Management Information Systems: Managing the Digital Firm, 16e **(Laudon)**
Chapter 11 Managing Knowledge and Artificial Intelligence

1) Which of the following is the first step in the knowledge management value chain?
A) Feedback
B) Acquire
C) Disseminate
D) Store
E) Apply
Answer: B
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

2) About _____ percent of the total economic output of the United States derives from the output of the knowledge and information sectors of the economy.
A) 15
B) 20
C) 55
D) 65
E) 85
Answer: B
Difficulty: Challenging
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

3) Which of the following statements best describes the relationship between collaboration and knowledge management?
A) Collaboration is impossible without knowledge.
B) Knowledge is impossible without collaboration.
C) Knowledge is useful only when shared with others.
D) As knowledge improves, so does collaboration.
E) Knowledge is the result of collaboration.
Answer: C
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

4) The text defines _____ as the flow of events or transactions captured by an organization's system.
A) information
B) data
C) wisdom
D) knowledge
E) experience
Answer: B
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

5) The text defines _____ as expertise of organizational members that has not been formally documented.
A) wisdom
B) information
C) data
D) experience
E) tacit knowledge
Answer: E
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

6) Which of the following statements is *not* an accurate description of the importance of knowledge to a firm?
A) Knowledge experiences network effects as more people share it.
B) Knowledge should be seen as an intangible key asset.
C) Knowledge enables firms to become more efficient in their use of scarce resources.
D) Knowledge is unconditional.
E) Much of the firm's value relies on being able to create knowledge.
Answer: D
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

7) What is meant by the statement "knowledge is sticky"?
A) Knowledge is hard to move.
B) Knowledge is universally applicable.
C) Knowledge works only in certain situations.
D) Knowledge is intangible.
E) Knowledge is difficult to replace.
Answer: A
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

8) Which of the following is *not* one of the main four dimensions of knowledge described in the chapter?
A) Knowledge is a firm asset.
B) Knowledge has different forms.
C) Knowledge has a location.
D) Knowledge is situational.
E) Knowledge is timeless.
Answer: E
Difficulty: Challenging
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

9) Changing organizational behavior by sensing and responding to new experience and knowledge is called:
A) change management.
B) knowledge leveraging.
C) the knowledge value chain.
D) organizational learning.
E) knowledge management.
Answer: D
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

10) What is the last value-adding step in the knowledge business value chain?
A) Acquire
B) Data and information acquisition
C) Store
D) Disseminate
E) Apply
Answer: E
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

11) The set of business processes, culture, and behavior required to obtain value from investments in information systems is one type of:
A) knowledge culture.
B) knowledge discovery.
C) organizational and management capital.
D) organizational routine.
E) knowledge.
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 11-1: What is the role of knowledge management systems in business?

12) Which of the following are the three major types of knowledge management systems?
A) MIS, DSS, and TPS
B) CRM, SCM, and CAD
C) DBMS, DSS, and ECM
D) COPs, ECM, and MIS
E) Enterprise-wide knowledge management systems, KWS, and intelligent techniques
Answer: E
Difficulty: Moderate
AACSB: Information technology
LO: 11-1: What is the role of knowledge management systems in business?

13) Specialized systems built for knowledge workers charged with discovering and creating new knowledge for a company are called:
A) Knowledge Work Systems (KWS).
B) Learning Management Systems (LMS).
C) wikis.
D) COPs.
E) enterprise-wide knowledge management systems.
Answer: A
Difficulty: Easy
AACSB: Information technology
LO: 11-1: What is the role of knowledge management systems in business?

14) Which of the following does *not* describe the dimensions of knowledge in a firm?
A) It is contextual and applicable only in relevant situations.
B) It is intangible.
C) It is subject to the laws of diminishing returns.
D) It is a cognitive event involving mental models.
E) It is enmeshed in a firm's culture.
Answer: C
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

15) Informal social networks of professionals and employees within and outside the firm who have similar work-related activities and interests are called communities of:
A) practice.
B) professionals.
C) interest.
D) knowledge.
E) expertise.
Answer: A
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

16) All of the following are intangible assets of a firm *except* its:
A) brand.
B) reputation.
C) knowledge.
D) information technology.
E) unique business processes.
Answer: D
Difficulty: Challenging
AACSB: Application of knowledge
LO: 11-1: What is the role of knowledge management systems in business?

