

1] Define Internet of Things (IoT).

Internet of Things (IoT) refers to the process of connecting everyday physical objects to the internet from common household objects like light bulbs to health care assets like medical devices to wearable, smart devices and even smart cities.

2] Analyse the benefits of AR and VR in project management.

- Increase in competitive ability.
- Increase in efficiency and productivity.
- Reduces time and costs.
- Reduces errors and facilitates work processes.
- Enables fast remote support for repairing systems weakness.
- Enable fast and remote collaboration.
- Involve innovation support.
- Facilitate to understand large amounts of data.
- Facilitate decision making problems solving.
- Facilitates monitoring of projects.
- Reduces the project validation risks.

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3] Show any three differences between augmented reality and Virtual reality.

SL. No.	Augmented reality	Virtual reality
1	Combination of digital and real world.	Totally artificial digital world.
2	User experience is partially immersed.	Complete sense of immersion.
3	Camera-enabled devices such as smart phone, tablet or smart glasses are required. Desktop and lap-top are not suitable because of its fixed camera position, unless an external camera is used.	Special hardware equipment is required (Microsoft hololens, HTC vive, oculus right, Google daydream, etc).
4	Latest versions of common operating systems are good enough (Android, IOS, Windows).	Special software is required.
5	Initial cost is lower than the VR.	Initial cost is higher than the AR.

4] Discuss the applications of AR and VR. (Any 5)

The applications of AR and VR in Project management are as follows:

- i. **Architecture, civil engineering, construction and real estate:** Instead of standard 2D format of drawings and renderings, investors and customers can now experience realistic impression of their future buildings, flats, and business places, both from the outside and from the inside.
- ii. **Marketing and sales:** Many companies have recognized additional values for both marketers and customers. For instance using app helps customers in fast decision making.
- iii. **Education:** AR/VR technologies offer great opportunities and diversity in education (remote learning, interactive learning etc.)
- iv. **Visual industries:** There are many examples of using AR/VR and related projects in this

- field; game industry, fashion industry, entertainment industry - cinema, film, travelling exhibitions (e.g. landmarks, museums) etc.
- v. **Automotive:** AR/VR solutions are used for test drives, car elements testing, car dealership experience, etc.
 - vi. **Manufacturing:** In complex manufacturing processes AR is useful in delivering the right information at the right moment to factory workers on assembly lines.
 - vii. **Healthcare:** Training of surgeons is one of the most important fields of application of the AR/VR technologies in healthcare.
 - viii. **Defence:** The project uses different approaches allowing remote connection of AR and VR systems to geo-location and other tools, involving 3D modeling, photogrammetric, drones and many other state-of-the-art technologies.
 - ix. **Service support:** Remote technical and expert support, visualized instructions, remote repairing, knowledge, exchange, etc., with the AV/VR technologies, maintaining and repairing at remote locations is possible.

5] Discuss the application of cloud technology in project management. (March/April-2022)

- Cloud-based project management software coordinates the planning, collaborating, monitoring, and delivering of a project.
- It allows project managers and teams to get work done using a network of tools available within the software, rather than using a plain old whiteboard and sticky notes.
- The use of project management software scales from business to business and team to team.
- But, in all, it is designed to make managing projects and deadlines easier and more effective. Cloud Technology allows the people to use the digital resources stored in the virtual space by the way of networks, often using satellite networks.
- It allows people to share the information and applications across the internet without being the restriction of their physical location.

6] Discuss the application of Internet of Things (IoT) in project management. (March/April-2022)

- Internet of Things (IoT) and sensors are used to get real-time information from various connected devices and predict the outcome.
- In project management, the IoT technology will fundamentally alter the speed of project execution.
- Organizations that adopt IoT will complete the projects in a speedy manner.
- The IoT intersects with project management on everything from team collaboration to data collection and can expect real time status reporting via IoT to user in a new era of dynamic planning and execution.
- Data collection will happen on a large scale allowing leaders to make more informed decisions. Inventory and resources will be easily monitored at all times.
- Devices can automatically sense and respond to what is happening around them, reducing the need for human intervention, lowering operating costs and increasing response time and minimizing errors.

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7] Discuss on how smart city projects can be developed using digital technologies. (March/April-2022)

- A smart city is a framework, predominantly composed of information and communication technologies (ICT), to develop, deploy and promote sustainable development practices to address growing urbanization challenges.
- This ICT framework is essentially an intelligent network of connected objects and machines that transmit the data using wireless technology and cloud technology.
- Cloud based IoT applications receive, analyse and manage data in real-time to help municipalities, enterprises and citizens to make better decisions that improve quality of life.
- Augmented Reality (AR) can be the interface which provides access to all the benefits of a smart city.

8] Discuss on how digital technologies can be used in Education. (March/April-2022)

- Digital technologies are electronic tools, systems, devices and resources that generate store or process data.
- The effective use of digital learning tools in classrooms can increase student engagement, help teachers improve their lesson plans, and facilitate personalized learning.
- It also helps students build essential 21st-century skills.
- Augmented Reality (AR) and Virtual Reality (VR) technologies offer great opportunities and diversity in education including remote learning, interactive learning etc.
- Students can collaborate on group projects using technology-based tools which enables new ways of learning, communicating, and working collaboratively where learners use programs or applications designed for problem solving or open-ended learning or technology for teachers, such as interactive whiteboards or learning platforms.

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