Q.1) Develop a LaTeX script to create a simple document that consists of 2 sections [Section1, Section2], and a paragraph with dummy text in each section. And also include header [title of document] and footer [institute name, page number] in the document.

\documentclass{article}

\usepackage{lipsum} % for generating dummy text

\usepackage{fancyhdr} % for header and footer

% Header and footer settings

\pagestyle{fancy}

\fancyhf{}

\rhead{Title of Document}

\lfoot{Vemana Institute of Technology}

\rfoot{\thepage}

\begin{document}

\section{Section1}

\lipsum[1] % generates dummy text

\section{Section2}

\lipsum[2] % generates dummy text

\end{document}

Q.2) Develop a LaTeX script to create a document that displays the sample Abstract/Summary

\documentclass{article}

% Set page margins

\usepackage[margin=1in]{geometry}

\begin{document}

\title{Sample Abstract}

\author{Your Name}

\date{\today}

\maketitle

\section\*{Abstract}

An abstract is a short summary of your completed research. It is intended to describe your work without going into great detail. Abstracts should be self-contained and concise, explaining your work as briefly and clearly as possible. An abstract lets readers get the gist or essence of your paper or article quickly, in order to decide whether to read the full paper.

\textbf{Keywords:} abstract, summary, LaTeX

\end{document}

Q.3) Develop a LaTeX script to create a simple title page of the VTU project Report [Use suitable Logos and text formatting]

\documentclass[12pt]{report}

\usepackage{graphicx}

\begin{document}

\begin{titlepage}

\centering

\includegraphics[width=0.15\textwidth]{vtu logo.png}\\[1cm] % University Logo

\textsc{\LARGE Visvesvaraya Technological University}\\[1.5cm] % University Name

\textsc{\Large Project Report}\\[0.5cm] % Document Type

\rule{\linewidth}{0.2 mm} \\[0.4 cm]

{ \huge \bfseries Title of Your Project}\\

\rule{\linewidth}{0.2 mm} \\[1.5 cm]

\textsc{\large Your Name}\\[0.5cm] % Author Name

\textsc{\large Department of Your Department}\\[0.5cm] % Department Name

\textsc{\large Your College Name}\\[0.5cm] % College Name

{\large \today}\\[2 cm] % Date

\vfill

\end{titlepage}

\end{document}

4

\documentclass[16pt]{scrartcl}

\usepackage[a4paper,left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}

\usepackage{pdflscape,setspace,amsmath,amssymb}

\usepackage[utf8]{inputenc}

\usepackage[T1]{fontenc}

\usepackage{calligra}

\usepackage{tgschola}

\usepackage{fourier-orns}

\usepackage{graphicx}

\usepackage{wallpaper}

\usepackage[normalem]{ulem}

\usepackage{charter}

\usepackage{microtype}

\hyphenpenalty 100000

% Define your certificate content here

\newcommand{\certificateTitle}{\emph{\LARGE Certificate}}

\newcommand{\certificateText}{%

This is to certify that this is a bonafide record of the project presented by the

students whose names are given below during \textless Monsoon/Winter and

Year here\textgreater{} in partial fulfillment of the requirements of the degree

of Bachelor of Technology in Computer Science and Engineering.

}

% Define the signature lines

\def\signature#1#2{%

\parbox[b]{1in}{\smash{#1}\vskip12pt} \hfill

\parbox[t]{2.8in}{\shortstack{\vrule width 2.8in height 0.4pt\\\small#2}}}

\def\sigskip{\vskip0.4in plus 0.1in}

\def\beginskip{\vskip0.5875in plus 0.1in}

\begin{document}

\begin{center}

\LARGE\textsc{Vemana Institute of Technology }\\[0.5cm]

\large{Department of Computer Science and Engineering}\\[2.0cm]

\emph{\certificateTitle}\\[2.5cm]

\end{center}

\normalsize

\certificateText

\begin{table}[h]

