**Question 1:** What are the emerging technologies in e-business?

**Answer 1:** The increasing sophistication of business applications mandates businesses and users to embrace flexibility, reusability, and standardization in applications. Open source software such as Java, PHP, and Linux were founded on this principle and have been stellar examples of keeping the total cost of ownership (TCO) low. We have witnessed the proliferation of a spate of various enterprise applications like enterprise resource planning (ERP), customer relationship management (CRM), supply chain management (SCM), business applications, e-commerce applications, databases, and software. Enterprise application integration (EAI) was used widely to integrate disparate applications to produce related information. With the invention of XML (Extensible Markup Language) in the early 2000s, Web services has become the latest buzzword among the technology intelligentsia today.

*Web services* are enterprise applications based on the universally accepted XML standard. Web services are componentized, communicated to, and accessed by many different applications. They function like intelligent applications, describing how they can be accessed and identifying the input variables needed to access them. Because they are based on open standards, they cost less, can be deployed incrementally, and are easy to deploy. Web services are futuristic because they can be updated and modified with technology upgrades and minimum cost outlay. They offer three intrinsic advantages to enterprises, as follows:

- **Flexibility:** Services can be changed, modified, integrated, or removed as per business scenarios
- **Integration:** Application-to-application communication and service
- **Reusability:** Enabling corporate software assets to be built across the organization

Web services also adapt well to service-oriented architecture (SOA)—the much broader, most widespread, strategic initiative undertaken by information technology (IT) and business professionals today. SOA is a collection of Web services that communicate with its own and other applications through a corporate registry. The registry, which uses UDDI (universal description, discovery, and integration) or ebXML, describes the Web services and how they can be accessed. The Web services description language (WSDL) is the basis for communicating with various applications, generally using SOAP protocol.
SOA has been around for many years, but it is now being widely accepted as the new way to deploy a flexible IT architecture which provides agility, productivity, and service re-use and integration while reducing development and deployment costs.

With these technologies at hand, organizations can deliver new levels of customer service, orientation, and business performance while accelerating internal efficiencies.

**Question 2:** What are the emerging technologies in the retail industry?

**Answer 2:** The first e-commerce integrated technology to impact the retail industry was the point-of-sale (POS) system introduced a few decades ago. This gave way to computing and online retailing through the Internet, which changed the face of retailing forever. Supply chain management applications (SCM), customer relations management (CRM), and business intelligence (BI) have taken retailing information management to higher levels. New technologies such as radio frequency identification (RFID) that replaces old-fashioned bar coding technologies, global trade item number (GTIN), inventory management and tracking, logistics management and optimization (Webvan), and electronic data interchange (EDI) have created a soup-to-nuts digitization spree in the retail world. The next emerging technology in the retail industry is mobile commerce, providing the consumer the convenience of shopping by cell phone or personal digital assistant (PDA) from any location.

**Question 3:** What are the emerging trends in telecommunications and infrastructure in organizations today?

**Answer 3:** Wireline communications have increased steadily in sophistication and given birth to wireless communications through cell phones, laptops, and PDAs. In the wireless realm, there are four primary technologies, as follows:

- Global system for mobile communication (GSM and the much-newer GPRS)
- Code-division multiple access (CDMA)
- Integrated dispatch enhanced network (iDEN)
- Time division multiple access (TDMA)

Going beyond wireless and wireline communications, VoIP (Voice Over IP) sends voice and video signals over the Internet, heralding a low-cost solution...
using surplus bandwidth. Broadband and satellite communications have seen new waves of technology with increasing bandwidth. UMMS (unified mobile messaging service) is the new generation telecommunications aggregation service that strives to unify all modes of telecommunications into one interface so the user may soon be able to browse the net, talk on the phone, listen and download music and videos, check directions, compute, and instant-message all on the same device.

**Question 4:** What is the future of wireless technologies?

**Answer 4:** Wireless technologies refer to the transmission of signals through radio waves rather than physical wires. A rapid transition of wireless technologies has made possible new paradigms in wireless communications in WLAN.

- 1st Generation analog devices to Wireless Application Protocol (WAP)
- 2nd Generation digital devices and Bluetooth
- 2.5 Generation, which enables data transfer up to 114 Kbps
- 3rd Generation, which includes multimedia and data transmission rates of up to 2Mbps–5Mbps

Wireless LAN technologies use the IEEE-based 802.11x standards (also called Wi-Fi) for converting digital signals into radio waves and transmitting them without cables to the receiving devices. The next generation to Wi-Fi will be Wi-Max based on IEEE’s 802.16 standards, which can transmit data at speeds of over 75 Mbps over 30 miles. This will allow, for example, a commuter unbroken Web connection while surfing the Web from the coffee shop through the train commute and all the way into the workplace.

