

Sample entrance test for the Economics with Data Science undergraduate program at ITU



Instructions

- This sample test has of four sections which includes Reading, Writing, Mathematics, and Data and Economics. All these sections are designed to test the basic knowledge of applicants in these areas.
- Answer key of each of the section is provided at the end of the test.
- This sample test is only for the purpose of introducing the test to potential students, so there may be some errors or typos in it.
- In this sample test you are provided with a framework of what the test questions and structure will look like.

Section 1: Reading

For each of the following questions, select the best answer from the choices provided and fill in the appropriate circle on the answer sheet.

1. While there were some tasks the candidate could _____, others she had to attend to herself.
 - a. Perform
 - b. endorse
 - c. delegate
 - d. misconstrue
 - e. rehearse
2. Although caterpillars and spiders belong to distinctly different classes of arthropods and come to produce silk quite independently, the silks they produce have remarkably _____ compositions.
 - a. delicate
 - b. diaphanous
 - c. mutable
 - d. similar
 - e. Durable
3. Concrete actually is _____, like a sponge—it can absorb up to 10 percent of its weight in water.
 - a. delicate
 - b. elastic
 - c. porous
 - d. ubiquitous
 - e. washable
4. His dislike of _____ made him regard people who flaunted their wealth or accomplishments as _____.
 - a. flattery...charlatans
 - b. poverty...misers
 - c. boasting...braggarts
 - d. failure...opportunists
 - e. procrastination...spendthrifts
5. Some of Kandinsky's artistic innovations are now so much a part of our visual world that they appear on everything from wallpaper to women's scarves without causing the slightest _____.
 - a. profit
 - b. remorse
 - c. boredom
 - d. effort
 - e. stir
6. Short stories, in Hemingway's phrase, have plots that show only "the tip of the iceberg"; such stories _____ a _____ shape below but do not describe that shape in detail.
 - a. cover up...distinctive
 - b. hint at...bulkier

- c. depart from...nebulous
 - d. thaw out...colder
 - e. revolve around...grimmer
7. The title *Rage of a Privileged Class* seems _____, for such a privileged group would seem on the surface to have no _____ sustained anger with anyone.
- a. incongruous...time for
 - b. paradoxical...reason for
 - c. ambiguous...familiarity with
 - d. ironic...indifference to
 - e. witty...capacity for
8. Darwin's ideas, which viewed nature as the result of cumulative, _____ change, triumphed over the older, catastrophist theories, which _____ that mountains and species were created by a few sudden and dramatic events.
- a. gradual...maintained
 - b. drastic...anticipated
 - c. regular...denied
 - d. frequent...disproved
 - e. abrupt...insinuated

Questions 9 and 10 are based on the following passage.

How did the term "spam" come to mean unsolicited commercial e-mail? Flash back to 1937, when Hormel Foods creates a new canned spiced ham, SPAM. Then, in World War II, SPAM luncheon meat becomes a staple of soldiers' diets (often GIs ate SPAM two or three times a day). Next, SPAM's wartime omnipresence perhaps inspired the 1987 Monty Python skit in which a breakfast seeking couple unsuccessfully tries to order a SPAM-free meal while a chorus of Vikings drowns them out, singing "Spam, spam, spam, spam . . ." To computer users drowning in junk e-mail, the analogy was obvious. "Spam," they said, "it's spam."

9. The tone of the passage can best be characterized as
- a. nostalgic
 - b. sardonic
 - c. detached
 - d. chatty
 - e. didactic
10. The parenthetical remark in the above passage ("often . . . day") serves primarily to
- a. establish the soldiers' fondness for SPAM.
 - b. provide evidence of SPAM's abundance.
 - c. refute criticisms of wartime food shortages.
 - d. illustrate the need for dietary supplements.
 - e. point out the difference between military and civilian diets.

Questions 11 and 12 are based on the following passage.

