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RB-0727

Second Year B. Sc. (I.C.) Examination

April / May – 2010

Mathematics : Paper - IV

(New Course)

Time : **3** Hours] [Total Marks : **105**

Instructions :

(1)

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

Name of the Examination :

☛ S.Y. B.Sc. (I.C.)

Name of the Subject :

☛ MATHEMATICS - 4 (NEW)

☛ Subject Code No. : 0 7 2 7 ☛ Section No. (1, 2,.....) : NIL

Seat No. :

Student's Signature

(2) All the questions are compulsory.

(3) Digits to the right indicate marks of question.

(3) Follow usual notations.

1 Answer the following questions : **15**

(1) Write FORTRAN character set.

(2) What is the difference between a variable and a constant ?

(3) Define hardware and software.

(4) Write the assignment statements for the following statements :

(i) Assign the value of $\sqrt{x^2+3}$ to y

(ii) Assign the sum of x, y to z

(iii) Assign k times $A + B$ to V.

(5) Express the following algebraic expression into its equivalent FORTRAN expression.

$$\frac{Pe^q}{2q} + \log p + \frac{|x|}{\sin y^3}$$

(6) What is the purpose of column 1 to 5 ?

(7) If $M = 5$ and $N = 15$, what will be the final values of M and N after calculating the statement.

```
If ((M-N)* 3.EQ.N) THEN
        M = N – M
        N = M – N
    ELSE
        N = 1
        N = 2
    ENDIF
```

(8) Give the difference between algebraic and FORTRAN expression.

(9) Find the value of the following expression.

$R = {}^{2}/_{4} + 7.5$

(10) What is a control system ?

2 (a) Give algorithm for calculating Fibonacci series. **9**

(b) Write a short note on Input - Output statements. **9**

OR

2 (a) What is a flow chart ? Describe various symbols used in drawing a flow chart. **9**

(b) Write the steps to solve a program or problem in computer. **9**

3 (a) Write short notes on : **9**

(i) Assignment statement

(ii) Logical operator

(iii) Logical expressions

(b) Represent the following numbers as FORTRAN complex constants **9**

(i) $-3 + 2i$

(ii) 50

(iii) $2 \cdot 5 \times 10^{5}$

OR

3 (a) Write a short note on DO - continue. **9**

(b) Write a program to check whether a number is divisible by 70 or not. **9**

4 (a) Write a program to find the sum of digits of a four digit number. **9**

(b) Write a program to find surface area and volume of a rectangular parallelopiped, the measures of whose sides are a, b and c. **9**

OR

4 (a) Prepare a program to find the sum of digits of four digit number. **9**

(b) Prepare a program to find the area of a circle when radius of circle is given. **9**

5 (a) Write a program to find transpose of matrix of order $m \times n$. **9**

(b) What are the differences between DO and implied DO statement ? **9**

OR

5 (a) Write a program to find the sum of two matrices of order $m \times n$. **9**

(b) Write a prograom to test whether an integer is prime or not, using DO loops. **9**

6 (a) A company keeps accurate records of its monthly expenditure and its total monthly sales for the first ten months of 2002, the record showed the following : **9**

Advertising expenditure	43	44	36	38	47	40	41	54	37	46
Monthly Sales	74	76	60	68	79	70	71	94	65	78

Find Karl Pearson's correlation coefficient between the two variables.

(b) Obtain the regression line of y on x and regression line of x on y for the following data : **9**

Age (in years) X	66	38	56	42	72	36	63	47	55	45
Blood Pressure Y	145	124	147	125	160	118	149	128	150	124

Estimate the blood pressure of a man whose age is 50 years.

OR

6 (a) From the following table, obtain two regression equations and estimate the yield of crops (y) when the rainfall (x) is 29 and rainfall (x) when yield is 600. **9**

	y **(yield)**	x **(rainfall)**
Mean	508.4	23.7
Standard Deviation	36.8	4.6

Correlation coefficient $r_{xy} = 0 \cdot 52$

(b) Ten competitors in a beauty contest are ranked by three judges in the following order : **9**

1st Judge	1	5	4	8	9	6	10	7	3	2
2nd Judge	4	8	7	6	5	9	10	3	2	1
3rd Judge	6	7	8	1	5	10	9	2	3	4

Use rank correlation to discuss which pair of judges has the nearest approach to beauty.