17) While systems such as KWS can manage semistructured and unstructured information, enterprise-wide content management systems are designed to manage only a firm's structured information.
Answer: FALSE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

18) Knowledge is "sticky" and not easily moved.
Answer: TRUE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

19) For a firm, organizational resources are unnecessary to transform data into knowledge.
Answer: FALSE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

20) Expertise is typically stored in structured documents throughout the firm.
Answer: FALSE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-1: What is the role of knowledge management systems in business?

21) Document management systems are essentially large databases.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 11-1: What is the role of knowledge management systems in business?

22) What is knowledge management? What types of knowledge might a company such as a taxi service have, and could a taxi service benefit from knowledge management?
Answer: Knowledge management is the set of processes developed in an organization to create, gather, store, disseminate, and apply the firm's knowledge. A taxi company's knowledge might include explicit knowledge, such as maps and routes between destinations. Tacit knowledge would include the experience of drivers, such as the best alternate routes between destinations or passenger needs. A taxi service might benefit from a system that gave drivers guides on routes that included alternate routes drivers had found. It might benefit from a learning management system (LMS) that trained drivers for locations, destinations, and alternate routes.
Difficulty: Easy
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

23) Briefly outline the knowledge management value chain as it might apply to the online catalog system of a public library.
Answer: Steps in the knowledge management chain include:
Acquisition: for an online catalog of a library this would be getting the book data into digital format.
Storage: This would involve the systems for storing this data, perhaps a central server.
Dissemination: The library would need to determine how the card catalog information is accessed by the public or by staff.
Application: This would involve the card catalog becoming part of the library's business processes: for example, the card catalog would be linked to a system of borrowing, so that users would know from the card catalog whether a book was out on loan.
Management and organizational activities: This would entail using the system with a card catalog base for other services, perhaps linking up to a wider library system to share resources, information, or book loaning between systems.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

24) Identify the three major types of knowledge management systems. Provide two examples of each.
Answer: The major types of knowledge management systems are enterprise-wide knowledge management systems, knowledge work systems (KWS), and intelligent techniques.
Enterprise-wide knowledge management systems include: enterprise content management (ECM) systems, collaboration and social tools, and learning management systems (LMS). Types of KWS include: computer-aided design (CAD) systems, and virtual reality (VR) systems.
Intelligent techniques include: data mining, expert systems, data mining, machine learning, neural networks, genetic algorithms, and intelligent agents.
Difficulty: Easy
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

25) What do you see as the challenges in setting up a knowledge management system?
Answer: Determining what knowledge will be the most effective or offer the most benefits to the company; defining taxonomies, gathering accurate knowledge, quantifying the system's success, change management and implementing business processes that incorporate the system.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-1: What is the role of knowledge management systems in business?

26) What are the four dimensions of knowledge?
Answer: The four dimensions of knowledge are that it is a firm asset, it has different forms, it has a location, and it is situational. Knowledge is a firm asset, although it is intangible, and its value to the firm increases as more people share it. The different forms of knowledge are tacit (unspoken) or explicit (codified), and involves both knowing how to follow procedures and why things occur. The location of knowledge is in the minds of workers – it is a cognitive event with both social and individual basis, and it is "sticky" within a firm's culture. Finally, knowledge is situational – it is dependent on context, and knowing when to apply a procedure is just as important as knowing the procedure itself.
Difficulty: Easy
AACSB: Application of knowledge; Written and oral communication
LO: 11-1: What is the role of knowledge management systems in business?