How does an artist train his eye? "First," said Leonardo da Vinci, "learn perspective; then draw from nature." The self-taught eighteenth-century painter George Stubbs followed Leonardo's advice. Like Leonardo, he studied anatomy, but, unlike Leonardo, instead of studying human anatomy, he studied

the anatomy of the horse. He dissected carcass after carcass, peeling away the five separate layers of muscles, removing the organs, baring the veins and arteries and nerves. For 18 long months he recorded his observations, and when he was done, he could paint horses' muscle by muscle, as they had never been painted before. Pretty decent work, for someone self-taught.

11. The primary purpose of the passage is to
 - a. explain a phenomenon.
 - b. describe a process.
 - c. refute an argument.
 - d. urge a course of action.
 - e. argue against a practice.
12. The use of the phrase "pretty decent" in the passage conveys:
 - a. grudging enthusiasm
 - b. tentative approval
 - c. ironic understatement
 - d. bitter envy
 - e. fundamental indifference

Questions 13–24 are based on the following passage.

In this excerpt from an essay on the symbolic language of dreams, the writer Erich Fromm explores the nature of symbols.

One of the current definitions of a symbol is that it is "something that stands for something else." We can differentiate between three kinds of symbols: the conventional, the accidental, and the universal symbol.

The conventional symbol is the best known of the three since we employ it in everyday language. If we see the word "table" or hear the sound "table," the letters t-a-b-l-e stand for something else. They stand for the thing "table" that we see, touch, and use. What is the connection between the word "table" and the thing "table"? Is there any inherent relationship between them? Obviously not. The thing table has nothing to do with the sound table, and the only reason the word symbolizes the thing is the convention of calling this particular thing by a name. We learn this connection as children by the repeated experience of hearing the word in reference to the thing until a lasting association is formed so that we don't have to think to find the right word. There are some words, however, in which the association is not only conventional. When we say "phooey," for instance, we make with our lips a movement of dispelling the air quickly. It is an expression of disgust in which our mouths participate. By this quick expulsion of air, we imitate and thus express our intention to expel something, to get it out of our system. In this case, as in some others, the symbol has an inherent connection with the feeling it symbolizes. But even if we assume that originally many or even all words had their origins in some such inherent connection between symbol and the symbolized, most words no longer have this meaning for us when we learn a language.

Words are not the only illustration for conventional symbols, although they are the most frequent and best-known ones. Pictures also can be conventional symbols. A flag, for instance, may stand for a specific country, and yet there is no intrinsic connection between the specific colors and the country for

which they stand. They have been accepted as denoting that particular country, and we translate the visual impression of the flag into the concept of that country, again on conventional grounds.

The opposite to the conventional symbol is the accidental symbol, although they have one thing in common: there is no intrinsic relationship between the symbol and that which it symbolizes. Let us assume that someone has had a saddening experience in a certain city; when he hears the name of that city, he will easily connect the name with a mood of sadness, just as he would connect it with a mood of joy had his experience been a happy one. Quite obviously, there is nothing in the nature of the city that is either sad or joyful. It is the individual experience connected with the city that makes it a symbol of a mood.

The same reaction could occur in connection with a house, a street, a certain dress, certain scenery, or anything once connected with a specific mood. We might find ourselves dreaming that we are in a certain city. We ask ourselves why we happened to think of that city in our sleep and may discover that we had fallen asleep in a mood similar to the one symbolized by the city. The picture in the dream represents this mood, the city “stands for” the mood once experienced in it. The connection between the symbol and the experience symbolized is entirely accidental.

The universal symbol is one in which there is an intrinsic relationship between the symbol and that which it represents. Take, for instance, the symbol of fire. We are fascinated by certain qualities of fire in a fireplace. First of all, by its aliveness. It changes continuously, it moves all the time, and yet there is constancy in it. It remains the same without being the same. It gives the impression of power, of energy, of grace and lightness. It is as if it were dancing and had an inexhaustible source of energy. When we use fire as a symbol, we describe the inner experience characterized by the same elements which we notice in the sensory experience of fire—the mood of energy, lightness, movement, grace, gaiety, sometimes one, sometimes another of these elements being predominant in the feeling.

