

Roll No.

Total Pages : 6

336304

December, 2019

B.Sc. (Mathematics) - III SEMESTER

Latex (SEC-301)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) Name any two list making environment. (1.5)
- (b) Write the command for producing page break in a Latex document. (1.5)
- (c) Which command will help you to change an entire paragraph written into small letters to capital letters at a glance? (1.5)
- (d) How to give medium space while typing mathematical expressions in Latex? (1.5)

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- (e) Write the name of the document class for putting \chapter command in Latex. (1.5)
- (f) What is the difference between \begin{eqnarray} and \begin{eqnarray*} commands? (1.5)
- (g) Write the output of the command.

$$\frac{d}{dx}\left\{\frac{1}{x}\right\}$$

$$=\frac{-1}{x^2}$$
 (1.5)
- (h) Write any two uses of Latex code. (1.5)
- (i) Write a Latex code for typing Manchoř and Frědic. (1.5)
- (j) Which command is used in pstricks to put a label at a specific point? (1.5)

PART - B

2. (a) Write a Latex code for typesetting the following :

A Latex Document

B. Sc IInd Semester Students

25th December, 2019

Abstract

This is the end semester examination of third semester¹.

We have learnt the basics of Latex.

1 Introduction

An error in your input file could produce an error in one of the special cross-referencing files.

The error in the cross-referencing will not manifest itself until the file is read, the next time you run Latex.

¹ Department of Mathematics

- (b) What is Latex class file? Give examples. (5)
3. (a) Find the errors in the following Latex source, write a corrected version and its output (10)
- ```

\Documentclass{article}
\begin{document}
We have following options
\begin{itemsiz}
\item $$x\ge y$
\item &&x\ge y&
\item x=y
\end{document}

```
- (b) Define preamble and environment of a Latex document. (5)

4. (a) Write a Latex code for typesetting the following expression

$$\sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \dots = e^x \quad (5)$$

- (b) Write a Latex code using reference command for the following expression. The commutation relation takes the form

$$[A, A^\dagger] = \frac{\mu_{n+1}}{\mu_n} - \frac{\mu_n}{\mu_{n-1}}$$

To prove Equation (5), we assume that the set  $\left\{ \frac{1}{\sqrt{\mu_n}}, n=0, 1, 2, \dots \right\}$  forms a complete orthonormal set. (10)

5. (a) Write a Latex code for the following output

Define a matrix  $A_n =$  
$$\begin{bmatrix} 1 & 1 & 1 & \dots & 1 \\ x_1 & x_2 & x_3 & \dots & x_n \\ x_1^2 & x_2^2 & x_3^2 & \dots & x_n^2 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ x_1^n & x_2^n & x_3^n & \dots & x_n^n \end{bmatrix}$$
 (10)

- (b) Write a Latex code for typesetting the following

$$\begin{aligned} 1 + 2 &= 3 \\ 4 + 5 + 6 &= 7 + 8 \\ 9 + 10 + 11 + 12 &= 13 + 14 + 15 \end{aligned} \quad (5)$$

6. (a) Write a code in Latex using pstricks to plot the curves  $y = \sin x$  and  $y = \cos x$  on the same coordinate. Show the first function as a red, dotted curve and the second one as a green, dashed curve. (10)

- (b) Write a Latex code for typesetting

$$\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi} \quad (5)$$

7. Write a Latex code in beamer to make the following presentation : (15)

|                                             |       |            |     |
|---------------------------------------------|-------|------------|-----|
| Introduction to Latex                       |       |            |     |
| Designed by                                 |       |            |     |
| Siksha University of Science and Technology |       |            |     |
| January 1, 2020                             |       |            |     |
| SUST                                        | Latex | 01/01/2020 | 1/2 |

## Pythagoras theorem

In a right angled triangle, the square of the hypotenuse is equal to the sum of the squares of the perpendicular and the base.

SUST

Latex

01/01/2020

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