CHAPTER 10 An Overview of Top Futuristic Technologies

1. How can Futuristic Technology be defined?

-Futuristic technology refers to technologies that can potentially change the way people live their daily lives across various domains such as businesses, social activities, governments, and research and development. It will revolutionize other industries and businesses can impact almost all existing industries and may bring forth new domains of industries in the future.

2. Which are the top Futuristic Technologies?

- 3D Printing Technology
- 6G Technology
- Autonomous Robots
- Artificial Neurons
- Artificial General Intelligence (AGI)
- Mind Uploading
- Driverless Vehicles
- Infrastructure Hacking
- Regenerative Medicine
- Digital Twin (DT) Technology
- Programmable Living Robots
- Human Augmentation
- Intelligent Process Automation (IPA)
- Space Elevator
- Rotating Skyhook
- Light Sail

3. How did 3D printing begin?

-3D printing, also known as additive manufacturing, originated in the 1980s primarily for rapid prototyping. Additive manufacturing evolved around 2010 and is now becoming popular across industries and manufacturing processes.

4. What are the applications of 3D printing?

-The applications of 3D printing include manufacturing, fashion, firearms, healthcare, transportation, cultural heritage, education, and PPE manufacturing.

5. In what ways does 6G technology differ from other technologies?

- 6G wireless technology offers more throughput and much lower latency compared to 5th generation networks.
- It supports more advanced ICT technologies such as virtual reality and augmented reality (VR/AR) in real-time environments, Internet of Things (IoT), mobile edge computing, diverse IT service-based business models, short packet communication, quantum computing, and others.
- It provides one microsecond latency in different telecom services, which is even much lower latency than 5G technology.
- It supports location awareness and present technology services for all its connected devices and networks.

6. What is the need for 6G technology?

-The need for 6G technology includes the convergence of technology, incorporation of high-performance computing (HPC), Internet of Things (IoT) network, and Mobile Edge computing.

7. What is a data center?

-Data center is where data and application are stored and shared, also internet services like cloud computing

8. What is an autonomous robot?

- An autonomous robot is an intelligent machine that can perform tasks without any human intervention. They perform tasks based on the intelligence they possess through computer-vision training datasets.

9. What are autonomous mobile robots (AMRs)?

- Autonomous mobile robots (AMRs) can perform their respective tasks without any intervention or support from human beings. They are capable enough to tackle different issues such as obstacles and continue performing the designated tasks by overcoming those hindrances as much as possible.

10. In what sense are Artificial Neurons useful?

- Artificial neurons are useful to transform the ways people work, live, and act in the future. They help achieve a high level of automation, which is the future of a highly connected world powered by multi-billion device networks. They understand and decide about the most complex environments and situations that may result in the most sophisticated automation in numerous industries, processes, and activities globally.

11. What are AGI and ASI?

- AGI (Artificial General Intelligence) is also referred to as deep artificial intelligence, which is equal to the thinking, understanding, learning, and applying intelligence to solve complex problems in the way the human brain thinks and updates the learned experience for future applications so that the advancement or growth of mind/intelligence would continue. ASI (Artificial Super Intelligence) is the most advanced form of artificial intelligence, which will supersede the capabilities and power of the most genius brains on earth. This is just a science fiction or imaginary idea that will be developed in the future.

12. Why is Digital Twin (DT) technology important?

-Digital Twin (DT) technology helps industries save the prototyping cost and operational failures of products and processes significantly.

CHAPTER 11. Impact of Advanced and Futuristic Technologies on Cybersecurity

1.How do modern technologies impact cybersecurity?

-As new technologies evolve, businesses adopt them rapidly to gain a competitive edge and capture market share. Consequently, the cybersecurity threat landscape expands significantly due to numerous security loopholes in software and associated firmware. Weak communication protocols, such as Signaling System 7 (SS7) and other older systems still in use, further heighten the threat levels in modern cybersecurity systems. Operators of these new technologies, as well as end-users who typically are not experts, encounter difficulties. Additionally, compatibility and interoperability issues arise when deploying modern and emerging technologies alongside existing systems, exacerbating cybersecurity challenges. The use of advanced hacking tools, including botnets, Network Mapper (Nmap), Nessus, NetStumbler, and others, adds to the risks. Moreover, the extensive use of social media also increases the likelihood of cyber threats.

2.How are advanced technologies affecting cybersecurity?

-The main technologies that have increased the landscape of cybersecurity threats include Bring Your Own Device (BYOD) standards and the IoT technology ecosystem. They contribute to the risk to national security, breaches of privacy, an increased burden of cybersecurity on businesses, a shortage of cybersecurity specialists, the risk of extensive data exposure, and manipulation of society and business.

3.Extensive data exposure: What Are the Risks?

-Increased number of user accounts with those huge numbers of devices and related services.

4.Is There a Strategy for Controlling Cyber Breaches?

-Deploy behavior analytics powered by big data and AI analytics. Incorporate context-aware security to make data-driven decisions regarding emerging threats in a real-time environment7.

5.What Is the Reason for the Shortage of Cybersecurity Professionals?

-The impact of emerging technologies.

6.What Impact Do Cyber-Attacks Have on Businesses?

-Businesses focus on investing heavily in cybersecurity to maintain a robust and reliable security level to avoid any damage caused by cyber-attacks. They are badly impacted by the burden of such a huge amount of money, which is spent on the maintenance and enhancement of cybersecurity systems and professionals.

7.What Are the Main Reasons for Data Exposure?

-In an environment where hackers and malicious actors are more organized and bold in their attacks, and there is a huge shortage of cybersecurity professionals to counter them, the chances of extensive data exposure remain very high. An increased number of user accounts with those huge numbers of devices and related services are also prone to1…

8.What Is Risk?

-The sensitive information being accessed or disclosed without authorization, particularly in a business environment that is highly competitive and driven by innovation

9.How Can Cybersecurity Affect National Security?

-Cybersecurity can lead to losses for major businesses that significantly contribute to the economic development and stability of a nation. The stealing and manipulation of data from the general populace can target them for activities that are detrimental and destructive to the country's security. It can create panic and social disturbances when the data of the most vulnerable sections of society is available for exploitation. Cybersecurity breaches can stir political chaos based on sensitive data and information collected. They can tear the social fabric and community harmony in any country, destabilizing economic, political, and social activities.

10.What Is a Zero Trust Policy?

-Adopt a zero-trust, or never-trust and always-verify, policy in your company, partners, and stakeholders simultaneously. Deploying an architectural framework known as Zero Trust eXtended (ZTX) is the best option to implement this policy.