The universal symbol is the only one in which the relationship between the symbol and that which is symbolized is not coincidental, but intrinsic. It is rooted in the experience of the affinity between an emotion or thought, on the one hand, and a sensory experience, on the other. It can be called universal because it is shared by all men, in contrast not only to the accidental symbol, which is by its very nature entirely personal, but also to the conventional symbol, which is restricted to a group of people sharing the same convention. The universal symbol is rooted in the properties of our body, our senses, and our mind, which are common to all men and, therefore, not restricted to individuals or to specific groups. Indeed, the language of the universal symbol is the one common tongue developed by the human race, a language which it forgot before it succeeded in developing a universal conventional language.

13. The passage is primarily concerned with:

- a. refuting an argument
- b. illustrating an axiom
- c. describing a process
- d. proving a thesis
- e. refining a definition

14. The term “stand for” in the second paragraph of the above reading means:

- a. tolerate
- b. represent
- c. withstand

- d. endorse
 - e. rise
15. According to the second paragraph of the above reading, “table” and “phooey” differ in that:
- a. only one is a conventional symbol.
 - b. “table” is a better-known symbol than “phooey”.
 - c. “phooey” has an intrinsic natural link with its meaning.
 - d. children learn “phooey” more readily than they learn “table”.
 - e. only one is used exclusively by children.
16. It can be inferred from the passage that another example of a word with both inherent and conventional associations to its meaning is:
- a. hiss
 - b. hike
 - c. hold
 - d. candle
 - e. telephone
17. The author contends that conventional symbols:
- a. are less meaningful than accidental ones.
 - b. necessarily have an innate connection with an emotion.
 - c. can be pictorial as well as linguistic.
 - d. are less familiar than universal symbols.
 - e. appeal chiefly to conventionally minded people.
18. Which of the following would the author be most likely to categorize as a conventional symbol?
- a. a country road
 - b. a patchwork quilt
 - c. a bonfire
 - d. the city of London
 - e. the Statue of Liberty
19. According to the author’s argument, a relationship between the city of Paris and the mood of joy can best be described as
- a. innate
 - b. dreamlike
 - c. elemental
 - d. coincidental
 - e. immutable
20. A major factor distinguishing a universal symbol from conventional and accidental symbols is:
- a. its origins in sensory experience
 - b. its dependence on a specific occasion
 - c. the intensity of the mood experienced.
 - d. its unmemorable nature
 - e. its appeal to the individual
21. By saying “Take . . . the symbol of fire” (6th paragraph), the author is asking the reader to
- a. grasp it as an element.
 - b. consider it as an example.
 - c. accept it as a possibility.

- d. prefer it as a category.
 - e. assume it as a standard.
22. Which of the following would the author most likely categorize as a universal symbol?
- a. the letters f-i-r-e
 - b. the letters p-h-o-o-e-y
 - c. a red dress
 - d. an American flag
 - e. water in a stream
23. The word “properties” in 7th paragraph means:
- a. possessions
 - b. attributes
 - c. investments
 - d. titles
 - e. grounds
24. The author contends in the 7th paragraph that the language of the universal symbol:
- a. antedates the development of everyday conventional language.
 - b. restricts itself to those capable of comprehending symbolism.
 - c. should be adopted as the common tongue for the human race.
 - d. grew out of human efforts to create a universal conventional language.
 - e. developed accidentally from the human desire to communicate.

Questions 25–27 are based on the following passages.

Passage 1 is an excerpt from a lecture by American humorist Mark Twain; Passage 2, an excerpt from an essay by English author and critic G. K. Chesterton.

Passage 1

There are several kinds of stories, but only one difficult kind—the humorous. The humorous story is American; the comic story, English; the witty story, French. The humorous story depends for its effect upon the manner of the telling, the comic story, and the witty story upon the matter. The humorous story may be spun out to great length, and may wander around as much as it pleases, and arrive nowhere in particular; but the comic and witty stories must be brief and end with a point. The humorous story bubbles gently along; the others burst.

