

.....**B. Civil Engineering 2<sup>nd</sup> Year**... EXAMINATION, 2017(OLD)  
 (1<sup>st</sup> / 2<sup>nd</sup> Semester / Repeat / Supplementary / Annual / Bi-Annual)

SUBJECT .....**Computer Aided Analysis and Programming**  
 (Name in full)

PAPER .....**XX**.....

Full Marks 100  
 (50 marks for part I)

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

Use a separate Answer-Script for each part

No. of Questions	PART I Answer any two questions	Marks
1.	Find the critical buckling load of a uniform column fixed at one end and hinged at other. <b>Divide the column into four equal parts and use Finite difference technique.</b>	25
2.	a) The first derivative of a function (y) in backward difference scheme is expressed as $\nabla y_i = (y_i - y_{i-1})/h$ . Find the <b>third derivative</b> of the function. b) Prove that for <b>Simpson rule</b> for numerical integration, $I = \frac{h}{3} [y_0 + 4y_1 + y_2]$	5 7
	b) $I = \int_0^3 (\frac{5x^3}{3} + \frac{4x^2}{9} + \frac{11x}{4} + 6) dx$ evaluate the value of I by <b>Trapezoidal and Simpson rule</b> . Also compare these results with exact value. Take <b>h=0.50</b> .	13
3	Find the Eigen values and Eigen vectors of the given matrix (A) by <b>Stoodala method</b> . $[A] = \begin{bmatrix} 3 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$	25

CIVIL ENGG 2<sup>ND</sup> YEAR 2<sup>ND</sup> SEMESTER EXAM 2017 (OLD)(1<sup>st</sup> / 2<sup>nd</sup> Semester / Repeat / Supplementary / Annual / Biannual)SUBJECT: *Computer Aided Analysis & Programming*

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No. of Question	PART – II	Marks
	<b><u>Answer Q 1. and any TWO from the rest.</u></b>	
1.i)	state errors, if any, in the following program segment and write the correct statement: a) <code>char s1[6]; strcpy(s1, "JADAVPUR");</code> b) <code>int a, *b = &amp;a;</code> c) <code>for(i=0;i&lt;2;i++) scanf("%f%f",&amp;amount[i]);</code>	3x2=6
ii.)	Write a <b>for loop</b> statement that initializes all the principal diagonal elements of a square matrix to <i>one</i> and others to <i>zero</i> . Assume 5 rows and 5 columns.	5
iii)	Explain the output: a) <code>#include&lt;stdio.h&gt; main() {int ii; for(ii=0;ii&lt;=2;ii++) {switch(ii) {case 1: printf("%d\n",ii); case 2: printf("%d\n",ii); default: printf("%d\n",ii);} }}</code> b) <code>#include&lt;stdio.h&gt; main() {int ii,x=0; for(ii=1;ii&lt;10;ii++) {if(ii%2== 1) x+=ii; else x- -; printf("%d\n",x);}}</code>	3x2=6
iv)	What is the utility of using Function?	3
2.i)	Write a program to find shear force and bending moment of a simply supported beam of length L subjected to uniformly distributed load (w) upto L/2 from left end. Display the result in tabular form. Use <b>function</b> .	12+3=15
ii)	What do you understand by the term 'Call by reference'? Give Example.	
3.i)	Write a program to add first n terms of the following series . $S = 1/1! + 2/2! + 3/3! + 4/4! + \dots$	
ii)	Write a short note on <i>Unary Operators</i> .	12+3=15
4.i)	Describe the purpose of using <code>malloc ()</code> ? Write syntax of it along with the necessary header file required.	
ii)	Write a program that will read the elements of a two dimensional square matrix and will find out the largest element from the leading diagonal of the matrix.	3+12=15