

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086  
(For candidates admitted during the academic year 2019 – 20 & thereafter)

SUBJECT CODE: 19ID/IC/MS55

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

COURSE : INTERDISCIPLINARY CORE

PAPER : MATHEMATICS THROUGH SCIENTIFIC SOFTWARE

TIME : 3 hours

MAXIMUM MARKS: 100

**SECTION –A**

Answer *ALL* the questions (20×1=20)

- In Excel, \_\_\_\_\_ is the address of the cell in the seventh column of the sixth row.  
a) F6  
b) F7  
c) G7  
d) G6
- \_\_\_\_\_ feature displays only the data in columns according to specified criteria  
a) Formula  
b) Pivot  
c) Sorting  
d) Filtering
- \_\_\_\_\_ shortcut closes the current workbook.  
a) Ctrl + W  
b) Ctrl + C  
c) Ctrl + F4  
d) Ctrl + O
- \_\_\_\_\_ tool helps better for What-If analysis in Excel.  
a) Pivot Table  
b) Goal Seek  
c) Track Change  
d) Formula Auditing
- A \_\_\_\_\_ lets to hide/reveal parts of a layer.  
a) Alpha Channel  
b) Layer Mask  
c) Layer Mask  
d) Light & Shadow Filter
- The image loses its quality by being \_\_\_\_\_.  
a) Merged  
b) Renamed  
c) Scaled  
d) Masked
- \_\_\_\_\_ tool takes color in passing and uses it to mix to the next color it meets.  
a) Smudge  
b) Heal  
c) Patch  
d) Dodge
- \_\_\_\_\_ is the shortcut for Text tool.  
a) T  
b) Alt + T  
c) Ctrl + T  
d) Shift + T
- In MATHCAD, Greek letters can be obtained from the Roman equivalent if we press  
a) [Ctrl]+G  
b) [Ctrl]+E  
c) [Ctrl]+R  
d) [Ctrl]+S



STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086  
(For candidates admitted during the academic year 2019 – 20 & thereafter)

SUBJECT CODE: 19ID/IC/MS55

B.SC. DEGREE EXAMINATION, NOVEMBER 2022

BRANCH I – MATHEMATICS

FIFTH SEMESTER

COURSE: INTERDISCIPLINARY CORE

PAPER : MATHEMATICS THROUGH SCIENTIFIC SOFTWARE

TIME : 3 hours

MAXIMUM MARKS: 100

**SECTION –B**

Answer *ANY FOUR* the questions (4×20=80)

21. Create an excel sheet that contains 10 customer record with the data fields:  
Customer\_No, Name, Vegetable, Price, Kilogram, Subtotal, Discount, Netamount.  
(10 marks)
- Select Vegetable from the list (Carrot, Brinjal, Potato, Tomato).  
If the vegetable is Carrot, price = Rs.30/kg.  
Brinjal, price = Rs.20/kg.  
Potato price = Rs.25/kg.  
Tomato price = Rs.10/kg.
- The user should have not chosen more than 30 kg for each vegetable category.  
(10 marks)
- a) Calculate Subtotal = Price \* Kilogram.  
b) If the Subtotal is above 300, give 1% discount.  
c) Calculate Netamount = Subtotal – Discount.  
d) Sort the records based on max value of Netamount.
22. a) Create a Colorful Logo for the conference “ICACT’22” conducted by Department of Computers, Stella Maris College with neat background.  
(10 marks)
- b) Create Text mask to display “OCEAN” using the image given  
(10 marks)
23. a) Draw the polar curve for  $r = \sqrt{\cos(2t)}$  (5 marks)
- b) Solve the given system of linear equations (5 marks)
- $$x + y + z = 6$$
- $$3x + 3y + 4z = 20$$
- $$2x + y + 3z = 13$$
- c) For the matrix  $A = \begin{pmatrix} 3 & 4 & 2 \\ 2 & 5 & -2 \\ 3 & 2 & 7 \end{pmatrix}$ , find  $A^2$ ,  $\overline{A^2}$ , and inverse of the submatrix of  $A$  obtained by eliminating the first row and last column. (6 marks)
- d) Define the range of  $x$  as 1 to 5 in intervals of .5 and hence compute  $x^3$  and  $\sin x$ . (4 marks)

24. a) Draw a horizontal bar chart representing the following data – “Sales of Ice cream”, label the axis and use colours for the bar chart. **(5 marks)**

Cone	120
Cup	200
Ball	150
Kulfi	90
Bar	300

- b) Draw a pie chart with title, using rainbow color pallet and a key to represent the following data and label the data in the pie chart with their percentages. **(8 marks)**

Number of People Vaccinated	
Bangalore	20000000
Chennai	50000000
Trichy	15000000
Erode	500000
Madurai	10000000

- c) In **R**, Construct and store a  $4 \times 2$  matrix that is filled row-wise with the values, 12, -4, 16, 8, 11, -12, 14, 6 in that order. Remove the first row, overwrite the first column with the same column sorted from smallest to largest and store the bottom four elements as a new  $2 \times 2$  submatrix. **(7 marks)**
25. a) Consider any data set from the **R** environment, use multiple regression with one response variable and four predictor variables, create a relationship mode, get the summary of the relationship model and predict the value. Represent the above graphically. **(15 marks)**
- b) Depict the usage of `rnorm()` and draw a histogram to show the distribution of the generated numbers. **(5 marks)**

\*\*\*\*\*