\centering

\begin{tabular}{lr}

Roll No & Names of Students \\

\hline

<Roll no here> & <Name here> \\

<Roll no here> & <Name here> \\

<Roll no here> & <Name here> \\

\end{tabular}

\end{table}

\vfill

\begin{flushright}

Ms. Sneha Zolgikar\\

(Project Guide)\\[1.5cm]

Dr. Ramakrishna M\\

(Course Coordinator)

\end{flushright}

\begin{flushleft}

Date:\today

\end{flushleft}

\end{document

5

documentclass{article}

\usepackage{geometry}

\usepackage{booktabs}

\geometry{a4paper, left=2cm, right=2cm, top=2cm, bottom=2cm}

\begin{document}

\title{Student Marks Report}

\author{Your Name}

\date{\today}

\maketitle

\section\*{Marks Summary}

\begin{table}[h]

\centering

\begin{tabular}{ccccccc}

\toprule

\textbf{S.No} & \textbf{USN} & \textbf{Student Name} &

\textbf{Subject1} & \textbf{Subject2} & \textbf{Subject3} &

\textbf{Total Marks} \\

\midrule

1 & 4XX22XX001 & Name 1 & 89 & 60 & 90 & 239 \\

2 & 4XX22XX002 & Name 2 & 78 & 45 & 98 & 221 \\

3 & 4XX22XX003 & Name 3 & 67 & 55 & 59 & 181 \\

\bottomrule

\end{tabular}

\caption{Student Marks Report}

\end{table}

\end{document}

6

\documentclass{article}

\usepackage{graphicx}

\usepackage{caption}

\begin{document}

\begin{figure}

\centering

\begin{minipage}{.5\textwidth}

\centering

\includegraphics[width=.4\linewidth]{f1.jpg}

\captionof{figure}{A figure}

\label{fig:test1}

\end{minipage}%

\begin{minipage}{.5\textwidth}

\centering

\includegraphics[width=.4\linewidth]{f2.jpg}

\captionof{figure}{Another figure}

\label{fig:test2}

\end{minipage}

\end{figure}

\end{document}

7

\documentclass{article}

\usepackage{amsmath, amssymb}

\begin{document}

The quadratic formula:

\[

x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}

\]

Step-wise simplification:

\[

= \frac{-2 \pm `\sqrt{2^2 - 4(1)(-8)}}{2 \times 1}

\]

\[

= \frac{-2 \pm \sqrt{4 + 32}}{2}

\]

Permutation-related summation:

\[

\varphi\_{\sigma}^{\lambda} A\_t = \sum\_{\pi \in C\_t} \operatorname{sgn}(\pi) \varphi\_{\sigma}^{\lambda} \varphi\_{\pi}^{\lambda}

\]

\[

= \sum\_{\tau \in C\_{\sigma t}} \operatorname{sgn}(\sigma^{-1} \tau \sigma) \varphi\_{\sigma}^{\lambda} \varphi\_{\sigma^{-1} \tau \sigma}^{\lambda}

\]

\[

= A\_{\sigma t} \varphi\_{\sigma}^{\lambda}

\]

\end{document}

8

\documentclass{article}

\usepackage[english]{babel}

\usepackage{amsthm} % Required for theorem environments

% Define theorem-like environments

\newtheorem{theorem}{Theorem}

\newtheorem{definition}{Definition}

\newtheorem{corollary}{Corollary}

\newtheorem{lemma}{Lemma}

\begin{document}

\section{Introduction}

% Example theorem

\begin{theorem}

Let \(f\) be a function whose derivative exists in every point, then \(f\) is a

continuous function.

\end{theorem}

% Example corollary (referencing the theorem)

\begin{corollary}

There's no right rectangle whose sides measure 3 cm, 4 cm, and 6 cm.

\end{corollary}

% Example lemma (also referencing the theorem)

\begin{lemma}

Given two line segments whose lengths are \(a\) and \(b\) respectively,

there is a real number \(r\) such that \(b = ra\).

