

[This question paper contains 8 printed pages.]

Your Roll No.....

Date of Exam: 27/11/19

Sr. No. of Question Paper : 7279

Unique Paper Code : 32353301

Name of the Paper : Latex and HTML

Name of the Course : B.Sc. (Hons.) Mathematics

Semester : III

Duration : 2 Hours

Maximum Marks : 38

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All questions are compulsory.

1. Fill in the blanks (Any 4) :  $(4 \times \frac{1}{2} = 2)$

(i) To create a hyperlink in HTML  $\langle \dots \rangle$  element is used.

(ii) LaTeX is a *markup*..... language.

(iii) The command  $\backslash \text{Pscircle}(2,2)\{1\}$  draws a circle with center (2,2) and radius 1.

P.T.O.

- (iv) Boldface text on a webpage is obtained with the ..... element.
- (v) The command to produce name of institute in a beamer presentation is .....

2. Answer any **eight** parts from the following :

(8×2=16)

- (i) Describe three different ways in LaTeX to write in math mode. \$ \$

- (ii) What is wrong with the following input:

$\$theta = pi$, then  $\$ \sin theta = 0$.$$

- (iii) What is the output of the following command :

$\backslash\left(\frac{a+b}{x+y}\right)^{\frac{1}{3}}$

- (iv) Make the following equation in LaTeX:

$$R_{\theta} = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$$

- (v) Give any two attributes of the img tag in HTML.

- (vi) Typeset a code in LaTeX for the following :

$$\sum_{k=1}^n k = \frac{n(n+1)}{2}$$

$\$ \sum_{k=1}^n k = \frac{n(n+1)}{2}$

(vii) Give the output of the command

`\psarc(1,1){3}{0}{50}`

(viii) Write a LaTeX code to produce  $p^q + q^p + z^z$  as the output.

$$\$ p^q + q^p + z^z$$

(ix) Write the output of the following HTML code :

`<h3> Ordered list with Arabic numerals </h3>`

`<ol type = "1">`

`<li> Analysis </li>`

`<li> Algebra </li>`

`</ol>`

1. Ana  
2. Alg -

(x) Write the postfix notation in standard form:  $x \sin 1 \text{ add } 2 \text{ exp } 1 \text{ x sub div.}$

$$\frac{\sin x + 1}{(1-x)^2}$$

3. Answer any **five** parts from the following :

(5×4=20)

(i) Write a code in LaTeX for typesetting the following expression:

$$A_n = \begin{bmatrix} n & n^2 & n^3 \\ 3 & 9 & 27 \\ 4 & 16 & 64 \\ 11 & 121 & 1331 \end{bmatrix}$$

P.T.O.

- (ii) Find the errors in the following LaTeX source, write a corrected version and write its output :

```
\documentclass{article}
```

```
\usepackage{amsmath}
```

```
\title{My Document}
```

```
\author{ABC}
```

```
\date{today}
```

```
\maketitle
```

```
\begin{document}
```

```
[ \lim_{n \rightarrow \infty} \frac{\sin 2x}{x} ]
```

```
\end{document}
```

My Document  
ABC

$\lim_{n \rightarrow \infty} \frac{\sin 2x}{x}$

- (iii) Write the code in LaTeX to plot the functions  $y = \sqrt{x}$  and  $y = x^2$  on the same coordinate system, for  $0 \leq x \leq 1$ . Show the sine function as a solid curve and the cosine function as a dotted curve.
- (iv) Write a code in LaTeX for typesetting the following expression :

$$\begin{aligned}e^x &= \frac{x^0}{0!} + \frac{x^1}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots \\e^{-1} &= \frac{(-1)^0}{0!} + \frac{(-1)^1}{1!} + \frac{(-1)^2}{2!} + \frac{(-1)^3}{3!} + \dots \\&= \frac{1}{0!} - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} + \dots\end{aligned}$$

- (v) Write LaTeX code in beamer to prepare the following presentation :

Slide 1:

**Trigonometric Functions**

XYZ

November 29, 2018

XYZ Trigonometric Functions

P.T.O.

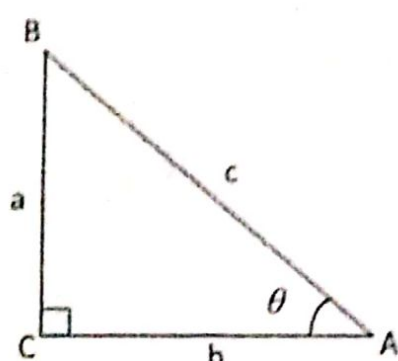
7279

6

slide title

Slide 2:

Trigonometric Functions


$$\sin \theta = \frac{a}{c}, \cos \theta = \frac{b}{c}$$

XYZ Trigonometric Functions

Slide 3:

THANK YOU

7279

7

- (vi) Write an HTML code to generate the following web page:

## University of Delhi

### Department of Mathematics

The list of options for DSE papers offered in B.Sc.(H)-Mathematics:

1. Vth Semester
  - a. DSE-1
    - i. Numerical Methods
    - ii. Mathematical Modelling and Graph Theory
  - b. DSE-2
    - i. Mathematical Finance
    - ii. Discrete Mathematics
2. VIth Semester
  - a. DSE-3
    - i. Probability Theory & Statistics
    - ii. Mechanics