.....B.E.Civil Engineering 2nd Year 1st Semester (Supplementary)..... EXAMINATION, *2018*

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
	Answer Q.1 and ANY FIVE questions from the rest	
1.a)	Write the equivalent FORTRAN statements of the following arithmetic equations i) $\theta = \cos^{-1}\left(\frac{a^2+b^2-c^2}{2ab}\right)$ ii) $z = \log_{10}\left(\sqrt{\lvert x-y\rvert}\right)$	[2+3+3+2=10]
1.b)	State whether the FORTRAN statements are correct or not. If not, rewrite the statement after rectifying them. i) `WRITE(5,15)K+M` ii) `DIMENSION AB(5),C(5x5)` iii) `DO I=2,10`	
1.c)	Convert the following statement to 'Logical –IF' structure: `IF(R)7,17,17`	
1.d)	Write examples of "Implied DO-Loop" statement and "Computed GO TO" statement used in FORTRAN language.	
2.	Write a FORTRAN program that will take co-ordinates (x,y) of the three points in a plane and determines area of the triangles formed by these.	10
3.	Write a FORTRAN program to find all two-digited integers that are divisible by 7 or 11 and to calculate the arithmetic mean of them.	10
4.	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. $\mathbf{F(x,y) = 2.7x^2 + 0.9xy - y^2}$ Range of x: 2.0 to 5.0 with the increment 0.5 Range of y: –1.0 to 7.0 with the increment 1.0	10

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No. of Questions	PART I	Marks
	(Contd. from page 1)	
5.	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 3rd row and the maximum element from the elements of 4th column and then calculates the average of these two values.	10
6.	Write a FORTRAN sub-programme to calculate the factorial of an integer. Using this subprogram, write a FORTRAN program to calculate ${}^nC_r$ using the following expression $${}^nC_r = \frac{n!}{r!(n-r)!}$$	10
7.	Write a FORTRAN sub-programme that calculates the following sum of products $a_1b_1 + a_2b_2 + a_3b_3 + \ldots a_nb_n$. Using this subprogram, write a FORTRAN program that calculates the following $$S = \frac{\sqrt{x_1^2 + x_2^2 + \ldots + x_n^2}\cdot\sqrt{y_1^2 + y_2^2 + \ldots + y_n^2}}{\sqrt{x_1y_1 + x_2y_2 + \ldots x_ny_n}}$$	10

=== END ===

Form A: Paper –Setting Blank Ref No. –Ex/CE/T/214/2018(S)

B.C.E. 2ND YEAR 1ST SEMESTER 2018

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

SUBJECT: *Computer Programming-I*

(Name in full)

Full Marks 100

Time: ~~Two hours~~/Three hours/~~Four hours/ Six hours~~ (40 marks for part-II)

Use a separate Answer-Script for each part

No. of Question	PART – II
	Answer any FOUR (All questions carry equal marks)
1.	Solve the following equation by *Gauss Elimination* method. $3X_1+4X_2-X_3+6X_4 = 30$ $5X_1 \quad -3X_4 = -3$ $-X_1-X_2+10X_3+2X_4 = 10$ $2X_1-3X_2-2X_3 \quad = -5$
2.	Solve the following equation by *Newton Raphson Method.* Find out the result correct upto 3 decimal points. Use tabular form showing only one sample calculation. Start with guess value x=0. $xe^x+\ln(x)-\cos(x)= 1.0$
3.	Use *Newton Raphson method* of two variables to solve the equations $x^4-x^2+y = 74.245$ $x -y^3+xy = -56.805$ Correct to two decimals, starting with the approximation (2.7, 4).
4.	Using *Runge Kutta Method of order 4*, find y (0.4) given that $dy/dx = x^3+xy$, y (0) = 0. Take h=0.2.
5.	The following table gives the value of X and Y, Y being the dependent variable. Use *Lagrange's formula* to find value of Y when X = 4.6.

X	1	3	5	8
Y	25	450	720	950

6.	Write short notes (ANY TWO):
a)	Method of Bisection
b)	Gauss Elimination Method with Pivoting
c)	Ill-Conditioned System of equations