27) Which of the following statements about genetic algorithms is *not* true?
A) Genetic algorithms are based on techniques inspired by evolutionary biology.
B) Genetic algorithms are used to solve problems that are very dynamic and complex, involving hundreds or thousands of variables or formulas.
C) Genetic algorithms are able to evaluate many solution alternatives quickly to find the best one.
D) Genetic algorithms use an iterative process to refine initial solutions so that better ones are more likely to emerge as the best solution.
E) Genetic algorithms discover knowledge by using hardware and software that parallel the processing patterns of the biological or human brain.
Answer: E
Difficulty: Challenging
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

28) All of the following are intelligent personal assistants for consumers *except*:
A) Siri.
B) Alexa.
C) Google Now.
D) Watson.
E) Cortana.
Answer: D
Difficulty: Easy
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

29) Apple's Siri application is an example of:
A) neural networks.
B) augmented reality.
C) AI.
D) intelligent agents.
E) machine learning.
Answer: D
Difficulty: Easy
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

30) Which of the following is a type of intelligent technique?
A) Digital asset management
B) Neural network
C) CAD
D) Augmented reality
E) LMS
Answer: B
Difficulty: Challenging
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

31) Which of the following techniques is used for knowledge acquisition?
A) Decision support systems
B) Transaction processing systems
C) CAD
D) Data mining
E) Content management system
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

32) Which of the following is a computer-based system that attempts to emulate how humans think and act?
A) Virtual reality systems
B) Neural networks
C) AI technology
D) Genetic algorithms
E) LMS
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

33) An inference engine is:
A) a neural network that can make inferences.
B) the programming environment of an expert system.
C) a method of organizing expert system knowledge into chunks.
D) a strategy used to search through the collection of rules and formulate conclusions.
E) a programming algorithm used to create a virtual world using a deep learning system.
Answer: D
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

34) Which of the following is *not* true about AI technologies?
A) AI programs today have mastered common sense thinking similar to humans.
B) AI can recognize human speech with only a 6 percent error rate.
C) Speech recognition is used in intelligent personal assistants like Siri and Alexa.
D) AI programs can recognize faces.
E) AI systems take data from the environment, and produce outputs like other computer programs.
Answer: A
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

35) Expert systems:
A) are capable of solving wide ranges of problems.
B) are based on DO WHILE rules.
C) lack the general intelligence of human beings.
D) share characteristics with mainframe computing.
E) are used for knowledge discovery.
Answer: C
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

36) Virtually all expert systems deal with problems:
A) of policy development.
B) that are highly structured.
C) of logic and control.
D) of high complexity.
E) with imprecise rules.
Answer: B
Difficulty: Challenging
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

37) Expert systems are expensive and time consuming to maintain because:
A) their rule base is so complex.
B) they rely on equipment that becomes outdated.
C) their rules must be reprogrammed every time there is a change in the environment, which in turn may change the applicable rules.
D) only the person who created the system knows exactly how it works, and may not be available when changes are needed.
E) it is difficult to program at this level of complexity without introducing software bugs.
Answer: C
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

38) Machine learning systems:
A) use machines to master a body of knowledge.
B) rely on expert systems to identify learning objectives.
C) find patterns in large data sets.
D) simulate the neurons in human brains to find patterns.
E) are currently not useful for organizations.
Answer: C
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

39) Supervised machine learning involves:
A) programmers supervising the machine learning program.
B) training a neural network to identify digital photos of cars or other objects in a very large dataset, with humans assessing whether the machine is correct or incorrect.
C) programs that identify cats (or other objects) without human intervention.
D) complex computer programs that decide what they want to learn.
E) using very large databases to store common sense knowledge, then searching the database for patterns.
Answer: B
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

40) Unsupervised machine learning involves:
A) using very large databases to store common sense knowledge, then searching the database for patterns.
B) using algorithms to simulate the neurons and synapses of human brains.
C) programs that can detect digital photos of human faces and cats without humans labeling the input photos.
D) using labeled inputs identified by humans to recognize objects.
E) using genetic algorithms to identify patters in large datasets.
Answer: C
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

41) Neural networks:
A) are composed of an input layer and an output layer.
B) rely on rules similar to expert systems.
C) use Learning Rules to identify the optimal path through the network.
D) use facial recognition algorithms to identify unique facial characteristics.
E) function similar to the human brain in recognizing objects.
Answer: C
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

42) Which of the following has a large number of sensing and processing nodes that continuously interact with each other?
A) Business intelligence systems
B) Expert systems
C) Neural networks
D) Knowledge management systems
E) Genetic algorithm
Answer: C
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