Passage 2

American humor, neither transfiguring lucid and appropriate like the French, nor sharp and sensible like the Scotch, is simply the humor of imagination. It consists in piling towers on towers and mountains on mountains; of heaping a joke up to the stars and extending it to the end of the world. With this distinctively American humor Bret Harte had little or nothing in common. The wild, sky-breaking humor of America has its fine qualities, but it must in the nature of things be deficient in two qualities, not only supremely important to life and letters, but also supremely important to humor—reverence and sympathy. And these two qualities were knit into the closest texture of Bret Harte’s humor.

25. Which of the following most resembles the humorous story as described in Passage 1?
- a. A parable

- b. A fairy tale
 - c. An allegory
 - d. A shaggy-dog story
 - e. A comical limerick
26. In stating that “The humorous story bubbles gently along; the others burst,” the author of Passage 1 is speaking.
- a. melodramatically
 - b. hypothetically
 - c. metaphorically
 - d. nostalgically
 - e. analytically
27. Which generalization about American humor is supported by both passages?
- a. It is witty and to the point.
 - b. It demonstrates greater sophistication than French humor.
 - c. It depends on a lengthy buildup.
 - d. It is by definition self-contradictory.
 - e. It depends on the subject matter for its effect.

Section 2: Writing

Some of the questions following the passages ask you to make inferences from the passages. To infer means to arrive at a conclusion by reasoning from evidence. Synonyms for infer are deduce, judge, or conclude. If you are told to infer something from a passage, you are basically being asked what conclusions can be drawn from the content of the story. Tip: If you replace the word infer with conclude in a question, it may make more sense to you.

In cities throughout the country, there is a new direction in local campaign coverage. Frequently in local elections, journalists are not giving voters enough information to understand the issues and evaluate the candidates. The local news media devotes too much time to scandal and not enough time to policy.

1. This paragraph best supports the statement that the local news media
 - a. is not doing an adequate job when it comes to covering local campaigns.
 - b. does not understand either campaign issues or politics.
 - c. should learn how to cover politics by watching the national news media.
 - d. has no interest in covering stories about local political events.

The use of desktop computer equipment and software to create high-quality documents such as newsletters, business cards, letterhead, and brochures is called Desktop Publishing, or DTP. The most important part of any DTP project is planning. Before you begin, you should know your intended audience, the message you want to communicate, and what form your message will take.

2. The paragraph best supports the statement that
 - a. Desktop Publishing is one way to become acquainted with a new business audience.
 - b. computer software is continually being refined to produce high-quality printing.
 - c. the first stage of any proposed DTP project should be organization and design.
 - d. the planning stage of any DTP project should include talking with the intended audience.

The entire low carbohydrate versus low-fat diet argument is so prevalent that one would think that these are the only two options available for losing weight and staying healthy. Some experts even feel that the low-carb/low-fat debate distracts us from an even more important issue—our culture’s reliance on processed and manufactured foods.

3. The paragraph best supports the statement that
 - a. experts state that not all fats are equal, so we need not reduce our intake of all fats; just those that contain partially hydrogenated oils.
 - b. important health concerns get overlooked when we focus exclusively on the low-fat versus low-carb question.
 - c. low-carbohydrate diets lead to significant and sustained weight loss.
 - d. processed foods can lead to many adverse health problems including heart disease, cancer, diabetes, and obesity.

Every year, Americans use over one billion sharp objects to administer healthcare in their homes. These sharp objects include lancets, needles, and syringes. If not disposed of in puncture-resistant containers, they can injure sanitation workers. Sharp objects should be disposed of in hard plastic or metal containers with secure lids. The containers should be clearly marked and be puncture resistant.

