHAN'	(f) X Y Z	(i) MEKANIK	

[10 marks]

2. Indicate the implicit data type (*real*, *integer* or *neither*) based on the variable name.

(a) LENGTH	(d) SUM	(g) XYZ	(j) WRITE
(b) COMMON	(e) MONEY	(h) 'ABC'	
(c) KOUNT	(f) JOKER	(i) END	

[10 marks]

3. State the number of loops performed in the following DO statements.

(a) DO I = – 8, 8
(b) DO J = – 5, 5, 2
(c) DO K = 1.5, 5, 1.2

[10 marks]

4. When the following codes are executed, what are the values of K, SUM and AVE ?

```
      REAL X(5)
      DATA  X /2, 4, –2, 0, 9/
      K = 0
      SUM = 0.
      DO  10 I = 1,5
       IF(X(I).GT.0) THEN
           SUM = SUM + X(I)
            K = K + 1
       ENDIF
10    CONTINUE
      AVE = SUM/FLOAT(K)
      END
```

[10 marks]

5. What are the results (TRUE or FALSE) of the following logical expressions ?

(a) ((280/2 – 144).GT.4)

(b) (1.GT.2.AND.4.GT.3)

(c) (5.GT.2.AND.6.GT.8.OR.6.LE.9)

(d) (5.GT.2.OR.6.GT.8.AND.6.LE.9)

(e) ((10 – 8).GT.(2**2))

[10 marks]

6. The input file ABC.DAT contains the following data, where the first data is entered in column 1.

12345678901234567890123456789012345678901234567890123456789012345

What is stored in the variables I, J, K, L and M after the following statements are executed ?

```
      OPEN(UNIT=2, FILE='ABC.DAT', STATUS = 'OLD')
      READ(2,100) I, J, K, L, M
100   FORMAT(T2, I2, 2X, I3, TR2, I4, 2X, TR2, TL3, I2, 1X, I2)
```

[10 marks]

7. The input file XYZ.DAT contains the following data, where the first data is entered in column 1.

ABCabc1234567890

What is displayed on the screen for A, B and C after the following statements are executed ?

```
      CHARACTER*5 A, B, C*4
      OPEN(2,FILE='XYZ.DAT',STATUS='OLD')
      READ (2,100) A, C
100   FORMAT (2A6)
      B = C
      WRITE(6,200) A, B, C
200   FORMAT(1H, A4,2X,2A6)
```

[10 marks]

8. An input file ABC.DAT contains the following data for *N* number of students in class SME1013.

'Ahmad'	40 ⟵	First student in the list
'Bakar'	80	
'Charlie'	60	
..	..	
..	..	
'Zul'	96 ⟵	*N* th, last student in the list

Write a FORTRAN program that,

(a) Reads the input file which contains student's names followed by their exam marks for *N* number of students

(b) Grades the students according to these criteria,

	mark ≥ 90	grade A
80 ≤	mark < 90	grade B
	mark < 80	grade C

(c) Calculates the average score for the class.

(d) Write to an output file COMPUT.RES a list which contains the student's names, their marks and grades

(e) Write to the output file the average score for the class.

[30 marks]