43) Which of the following describes a difference between neural networks and genetic algorithms?
A) Genetic algorithms are designed to process large amounts of information.
B) Genetic algorithms are a type of knowledge discovery, while neural networks are an intelligent technique.
C) Genetic algorithms are used to evaluate alternative solutions to problems, whereas neural networks are used to discover patterns in data.
D) Genetic algorithms are designed to work with small amounts of data, while neural networks can handle large quantities of data.
E) Neural networks are a type of machine learning, whereas genetic algorithms are static programs.
Answer: C
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

44) Genetic algorithms:
A) develop solutions to particular problems using inheritance, crossover, and mutation.
B) represent knowledge as groups of characteristics.
C) do not work for most problems.
D) are based on logic.
E) seek to emulate a human expert's way of solving problems.
Answer: A
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

45) Software programs that work without direct human intervention to carry out specific tasks for individual users, business processes, or software applications, are called:
A) intelligent agents.
B) intelligent techniques.
C) business intelligence.
D) AI hybrid systems.
E) genetic algorithms.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

46) What type of intelligent technique helps Netflix develop a personalized selection of videos for customers?
A) Machine learning
B) Intelligent agents
C) Genetic algorithms
D) Neural networks
E) Deep learning neural networks
Answer: A
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

47) Deep learning networks:
A) rely on humans to help it identify patterns.
B) use multiple layers of neural networks to detect patterns in input data.
C) rely on experts to tell the system what patterns to expect in the data.
D) require labeled data as input.
E) require explicit programming by humans to identify patterns in unlabeled data.
Answer: B
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

48) _____ can improve their performance without explicit programming.
A) Neural networks
B) Communities of practice
C) Genetic algorithms
D) Machine learning
E) Intelligent techniques
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

49) Which of the following statements about natural language processing (NLP) is *not* true?
A) NLP is used by Google to return more meaningful search engine results based on the user's search language.
B) NLP is typically based on machine learning techniques.
C) NLP relies on the use of natural language experts.
D) NLP can infer customers' specific needs when they call help centers.
E) NLP often uses neural networks.
Answer: C
Difficulty: Challenging
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

50) Computer vision systems rely on which of the following intelligent techniques?
A) Genetic algorithms
B) Expert systems
C) Database programs
D) Intelligent computer agents
E) Pattern recognition
Answer: E
Difficulty: Challenging
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

51) Intelligent agents rely on:
A) agent-based modeling.
B) MOOC.
C) augmented reality.
D) virtual reality systems.
E) machine learning.
Answer: E
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

52) The collection of expert rules developed by expert systems is referred to as:
A) the knowledge base.
B) a deep learning neural network.
C) a genetic algorithm.
D) Internet of Things (IoT).
E) artificial intelligence.
Answer: A
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

53) A(n) _____ is a type of intelligent technique that finds patterns and relationships in massive data sets too large for a human to analyze.
A) inference engine
B) CAD
C) expert system
D) genetic algorithm
E) neural network
Answer: E
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

54) Which of the following statements about robotics is *not* true?
A) Robotics involves the creation and use of machines than can substitute for humans.
B) Robotics relies on sensors to provide vision and sensory feedback.
C) Robotics can be used for surgery, bomb deactivation, and other dangerous environments.
D) Robotics does not require programming but instead relies solely on AI.
E) Robotics has widespread use in the automobile industry.
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

55) Expert systems are one of the tools used for knowledge storage.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

56) Expert systems capture the knowledge of skilled employees in the form of a set of rules in a software system that can be used by others in the organization.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

57) Expert systems are typically used in business in discrete, highly structured decision-making situations.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

58) Expert systems work by applying a set of AND/OR rules against a knowledge base, both of which are extracted from human experts.
Answer: FALSE
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

59) Neural networks are not well-suited for diagnostic systems in medicine.
Answer: FALSE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

60) Deep learning neural networks can learn as well as humans.
Answer: FALSE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

61) Machine learning systems "learn" patterns from large quantities of data by sifting through data, searching for relationships, building models, and correcting over and over again the model's own mistakes.
Answer: FALSE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

