UNIT – I

Introduction to Virtual Reality and Augmented Reality – Definition – Introduction to Trajectories and Hybrid Space-Three I's of Virtual Reality – Virtual Reality Vs 3D Computer Graphics – Benefits of Virtual Reality – Components of VR System – Introduction to AR-AR Technologies-Input Devices – 3D Position Trackers – Types of Trackers – Navigation and Manipulation Interfaces – Gesture Interfaces – Types of Gesture Input Devices – Output Devices – Graphics Display – Human Visual System – Personal Graphics Displays – Large Volume Displays – Sound Displays – Human Auditory System.

1.3)BENEFITS OF VIRTUAL REALITY (VR):

1. **Immersive Experiences:**

- Description: VR provides users with immersive and realistic experiences by simulating 3D environments. This heightened sense of presence makes it an effective tool for training, education, and entertainment.

2. Enhanced Training and Education:

- Description: VR allows users to engage in realistic simulations for training purposes. In fields like healthcare, aviation, and military, trainees can practice complex procedures in a safe and controlled virtual environment.

3. Medical Applications:

- Description: VR is utilized for medical training, surgery simulations, and therapy. It allows healthcare professionals to practice surgeries, medical students to explore anatomy, and patients to undergo virtual therapy sessions.

4. Architectural Visualization:

- Description: Architects and designers use VR to create virtual walkthroughs of buildings and structures before they are constructed. This allows for better visualization and understanding of spatial relationships.

5. Virtual Travel and Tourism:

- Description: VR enables users to virtually explore destinations and tourist attractions from the comfort of their homes. This immersive experience can aid in travel planning and promotion of tourist destinations.

6. Entertainment and Gaming:

- Description: VR provides a new dimension to gaming and entertainment by allowing users to be fully immersed in virtual worlds. It enhances the gaming experience by making it more interactive and engaging.

7. Remote Collaboration:

- Description: VR facilitates remote collaboration by allowing users to meet and work together in virtual spaces. This is particularly beneficial for teams spread across different geographical locations.

8. Reduced Costs in Training:

- Description: VR training environments can reduce costs associated with traditional training methods, such as travel expenses, physical equipment, and the need for real-world facilities.

9. Therapeutic Applications:

- Description: VR is used for therapeutic purposes, such as treating phobias, PTSD, and anxiety disorders. It provides a controlled and customizable environment for exposure therapy.

10. Innovative Design and Prototyping:

- Description: VR aids in product design and prototyping by allowing designers to visualize and interact with virtual models. This accelerates the design process and reduces the need for physical prototypes.

11. Real Estate Virtual Tours:

- Description: In the real estate industry, VR is used to create virtual property tours. Potential buyers can explore properties remotely, saving time for both buyers and sellers.

12. Accessible Education:

- Description: VR can make education more accessible by providing virtual classrooms and educational content. It can be particularly beneficial for remote or disadvantaged communities.