STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086 (For candidates admitted during the academic year 2019 – 2020 & thereafter) B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

S.Sc. DEGREE EXAMINATION, NOVEMBER BRANCH I – MATHEMATICS

FIFTH SEMESTER

COURSE : INTERDISCIPLINARY CORE

SUBJECT CODE: 19ID/IC/MS55

TIME	: 3 HOURS	MAX. MARKS: 100

		SECTION -A					
AN	SWER ALL THE QUESTIONS	: :	$(20 \times 1 = 20)$				
1.	In MATHCAD the range varial value and last value.	between the first					
	a) colon(:)	c) semi colon (;)					
	b) comma (,)	d) period (.)					
2.	To view the built-in functions in	menu.					
	a) FILE	c) EDIT					
	b) INSERT	d) MATH					
3.	In MATHCAD, part of a name	can be a subscript by pressing					
	a) comma (,)	c) period (.)					
	b) underscore (_)	d) none					
4.	In MATHCAD , the middle placeholders on each of the axes are to hold						
	a) range values	c) $f(x)$					
	b) numeric values	d) arguments					
5.	In Box plot <i>notch</i> is a value.						
	a) numeric value	c) logical value					
	b) character value	d) None of the above					
6.	In R , the <i>hist()</i> function takes _						
	a) variable	c) value					
	b) vector	d) None of the above					
7.	In R , the members must all be vectors of equal length for						
	a) List c) Factors						
	b) Arrays	d) Data frame					
8.	In R , the command $B \leftarrow matrix(c(1,2,3,4,5))$ will produce						
	a) one column	c) one row					
	b) warning message	d) error message					
9.	The is also called as the 50 th percentile.						
	a) mean	c) median					
	b) mode	d) All of the above					

10.	The correlation results can be viewed using the function in R .			
	a) corrplot()	c) Corrplot()		
	b) corr.plot()	d) Corr.plot()		
11.	A relationship model in R is created using			
	a) lmd()	c) rm()		
	b) im()	d) None of the above		
12.	In R , this function generates required number of random values of given probability from a given sample.			
	a) qbinorm()	c) qbinom()		
	b) rbinorm()	d) rbinom()		
13.		epresents only one value for each variable?		
	a) Bar	c) Pie		
	b) Line	d) Column		
14.	A formula in Excel always begins with an			
	a) Equal sign	c) Colon		
	b) Comma	d) Space		
15.	Which of the following identifies a cell in Excel?			
	a) Address	c) Formula		
	b) Name	d) Label		
16.	Which function displays row data in a column or column data in a row?			
	a) Rows	c) Transpose		
	b) Hyperlink	d) Index		
17.	A lets to hide/reveal parts of a layer.			
	a) Alpha Channel	c) Layer Mask		
	b) Layer Mask	d) Light & Shadow Filter		
18.	The image loses its quality by being			
	a) Merged	c) Scaled		
	b) Renamed	d) Masked		
19.	tool takes color in passing and uses it to mix to the next color it meets.			
	a) Smudge	c) Patch		
	b) Heal	d) Dodge		
20.	is the shortcut for Text tool.			
	a) T	c) Ctrl + T		
	b) $Alt + T$	d) Shift + T		



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B.Sc. DEGREE EXAMINATION, NOVEMBER 2022 BRANCH I – MATHEMATICS FIFTH SEMESTER

COURSE : INTERDISCIPLINARY CORE

PAPER : MATHEMATICS THROUGH SCIENTIFIC SOFTWARE

SUBJECT CODE: 19ID/IC/MS55

TIME : 3 HOURS MAX.MARKS: 100

SECTION -B

ANSWER ANY FOUR QUESTIONS

 $(4 \times 20 = 80)$

1. a) Draw the multiple x - y plot for the functions f(x) = 2x + 1, $g(x) = \sin(x)$.

(5 marks)

b) Solve the given system of linear equations

(5 marks)

$$10x + 2y + z = 9$$
$$x + 10y - z = -22$$
$$-2x + 3y + 10z = 22$$

c) Use symbolic computation to find the inverse, transpose and determinant for the

$$matrix \begin{pmatrix} A & B & C \\ D & E & F \\ G & H & I \end{pmatrix}$$
(4 marks)

d) Solve
$$x\sin(x) - e^x + \log x = 0$$
, $\prod_{n=1}^{10} a. k^n$, $\sum_{i=3}^{10} \frac{(-1)^{i+1}}{i}$ (6 marks)

- 2. a) In R, create a 5×3 matrix representing the marks of 3 students in 5 subjects and depict it using a multiple bar diagram. (5 marks)
 - b) Create a data frame for the number of students who are campus recruited in the four IT companies IBM, Cognizant, TCS and Infosys in the last 7 years and represent it by a multiple line plot using different colours, give labels, heading and a key.

 (10 marks)
 - c) In **R**, create a numeric vector with values ranging from 50 to 90 using the sequence operator, identify the number which are divisible by 5 and print the results. (5 marks)
- 3. a) Analyze the following pairs of data sets, such as its mean, variance, correlation (between X_i and Y_i , i = 1,2), scatter plot (X_i versus Y_i , i = 1,2) and infer the relationship between the two variables.

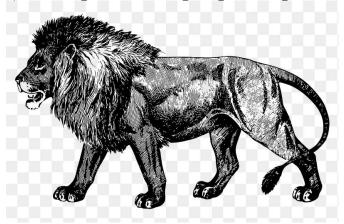
X_1	<i>Y</i> ₁	X_2	Y_2
10	8.04	10	9.14
8	6.95	8	8.14
13	7.58	13	8.74
9	8.81	9	8.77
11	8.33	11	9.26
14	9.96	14	8.1
6	7.24	6	6.13
4	4.26	4	3.1
12	10.84	12	9.13
7	4.82	7	7.26
5	5.68	5	4.78

(15 marks)

b) Illustrate the application of dbinom() and pbinom() using suitable values in R.

(5 marks)

- 4. Create an excel sheet that contains 15 students record with the data fields Consumer No, Name, Jewels, No of grams, Wastage, Net amount. (10 marks)
 Select Jewels from the list (Chain, Bangles, Ring, Stud).
 Wastage = 10% from the grams purchased.
 The gold rate /gram is assumed to be Rs. 5000.
 - a) Calculate Subtotal = No_of _grams * gold rate + Wastage (10 marks)
 - b) Calculate Netamount = 10% GST + Subtotal
 - c) Filter the Bangles record alone
 - d) Compare various jewels purchased by the customers using Bar chart.
- 5. a) Create logo "Stella" using the given image. (10 marks)



b) Create an image on your own and animate the image

(10 marks)