62) Because neural network applications cannot always explain why they arrive at a particular solution, they are not well suited for use in the medical profession.
Answer: FALSE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

63) AI applications are used by search engines and social networks to target ads.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

64) Intelligent agents can discover underlying patterns, categories, and behaviors in large data sets.
Answer: FALSE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

65) Today's AI systems are very good at creating new products for business firms.
Answer: FALSE
Difficulty: Challenging
AACSB: Information technology
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

66) What is the difference between a neural network and genetic algorithms? Which would be most useful to an organization of astronomers analyzing gamma ray emissions reaching Earth?
Answer: A neural network attempts to emulate the processing patterns of the biological brain. The results are a program that can "learn" by comparing solutions to known problems to sets of data presented to it. Neural networks are used for solving complex, poorly understood problems for which large amounts of data have been collected. Genetic algorithms are problem-solving methods that use the model of living organisms adapting to their environment. Possible solutions are evaluated, the "best" choices are made, then more possible solutions are created by combining the factors involved in those first "best" choices, and choosing again. The process continues until an optimum solution is reached. These genetic algorithms are useful for finding the optimal solution for a specific problem by examining a very large number of alternative solutions for that problem. Student evaluations will vary. One answer is: I think a neural network would be of most use because of its ability to analyze large amounts of data and find hidden relationships.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

67) What are the differences between human intelligence and artificial intelligence?
Answer: Human intelligence relies on an estimated 84 billion neurons (brain cells), each with over 10,000 connections to other neurons (synapses), and over one trillion total connections in its network. Modern human beings have been "programed" (by nature) for an estimated 300,000 years, and their predecessors for 2.5 million years. In contrast, AI uses machine learning techniques (including statistics), and very large arrays of computers, to identify patterns in very large databases. These AI techniques are applicable today in a very limited number of situations where there are very large databases and computing facilities, desired outcomes are already defined by humans, and the output is binary (0,1), yes/no, or classifying photos as either cats, or other. Alan Turing defined an artificially intelligent computer program as one that a human could have a conversation with and not be able to tell it was a computer. Today's AI systems do not yet meet this criterion. Nevertheless, AI systems can be enormously helpful to humans and business firms.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

68) What is a chatbot and how are they used in business?
Answer: Chatbots (chatterbots) are software agents designed to simulate a conversation with one or more human users via textual or auditory methods. They try to understand what you type or say and respond by answering questions or executing tasks. Chatbots are typically used in systems for customer service or information acquisition. For example, Facebook has integrated chatbots into its Messenger messaging app, so that any outside company with a Facebook brand page can interact with Facebook users through the chat program. A Facebook user could, for example, browse for a pair of lightweight running shoes on Messenger by texting a message to begin a conversation with Spring, a mobile shopping app. Spring would ask the user for his or her preferred price range for the shoes and display small selections of what it thinks the user might like.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

69) How do neural networks and machine learning actually "learn"?
Answer: Machine learning systems based on neural networks do not learn like human beings learn. Humans use billions of neurons and connections called synapses to sense, learn, and store information. Instead, machine learning systems are pattern-detection software-based programs that use thousands of connected nodes to discern patterns in very large datasets. There are millions of paths through this network. The question is: which of these paths produces a satisfactory result, e.g. identify cancer tumors. Once this path, or collection of paths, is discovered, after millions of runs through the data, it is said to have "learned" how to identify tumors. In actual practice, for some tumors, machine learning can produce results nearly as good, or even better, than humans.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

70) Describe some of the ways we use machine learning technologies every day.
Answer: Machine learning is omnipresent in modern technology. Each Google search you perform uses machine learning techniques to adjust results to be more accurate over time. Amazon's recommendations are generated using machine learning to be most appealing to you based on your prior purchases and online behavior. The same goes for Netflix, whose recommendations for TV and movies to watch are generated in the same way.
Difficulty: Challenging
AACSB: Application of knowledge; Written and oral communication
LO: 11-2: What are artificial intelligence (AI) and machine learning? How do businesses use AI?