**Question 5:** How do ISs help align corporations with Sarbanes-Oxley (SOX)?

**Answer 5:** The Sarbanes-Oxley (SOX) Act of 2002 strives to enforce financial accountability with senior management and auditing firms by holding them responsible for the reliability and accuracy of a company’s financial reports and corporate disclosures. It also propagates faster reporting, information communications, risk analysis, internal controls on finances and data management, and compliance governance. ISs help organizations comply with SOX through the following:

- (i) Document management- SOX necessitates archiving, presentation, and reproduction of various documents for important events and
transactions. ISs meet the need created to effectively organize documents in different formats.

- (ii) Effective use of Business Intelligence—BI will be key to ensure timely, reliable, and accurate analysis and reporting of business information to ensure compliance.

**Question 6:** How do ISs help organizations with new management trends such as Six Sigma, lean manufacturing, Kaizen, JIT, and TQM?

**Answer 6:** Total quality management (TQM), Kaizen, JIT (just-in-time), lean manufacturing, and Six Sigma (3.4 defects per million opportunities—the near-perfect defect-per-production ratio) are all quality standards and practices which strive to standardize and perfect business processes. At the core of these philosophies are metrics gathering, organization-wide training, processes evaluation, and failure-proofing. Most of these processes are number-crunching activities. To a wide degree, BI (business intelligence) tools help in gathering data, analyzing, and applying the data toward these metrics. Six sigma for software is a quality process for the software development industry.

**Question 7:** What is business intelligence and knowledge management?

**Answer 7:** *Knowledge management* refers to the business processes that create, store, disseminate, and manage knowledge capital in the organization. Used interchangeably with BI (business intelligence), it’s the all-important process that converts raw data into useable information to make business decisions and follow-up actions. BI analyzes historical data—data that are scattered around the organizations in various departments, ERPs, and software and hard drives—and transforms them into intelligent multidimensional information that gives a 360-degree view of the business. Using statistical analysis and forecasting, it helps to create decision support systems. BI applications reside close to the central repository of an organization’s database, just one layer out from the system software and databases. BI is critical to corporate strategy.

**Question 8:** How did BI evolve?

**Answer 8:** BI has existed ever since mainframe era. Back in the mainframe era, though, reporting was static and two-dimensional with no data analytics
capabilities. Query and reporting was cumbersome and tedious, and there was a lack of strong RDBMS and analytics software.

With the advent of high-end databases like Oracle and DB2, the 1990s saw organizations storing huge chunks of data by building online transaction processing (OLTP) systems, ERP systems, call centers, and the Internet. These data were harnessed using data warehouses, data marts, and ETL (Extract Transform Load) tools using data mining and data warehousing.

Today, with sophisticated BI software applications and tools like Cognos, Business Objects, Hyperion, and other predictive analytics, it is possible for organizations to make vital decisions to aid corporate strategy and competitive advantage through information technology.

**Question 9:** What are the emerging technologies in business intelligence?

**Answer 9:** BI is a mesh of various technologies and architectures, including the following:

- **Data warehousing, data mining, data marts:** Collects data from various sources to form a repository from which various tools analyze data
- **Extract transfer load (ETL):** Extracts data, converts it into information using pre-defined business rules, and loads up the converted information into a new database (e.g., Informatica)
- **Reporting and query tools:** Accesses data as per request (query); formats and presents it to users (e.g., Crystal Reports)
- **Balanced scorecards:** Performance measurement and conformance testing to predetermined business strategy and management goals
- **Digital/corporate/executive dashboards:** Customizable overview presentation in one-shot of all the information required per user, function, or department
- **OLTP:** Applications that manage transaction-related applications which require multiple connections
- **OLAP:** Selective extraction and presentation of information in different views from multidimensional databases (e.g., Microstrategy)
- **Data analytics:** Specialized applications that analyze data in specific fields
**Question 10:** What is the future of BI?

**Answer 10:** BI has seen a full cycle metamorphosis with the increasing sophistication of information. The future might potentially see BI merge with AI (artificial intelligence). AI has been used in business to develop intelligent computer-based systems that can “think” logically like human beings. These are based on human knowledge, expertise, and reasoning through business rules, logic, and algorithms. Predictive analysis and forecasting is bound to improve and refine as time goes by, so we are certain to see new concepts, frameworks, and methodologies of producing and making readily available top-notch information for corporate executives.