.....*B.E.CIVIL ENGINEERING 2nd Year 1st Semester*..... EXAMINATION, *2019*

SUBJECT .....*COMPUTER PROGRAMMING - I* .....

PAPER .....--.....

Time: **Three hours**

Full Marks 100
(60 marks for this part)

Use a separate Answer-Script for each part

No. of Questions	PART I	Marks
	Group – A (Answer all questions)	
1.a)	Why do we require 'compilation' of FORTRAN computer programme?	[2½ x 4 =10]
1.b)	What is the difference between 'syntax error' and 'logical error' in programme?	
1.c)	How can the normal order of execution of programme statements be changed? Give example.	
1.d)	Why do we need to use subprogrammes in developing computer programme?	
	Group – B (Answer all questions)	
2.a)	Write the equivalent FORTRAN statements of the following arithmetic equations i) $A=\dfrac{B}{2.5-\dfrac{G}{x^2+\cos(3\alpha)}}$ ii) $s=\tan^{-1}\left(\dfrac{\log_{10} k}{\lvert\beta-4.1\delta\rvert}\right)$	[2+2+ 1=5]
2.b)	State whether the FORTRAN statements are correct or not. If not, rewrite the statement after rectifying them. i) `READ(2,2)"SUM=",S` ii) `Y=SQRT(TS/N)`	
2.c)	What is difference between 'STOP' and 'END' statements used in FORTRAN programme?	
3.	Write a FORTRAN programme that is capable of finding both real and imaginary roots of quadratic equation $ax^2+bx+c=0$.	10

(Contd. to page 2)

.....*B.E.CIVIL ENGINEERING 2nd Year 1st Semester*..... EXAMINATION, *2019*

SUBJECT ..... *COMPUTER PROGRAMMING - I* .....

PAPER .....

Full Marks 100
(60 marks for this part)

Time: **Three hours**

Use a separate Answer-Script for each part

No. of Questions	PART I	Marks
	(*Contd. from page 1*)	
	Group – C (Answer Q4 and any two questions from rest)	
4.a)	Convert the following statement to 'Logical –IF' structure: `GO TO (11,12,22,33),IV`	[2+2+1=5]
4.b)	Write an example of 'implied DO loop' statement? Explain its meaning. Where is it used?	
4.c)	Give an example of 'conditional GO TO' statement.	
5.	Write a FORTRAN program that will take co-ordinates (x,y) of the three points in a plane and determines whether these points can form a triangle or not.	10
6.	Write a FORTRAN program to determine the sum of prime integers in the range 51 to 100.	10
7.	Write a FORTRAN programme to calculate the sum of the following series upto n-th term: $S = 1 - \frac{3}{x^2} + \frac{5}{x^3} - \frac{7}{x^4} + \ldots$	10
8.	Write a FORTRAN program that tabulates the values of the following function f(x,y) for the range of x and y as given below and determines their arithmetic mean: $\mathbf{F(x,y) = 7x^2 - xy + 10y}$ Range of x: –2.2 to 4.6 with the increment 0.2 Range of y: –6.5 to 0.0 with the increment 0.5	10

(*Contd. to page 3*)

.....B.E.CIVIL ENGINEERING 2nd Year 1st Semester..... EXAMINATION, *2019*

SUBJECT ..... ***COMPUTER PROGRAMMING - I*** .....

PAPER .....--.....

Full Marks 100
(60 marks for this part)

Time: **Three hours**

Use a separate Answer-Script for each part

No. of Questions	PART I	Marks
	(*Contd. from page 2*)	
	Group – D (Answer any one question)	
9.	Write a FORTRAN programme that reads the elements of a matrix of size (4x6) row-wise and then finds out the **minimum element** from the elements of **each row** and the **maximum element** from the elements of **each column**.	10
10.	Write a FORTRAN programme that reads the elements of a matrix of size (3x5) column-wise, interchanges the elements of **1st row** with that of **3rd row** and then interchanges the elements of **2nd column** with those of **4th column** and then displays the new matrix in row-wise manner.	10
11.	Write a FORTRAN sub-programme that calculates the sum of the products $\mathbf{S=a_1.b_1+ a_2.b_2+ ...+ a_n.b_n}$. Using this subprogram, write a FORTRAN program to calculate the standard deviation of n real numbers $x_1, x_2, x_3, \ldots x_n$ having the frequencies $f_1, f_2, f_3, \ldots f_n$ using the following expression $$S.D. = \sqrt{\frac{\sum_{i=1}^{n} f_i x_i^2}{\sum_{i=1}^{n} f_i} - \left(\frac{\sum_{i=1}^{n} f_i x_i}{\sum_{i=1}^{n} f_i}\right)^2}$$	10

=== END ===

Form A: Paper –Setting Blank

Ref No. – Ex/CE/T/214/2019

B.C.E. 2ND YEAR 1ST SEMESTER 2019

(1st / ~~2nd~~-Semester ~~/ Repeat / Supplementary / Annual / Bianual~~)

SUBJECT: *Computer Programming-I*

(Name in full)

Time: ~~Two hours~~/Three hours/~~Four hours/ Six hours~~ Full Marks 100

(40 marks for part II)

No. of Question	Use a separate Answer-Script for each part PART – II	
1.	Solve the following equation by *Method of false position.* Find out the result correct upto 3 decimal points. Use tabular form showing only one sample calculation. Root lies between 2 and 3. $e^x + \tan(x) + 1/x = 9.845$	10
	OR	
	Solve the above problem by *Method of bisection.*	10
2. a)	Solve the following equation by *Gauss Elimination* method. (Upto 3 decimal point). $-x_2 + 3x_3 = 7.338$ $2x_1 + 3x_2 - x_3 = 5.078$ $x_1 - 3x_2 + x_3 = -1.928$	8
b)	Write short note on *Ill-Conditioned System of equations.*	2
	OR	
2.	Use *Newton Raphson method* of two variables to solve the equations $x^3 - y = -0.303$ $x - 2y^2 = -11.200$ Correct to two decimals, starting with the approximation (1, 2).	10
3.a)	Using *Runge Kutta Method of order 4*, find y (0.2) given that $dy/dx = (2x^2+y^2)$, y (0) = 1.5. Take h=0.1.	8
b)	Write short note on Predictor *Corrector Method.*	2
4.	The population of a city during five census periods was as follows:	

Year:	1971	1981	1991	2001	2011
Population (Million):	2.8	3.2	4.5	5.9	7.5

Interpolate the population during **1996.** Use Lagrange Interpolation. 10

OR

Certain experimental values of x and y are given below. Form an Exponential Function in the form of $y=ae^{bx}$, using **Least Square Method.** Find value of y when x=45.

X	10	20	40	50	56
Y	100	110	120	150	200

10