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RR-0885

Third Year B. Sc. Examination

March / April – 2010

Computer Oriented Numerical Methods

(CAN Course)

[Old Course]

Time : **3** Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **T. Y. B. Sc.**

Name of the Subject :

☛ **Computer Oriented Numerical Methods (Old) (CAN)**

☛ Subject Code No. : **0 8 8 5** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) **All** the questions are **compulsory**.

(3) Figures to the **right** indicate **full** marks.

1 Answer the following questions : **10**

(1) Write arithmetic operator's in FORTRAN :

(2) State difference between executive and non-executive statement.

(3) Write the following statements in FORTRAN.

(i) IF x > y, STOP

(ii) IF J ≠ K, go to the statement 31.

(4) Write a FORTRAN expression for (2x + y) (3z – 4w).

(5) Take X=4.0 and K = 3 and compute Y from following :

(i) Y=X*(K/4)

(ii) Y=(X+K)/4

2 (a) Draw a block diagram of computer and explain the function of each of its units. **5**

(b) Draw a flowchart to find the sum of the series **5**

$$sum = \sum_{n=1}^{50} x^n .$$

(c) Check the validity of the following real constants : 2

(i) 40, 943.65

(ii) 428.58

(iii) 46+E2

(iv) 485 E2.5

OR

2 (a) Explain different rules of writing real expressions with illustrations. 5

(b) Draw the flowchart to find Fibonacci numbers upto 200. 5

(c) Give FORTRAN equivalent : 2

$$\frac{1}{\alpha\sqrt{2\pi}} e^{\sqrt{2\alpha(x-m)^2}}.$$

3 (a) Write a program to print the given five digit integer in reverse order. 5

(b) Draw a flow-chart to find a real roots of the quadratic equation. 5

(c) Convert the following into FORTRAN language : 2

$$\frac{\alpha}{\sqrt{\alpha^2+\beta^2}} \sin(wt+\theta).$$

OR

3 (a) Write a program to compute the average marks of each student in three subjects S_1, S_2 and S_3 in a class of 100 students. 5

(b) Give FORTRAN equivalence of the following, assuming that computer does not accept mixed mode expressions : 5

(i) $\sin(x-2y)+e^{x/y}-|x^2-y^2|$

(ii) $e^{x+y}-\sin(x+ny)$

(c) Write the given statement in FORTRAN : 2

60 FORMAT ('1', E15.5, E15.2, E15.4)

4 (a) Explain Do statement with illustration. **5**

(b) Write a program to find A^T of a m×n matrix A. **5**

(c) Why following statement labels are invalid : **2**

(i) CALL

(ii) –17

(iii) I+J

(iv) +35

OR

4 (a) Explain LOGICAL IF statement with illustration. **5**

(b) Write a program to find the average height of males and females in a class seperately. **5**

(c) Explain Hierarchy of operations in expression. **2**

5 (a) Explain F-Format with illustration. **5**

(b) What is subscripted variable ? Explain the use of DIMENSION statement in FORTRAN with illustration. **5**

(c) Write a program to convert rupees to paise. **2**

OR

5 (a) Explain BLOCK IF statement with illustration. **5**

(b) Describe the output after the execution of FORMAT statement in the following program : **5**

```
A = –193.4589
B = .4589
C = –.008946
D = 455
PRINT 100, A,B,C,D
100 FORMAT (IX, E7.4, E11.4, F8.6, I4)
```

(c) State the difference between STOP and END statement. **2**

6 (a) Write a program to find the solution of $x^3 - x - 1 = 0$ by Bisection method. **6**

(b) Write a program to solve the differential equation $\frac{dy}{dx} = x^2 + y^2,\ y(0) = 0$ by Euler's method. (Take $h = 0.1,\ 0 \le x \le 0.5$) **6**

OR

6 (a) Write a program to solve the equation $x^2 - 6x + 1 = 0$ by the method of false position. **6**

(b) Write a program to evaluate an integral $\int_1^3 \frac{dx}{x}$ by Simpson's $\frac{1}{3}$ rule. **6**