\end{lemma}

\end{document}

9

\documentclass[10pt]{article}

\usepackage{cite}

\title{Bibliography management}

\author{}

\date{}

\begin{document}

\maketitle

\section{Introduction}

In recent years, the study of artificial intelligence (AI) has gained significant attention\cite{einstein}. Various fields, such as natural language processing (NLP)\cite{dirac}, computer vision\cite{latexcompanion}, and robotics\cite{knuthwebsite}, have seen remarkable advancements. One notable development is the creation of large language models like GPT-3 and GPT-4\cite{knuth-fa}. These models have shown impressive capabilities in understanding and generating human-like text\cite{knuth-acp}.

\section{Discussion}

AI is not only transforming industries but also influencing academic research\cite{ctan}. Studies have shown that AI can significantly improve the efficiency of data analysis and interpretation\cite{Zhang}. Moreover, AI-driven tools are being used to tackle complex problems in medicine\cite{Hassouneh} and environmental science\cite{Thaher}.

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\bibitem{knuth-fa} Donald E. Knuth, Fundamental Algorithms, Addison-Wesley, 1973.

\bibitem{knuth-acp} Donald E. Knuth, The Art of Computer Programming, Four volumes, 1968.

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\bibitem{Zhang} Min Zhang, The Influence of Deep Learning Algorithms , IEEE Access, 2020.

\bibitem{Hassouneh} Yousef Hassouneh, A Supervised Contrastive Learning Approach , IEEE Transactions , 2023.

\bibitem{Thaher} Thaer Thaher, An Intelligent Ensemble-Based Model, IEEE Access, 2021.

\end{thebibliography}

\end{document}

10

\documentclass[border=0.2cm]{standalone}

\usepackage{tikz}

\begin{document}

\begin{tikzpicture}

[

level 1/.style = {red, sibling distance = 4cm},

level 2/.style = {blue, sibling distance = 2.5cm}

]

\node {parent}

child {node {child 1}

child {[

fill] circle (2pt)}

child {[fill] circle (2pt)}

edge from parent [dashed]}

child {node {child 2}

child {node {grandchild 1}

child {node {great-grandchild}}}

child {node {grandchild 2}}

edge from parent node [right] {x}};

\end{tikzpicture}

\end{document}

11

\documentclass{article}

\usepackage{algorithm}

\usepackage{algpseudocode}

\begin{document}

\begin{algorithm}

\caption{An algorithm with caption}\label{alg:cap}

\begin{algorithmic}

\Require $n \geq 0$

\Ensure $y = x^n$

\State $y \gets 1$

\State $X \gets x$

\State $N \gets n$

\While{$N \neq 0$}

\If{$N$ is even}

\State $X \gets X \times X$

\State $N \gets \frac{N}{2}$ \Comment{This is a comment}

\ElsIf{$N$ is odd}

\State $y \gets y \times X$

\State $N \gets N - 1$

\EndIf

\EndWhile

\end{algorithmic}

\end{algorithm}

\end{document}

12

%Report

\documentclass{report}

\usepackage{fullpage} % Set margins to 1 inch all around

\renewcommand{\baselinestretch}{2} % Double spacing

\author{Your Name Here}

\title{Your Title Here}

\begin{document}

\maketitle

\tableofcontents

% Add your report content here

\chapter{Introduction}

Your introductory text goes here.

\chapter{Methodology}

Details about your methodology.

\chapter{Results}

Present your findings.

% Add more chapters or sections as needed

\end{document}

\documentclass{article}

\usepackage{fullpage} % Set margins to 1 inch all around

\renewcommand{\baselinestretch}{1.5} % Adjust line spacing

\author{Your Name Here}

\title{Your Title Here}

\begin{document}

\maketitle

% Add your article content here

\section{Introduction}

Your introduction text.

\section{Methods}

Details about your methods.

\section{Results}

Present your results.

% Add more sections as needed

\end{document}