71) _____ knowledge exists in formal documents, as well as in formal rules that organizations derive by observing experts and their decision-making behaviors.
A) Unstructured
B) Tacit
C) Management
D) Explicit
E) Structured
Answer: E
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

72) Which of the following types of system enables organizations to digitize, index, and tag structured and unstructured knowledge and documents according to a coherent framework?
A) Wikis
B) CAD
C) ECM
D) LMS
E) VR
Answer: C
Difficulty: Easy
AACSB: Information technology
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

73) All of the following are typical components or capabilities of an ECM system *except*:
A) knowledge portals.
B) communication tools.
C) tagging tools.
D) digital asset management.
E) artificial intelligence tools.
Answer: E
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

74) Which of the following would *not* be considered semistructured knowledge?
A) Request for proposals
B) Voice mail
C) Videos
D) E-mail
E) Brochures
Answer: A
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

75) In content management, once a taxonomy is developed, documents must then be _____ with the proper classification.
A) tagged
B) inventoried
C) tupled
D) retrieved
E) archived
Answer: A
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

76) You are advising a video production company on the best type of knowledge management system to help them archive digital video and sound clips. Which of the following will suit their needs?
A) MOOC
B) Digital asset management system
C) CAD system
D) Virtual reality system
E) LMS
Answer: B
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

77) A MOOC is:
A) a type of online course.
B) an intelligent technique.
C) a VR system.
D) a machine learning system.
E) a type of content management system.
Answer: A
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

78) Which of the following is a tool for the management, delivery, tracking, and assessment of various types of employee learning?
A) Investment workstation
B) Organizational learning system
C) Employee enrichment system
D) LMS
E) Employee management system
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

79) A(n) _____ is a scheme for classifying information and knowledge in such a way that it can be easily accessed.
A) Intelligent technique
B) COP
C) KWS
D) enterprise-wide knowledge management system
E) taxonomy
Answer: E
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

80) Coca-Cola uses a _____ in order to classify, store and distribute all the images of the brand.
A) digital asset management system
B) virtual reality system
C) learning management system
D) neural network
E) knowledge base
Answer: A
Difficulty: Challenging
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

81) Real knowledge is stored only in structured documents.
Answer: FALSE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

82) Structured knowledge is explicit knowledge that exists in formal documents and formal rules.
Answer: TRUE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

83) Semistructured information is all the knowledge in a firm that resides in the heads of experienced employees.
Answer: FALSE
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

84) How can knowledge be gathered from the personal and undocumented expertise of professionals within a firm? List at least four ways to gather and disseminate such knowledge.
Answer: The expertise and experience of firm employees can be gathered by documenting their experience through documenting best practices and frequently asked questions. You can also develop a referral system by providing a way for employees to find a company expert for the solution they are looking for. Other tools you can use include best-practices documents, FAQs, collaboration tools, wikis, and blogs for helping gather and disseminate tacit knowledge.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

85) You have been hired by a small architectural firm interested in implementing a knowledge management system. What features do you think would be of most benefit to them?
Answer: Student answers will vary. The ability to store structured documents, such as plans, blueprints; collaboration tools, the ability to reference up-to-date local or national building codes, a system for storing case studies, best practices, and corporate standards. Also of importance is a KWS or CAD to aid in engineering and design.
Difficulty: Challenging
AACSB: Analytical thinking
LO: 11-3: What types of systems are used for enterprise-wide knowledge management and how do they provide value for businesses?

86) Which of the following statements about 3-D printing is *not* true?
A) It creates solid objects.
B) It is also called additive manufacturing.
C) It is incompatible with the cloud.
D) It creates objects layer by layer.
E) It uses specifications in a digital file.
Answer: C
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

87) All of the following are considered to be knowledge workers *except*:
A) designers.
B) engineers.
C) architects.
D) executives.
E) researchers.
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

88) CAD workstations:
A) provide engineers, designers, and factory managers with precise control over industrial design and manufacturing.
B) provide an important source of expertise for organizations.
C) allow groups to work together on documents.
D) are high-end PCs used in the financial sector to analyze trading situations instantaneously and facilitate portfolio management.
E) facilitate employee learning.
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

