Q1.) What is Chatbot ?

Ans: A Chatbot is an Artificial Intelligence (AI) program designed to simulate human-like conversations using text or voice like interactions. It operates based on pre-defined rules or advanced machine learning techniques to understand and process user queries. Chatbots are commonly used for customer support, virtual Assistance, and automating routine tasks across various industries.
There are two main types of Chatbots:
1. Rule-based Chatbots.
2. AI-powered Chatbots.

- Rule-based chatbots follow a set of pre-defined commands and respond accordingly, making them suitable for simple interactions like FAQs.
- AI powered chatbots utilize Natural Language processing (NLP) and Machine Learning (ML) to understand user inputs more effectively, allowing for dynamic and personalized responses.

Chatbots are widely used in E-commerce, banking, healthcare, and customer service. They help buisnesses reduce costs, enhance user engagement, and improve response time
For Example:-
Chatbots in banking can assist with balancing enquiries and transactions, while those in healthcare can schedule appointments and provide medical Advice.

Q2.) Explain any one Real time Chatbot ?

Ans. Example of a Real-time Chatbot : Google Assistant.
Google Assistant is a widely used AI powered chatbot developed by Google. It is designed to assist users

through voice or text-based interactions, performing various tasks such as answering questions, setting reminders, controlling smart home devices, and providing real-time information like weather updates and news.

One of Google Assistant's key strength is its ability to understand Natural Language commands through advanced NLP and Deep Learning Algorithms. It supports multiple languages, making it a versatile tool for global users. Integrated into smartphones, smart speakers, and other IoT devices, it enables users to interact with technology in a seamless, hands-free manner.

A significant Advantage of Google Assistant is its integration with Google services such as Gmail, Calendar, and Maps, allowing users to schedule meetings, get navigation help, and sending messages efficiently It also works with third party Applications, making it compatible with various smart home devices like Nest Thermostats and Philips Hue Light.

Over time, Google Assistant has evolved to provide personalized recommendations, adapting to user preferences. Its ability to understand context and provide Follow-up responses, make it one of the most advanced AI chatbots available today, revolutionizing human-computer interaction.

Q3) Explain any two Applications of NLP.

ANS. The two Applications of NLP (Natural Language Processing) are:-

1. Sentiment Analysis

- Sentiment Analysis, is also known as Option mining, is an NLP Application that analyzes textual data to determine the emotional tone behind it. This technology is widely used in social media monitoring, customer feedback analysis, and brand reputation Management. By classifying text as positive, negative, or neutral, buisnessess can guage public opinion on their products, services, or marketing campaigns
- For Example:-
Companies use sentiment Analysis to track customer reviews on platforms like Amazon and twitter. If a product receives mostly a negative feedback, buisnesses can take corrective actions to improve user satisfaction. Additionally, political analysts use sentiment Analysis to understand public opinions on elections and policy changes.
- Sentiment Analysis is implemented using machine Learning models and Lexicon based Approaches, where AI systems are trained to recognize emotions based on pre-defined datasets..

2. Machine Translation (MT)

- MT is an NLP application that Automatically translates text from one language to another. It is widely used in global communication, content localization, and multilingual customer support. A well-known example of machine translation is google Translate, which enables users to translate text, documents, and speech in Real time.
- There are three main types of Machine Translation.

1. Rule-Based MT:-
User pre-defined grammatical Rules for translation.

2. Statistical MT:- Translates text based on statistical probabilities from Large Datasets.

3. Neural MT (NMT):- Uses Deep learning and Artificial Neural Networks to generate more natural and accurate translation.