This question paper contains **4+1** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **2349**

Unique Paper Code : **62353325** **GC-3**

Name of the Paper : **Latex and HTML**

Name of the Course : **B.A. (Prog.) Mathematics (CBCS) Skill Enhancement Course**

Semester : **III**

Duration : **2 Hours** Maximum Marks : **50**

(Write your Roll No. on the top immediately on receipt of this question paper.)

All questions are compulsory.

1. Fill in the blanks : 5×1=5

   (*a*) In LaTeX, optional arguments are always given in ..... brackets.

   (*b*) The part of a LaTeX file preceding ***\begin {document}*** command is called ..... .

   (*c*) The ***html*** element is closed with ..... tag.

   (*d*) The LaTeX code to produce the mathematical expression $e^{i\theta} = \cos\theta + i \sin\theta$ is ..... .

   (*e*) ..... tag is used in HTML to create a list of items in specified order.

2. Answer any *ten* parts from the following : 10×2=20

   (1) Write any *two* different ways of including mathematical expressions in LaTeX document.

P.T.O.

(2) Write the difference between the commands ***\ldots*** and ***\cdots***.

(3) What is the output of \pscircle (3, 2){1} in pstricks ?

(4) Write the output of the command **$\sqrt[n]{5}$**.

(5) What is the command for writing the set {0, 1} in LaTeX ?

(6) Explain the difference in the outputs of the following two LaTeX source codes :

(*i*) \begin{document}

Suppose that $ x = 25 $

\end{document}

(*ii*) \begin{document}

Suppose that $$ x = 25 $$

\end{document}

(7) Write a set of commands to be put in the main document in LaTeX to produce :

$$\lim_{x \to 0} \frac{\sin x}{x} = 1.$$

(8) Write the output of :

\documentclass{beamer}

\title{Skill Enhancement Course}

\author{ABC}

\institute{University of Delhi}

```
\begin{document}

\begin{frame}

\titlepage

\end{frame}

\end{document}
```

(9) Write a code in LaTeX to produce the output :

$$|x| = \begin{cases} -x, & x < 0 \\ x, & x \geq 0 \end{cases}$$

(10) Write the following postfix expressions in the standard form :

x 1 add 2 exp 1 x sub div.

(11) What is the output of the command **\psline (1, 1) (5, 1) (1, 4) (1, 1)** in pstricks ? Also, give a rough sketch of the same.

(12) What is wrong with the following input ? What is the right way to do it ?

If $theta = pi$ then $sin theta = 0$.

3. Answer any *five* parts from the following : 5×5=25

(*i*) Write a code in LaTeX to plot the function :

$$f(x) = \begin{cases} x^2, & 0 \leq x \leq 2 \\ -x^2, & -2 \leq x < 0 \end{cases}$$

(*ii*) Write the code for the following in LaTeX environment :

Let $x = (x_1, x_2, \ldots\ldots, x_n)$, where the x_i are non-negative real numbers. Set :

$$M_r(x) = \left(\frac{x_1^r + x_2^r + \ldots\ldots + x_n^r}{n} \right)^{\frac{1}{r}}, \quad r \in \mathbf{R}\backslash\{0\}$$

and

$$M_0(x) = (x_1 x_2 \ldots\ldots x_n)^{1/n}.$$

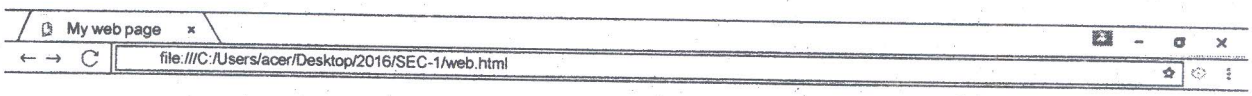
(*iii*) Write a presentation in beamer with the following content :

Slide – 1 contains **the title of the presentation, author's name and affiliation**

Slide – 2 contains the **list of subjects taught in B.A. (Prog.) course**

Slide – 3 contains **Thank You**

(*iv*) Write an ***html*** code to generate the following web page :



University of Delhi

Department of Mathematics
Course offered

- B.Sc.(H) Mathematics
- M.Sc. Mathematics
- M.Phil.
- Ph.D.

(*v*) Write a code in LaTeX to get the following matrix :

$$A = \begin{bmatrix} a & c & e \\ b & d & f \\ g & i & k \\ h & j & l \end{bmatrix}.$$

(*vi*) Write the code in LaTeX to draw the following circle with shaded sector :