89) Which of the following would *not* be classified as a KWS?
A) CAD system
B) 3D visualization system
C) AR applications
D) Expert system
E) VR system
Answer: D
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

90) VR systems:
A) provide engineers, designers, and factory managers with precise control over industrial design and manufacturing.
B) automate the creation and revision of designs.
C) use machines to make solid objects.
D) use computer-generated simulations that are so close to reality that users almost believe they are participating in a real-world situation.
E) enable acquiring, storing, and disseminating knowledge documents in a virtual world.
Answer: D
Difficulty: Moderate
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

91) Which of the following seeks to enhance human perception by combining a live direct view of the physical world with computer-generated images?
A) Augmented reality
B) Expert system
C) Computer-Aided Design
D) Knowledge Work System
E) Machine Learning System
Answer: A
Difficulty: Moderate
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

92) Augmented reality is:
A) a system for creating computer-generated simulations that are close to reality.
B) a system that uses machine learning to produce new digital images.
C) a method of organizing expert system knowledge into chunks.
D) a technology for enhancing visualization by overlaying digital data and images onto a physical real-world environment.
E) a programming algorithm used to create a virtual world using machine learning.
Answer: D
Difficulty: Moderate
AACSB: Reflective thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

93) 3-D printers can produce fully functioning components, such as working batteries and LEDs.
Answer: TRUE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

94) CAD and virtual reality are both types of Knowledge Work Systems (KWS).
Answer: TRUE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

95) Knowledge workers include all of a company's workers who are tasked with managing or creating knowledge, from top-level scientists to clerical and data workers.
Answer: FALSE
Difficulty: Easy
AACSB: Reflective thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

96) Computer-aided design automates the creation and management of designs.
Answer: TRUE
Difficulty: Moderate
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

97) Today's 3-D printers can create objects out of human cartilage.
Answer: TRUE
Difficulty: Challenging
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

98) The yellow first-down markers shown on televised football games are examples of AR.
Answer: TRUE
Difficulty: Easy
AACSB: Information technology
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

99) Why are knowledge workers so important to the digital firm? What are their functions and which of these do you feel is most critical to the success of the firm? Why?
Answer: Student answers will vary, but should include an understanding of the three main functions of knowledge workers. An example answer is: Knowledge workers create new products or find ways to improve existing ones. Without them, the firm would stagnate and become less competitive in an environment that is always changing and is increasingly more competitive. In the modern economy, knowledge is truly power. The three major functions of knowledge workers are: keeping the organization up-to-date in knowledge as it develops in the external world; serving as internal consultants regarding their areas of knowledge and its opportunities; and acting as change agents as they evaluate, initiate, and promote new projects. The most important of these is to develop new knowledge as it applies to the making of products or services, as offering products and services is the mainstay of the corporation.
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

100) What are three important qualities or capabilities of a KWS?
Answer: A KWS must give knowledge workers the specialized tools they need, such as powerful graphics, analytical tools, and communications and document-management tools. A KWS must provide a user-friendly interface to the KWS. These user-friendly interfaces save time by allowing the user to perform needed tasks and get to required information without having to spend a lot of time learning to use the computer. A KWS must be carefully designed to optimize the performance of the specific tasks of the pertinent knowledge worker.
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?

101) Discuss the concept of virtual reality, especially with regard to its applications in the business arena.
Answer: Virtual reality (VR) systems have visualization, rendering, and simulation capabilities that go far beyond those of conventional CAD systems. VR systems use interactive graphics software and hardware to create computer-generated simulations that are so close to reality that users almost believe they are participating in a real-world situation. The original applications were in gaming, but new uses in education, science, and business are being developed and have great promise. NYU's Langone Medical Center is an example of a business application. Students wearing 3-D glasses are able to "dissect" a virtual cadaver projected on a screen. With the help of a computer, they can move through the virtual body, scrutinizing layers of muscles or watching a close-up of a pumping heart along with bright red arteries and deep blue veins.
Difficulty: Moderate
AACSB: Analytical thinking
LO: 11-4: What are the major types of knowledge work systems, and how do they provide value for firms?