

This question paper contains 4+1 printed pages]

Roll No.

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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 :

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

- (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 :

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

P.T.O.

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

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

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

and

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

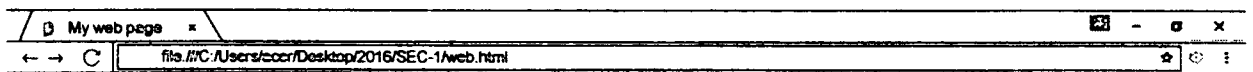
(iii) Write a presentation in beamer with the following content :

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**

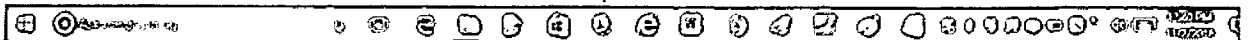
(iv) Write an *html* code to generate the following web page :



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 :

