.........*B.C.E. 2ⁿᵈ Year 1ˢᵗ Semester*......... 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) $\theta = \tan^{-1}\left(\dfrac{2I_{xy}}{I_x - I_y}\right)$ ii) $s = \sin^{-1}\left(\dfrac{\lvert a-b \rvert}{c}\right) - 2.5.\log_{10}\left(\sqrt{\lvert x \rvert}\right)$	[2+3+ 2+3 =10]
1.b)	State whether the FORTRAN statements are correct or not. If not, rewrite the statement after rectifying them. i) `WRITE(5,15)A,B,C,"AVG=",AVG` ii) `IF(D.GT.0)BIG=A1,STOP` iii) `FUNCTION AVERAGE(K,L,B(10))`	
1.c)	Convert the following statement to 'Logical –IF' structure: `IF(X-2.0)11,11,12`	
1.d)	What is the difference between 'function sub-programme' and 'subroutine sub-programme' 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 whether the points are collinear or not.	10
3.	Write a FORTRAN program to find out smallest and largest three-digited prime integers and calculate the difference between them.	10
4.	Write a FORTRAN program that tabulates the values of the following function f(x,y,z) for the range of x,y and z as given below. $F(x,y,z) = 4x^3 - 3.2xy + 5.1yz - z^3$ Range of x: –5.5 to 2.0 with the increment 0.5 Range of y: 0.0 to 3.4 with the increment 0.2 Range of z: –1.0 to 0.0 with the increment 0.1	10

.........*B.C.E. 2nd Year 1st Semester*......... EXAMINATION, *2018*

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

PAPER ....—..................

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Full Marks
(60 marks for this p

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Time: Three hours

Use a separate Answer-Script for each part

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No. of Questions	PART I	Mar
	(*Contd. from page 1*)	
5.	Write a FORTRAN programme that reads the elements of a square matrix of size (6x6) row-wise and then finds out the minimum element from the elements of lower triangular part (including principal diagonal), the maximum element from the elements of upper triangular part (excluding principal diagonal) of the matrix and also find product of these two values.	1(
6.	Write a FORTRAN sub-programme to calculate the arithmetic mean n real numbers a_1, a_2, a_3, ... a_n having the frequencies b_1, b_2, b_3, ... b_n using the expression given below. Using this subprogram, write a FORTRAN program to calculate the standard deviation of n real numbers x_1, x_2, x_3, ... x_n having the frequencies f_1, f_2, f_3, ... f_n using the following expression $$S.D. = \sqrt{\frac{\sum_{i=1}^{n} f_i (x_i - \bar{x})^2}{\sum_{i=1}^{n} f_i}} \qquad \text{where,} \qquad \bar{x} = \frac{\sum_{i=1}^{n} f_i x_i}{\sum_{i=1}^{n} f_i}$$	10
7.	Write a FORTRAN sub-programme that multiplies two matrices [X] of size (mxn) and [Y] of size (nxl). Using this subprogram, write a FORTRAN program that reads the elements of a matrix [B] of size (4x6) in row-wise order & [D] of size (4x4) in column-wise order and calculates $$[S] = [B]^T.[D].[B]$$ and displays the elements of [S] row-wise order.	10

=== END ===

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
(40 marks for part II)

Time: ~~Two hours~~/Three hours/~~Four hours/ Six hours~~

Use a separate Answer-Script for each part

Full Marks
ks for this part

No. of question	Mark	PART – II	
		Answer <u>any FOUR</u> (All questions carry equal marks)	
(6x6) lower ments find	1. 10	Solve the following equation by *Gauss Elimination* method. (Upto 3 decimal point). $$\begin{aligned} -x_2 \ -3x_3 \ -4x_4 &= -14.9 \\ 2x +x_2 \ -x_3 \ -5x_4 &= 3.4 \\ -x -3x_2 \qquad -x_4 &= -10.0 \\ x +x_2 +2x_3+3x_4 &= 12.0 \end{aligned}$$	10
rs a₁, elow. ation g the	2. 10	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 1 and 2. $$e^x- \cos(x) +1/x=4.31$$	10
	3.	Using *Runge Kutta Method of order 4*, find y (0.4) given that $dy/dx = (2x^2+y)/ e^{(x+y)}$, y (0) = 1. Take h=0.2.	10
and the umn	4. 10	The following table gives the viscosity of oil as a function of temperature. Use *Lagrange's formula* to find viscosity of oil at a temperature of 155^0.	10

Temp (^{0})	100	130	160	190	200
Viscosity	10.8	8.1	5.5	4.8	4.5

	5.	Use *Newton Raphson method* of two variables to solve the equations $$x^4-x +y = 4.119$$ $$3x -y^3+xy = -22.642$$ Correct to two decimals. starting with the approximation (1.0,3.0).	10
	6. a) b)	Write short notes Method of least square Inconsistent Equations	5X2=10