4. The paragraph best supports the idea that sanitation workers can be injured if they
 - a. do not place sharp objects in puncture resistant containers.
 - b. come in contact with sharp objects that have not been placed in secure containers.
 - c. are careless with sharp objects such as lancets, needles, and syringes in their homes.
 - d. do not mark the containers they pick up with a warning that those containers contain sharp objects.

Litigation is not always the only or best way to resolve conflicts. Mediation offers an alternative approach, and it is one that can be quite efficient and successful. Mediation can be faster, less expensive, and can lead to creative solutions not always possible in a court of law. Additionally, mediation focuses on mutually acceptable solutions, rather than on winning or losing.

5. This paragraph best supports the idea that
 - a. there is too much reliance on litigation in our society.
 - b. litigation is expensive, slow, and limited by its reliance on following the letter of the law.
 - c. mediation is the best way to resolve a crisis.
 - d. mediation can be an effective way to resolve conflicts.

Charles Darwin was born in 1809 in Shrewsbury, England. He was a biologist whose famous theory of evolution is important to philosophy for the effect it has had on ideas relating to the nature of men. After many years of careful study, Darwin attempted to show that higher species came into existence as a result of the gradual transformation of lower species, and that the process of transformation could be explained through the selective effect of the natural environment upon organisms. He concluded that the principles of natural selection and survival of the fittest govern all life. Darwin's explanation of these principles is that because of the food supply problem, the young of any species compete for survival. Those young that survive to produce the next generation tend to embody favorable natural changes that are passed on by heredity. His major work that contained these theories is *On the Origin of the Species*, written in 1859. Many religious opponents condemned this work.

6. According to the passage, Charles Darwin was which of the following?
 - a. a priest
 - b. a biologist
 - c. an animal trainer
 - d. a politician
7. Which of the following statements supports Darwin's belief about the origin of all species?
 - a. Man is descended from monkeys.
 - b. All life forms developed slowly over time from lower life forms.
 - c. Natural forces do not affect life on Earth.
 - d. All species were individually created.
8. Darwin's explanation that the young of any species compete for food and survival, and those that survive are strong and pass their traits on to their young was called which of the following?
 - a. belief in creationism
 - b. the catastrophic theory
 - c. theory of natural selection and survival of the fittest
 - d. the study of anthropology
9. According to the passage, how was Darwin's book, *On the Origin of the Species*, received?

- a. Scientists gave their immediate approval of Darwin's book.
- b. Religious opponents condemned Darwin's book.
- c. The world ignored Darwin's book.
- d. Darwin's book became an immediate bestseller.

The crystal clear, blue water and the magnificent sun make the Caribbean Island of Saint Maarten a favorite vacation spot, one that is popular with North Americans during their winter holidays from December through March, as well as with South Americans and Europeans from April through August. The French and Dutch settled on the island in the 1600s, and to this day, the island is divided between the two of them. The French capital is Marigot; the Dutch capital is Philipsburg. Tourists soon discover that St. Maarten has an intriguing history. Ancient artifacts found on the island date back to the Stone Age, 6,000 years ago! Tourists also learn that 1,200 years ago the Arawak Indians inhabited all the islands of the West Indies and were a peaceful people living under the guidance of their chiefs. Three hundred years after the Arawaks first arrived on St. Maarten, in the 1300s, they were defeated and forced to abandon the island by a hostile tribe of Indians originating in South America. This new tribe was called the Carib. The Caribbean Sea was named after them. Unlike the Arawaks, they had no permanent chiefs or leaders, except in times of strife. And they were extremely warlike. Worse, they were cannibalistic, eating the enemy warriors they captured. In fact, the very word cannibal comes from the Spanish name for the Carib Indians. The Spanish arrived in the fifteenth century and, unfortunately, they carried diseases to which the Indians had no immunity. Many Indians succumbed to common European illnesses; others died from the hard labor forced upon them.

10. One can infer from the passage that the Stone Age people lived on St. Maarten around the year
 - a. 6000 B.C.
 - b. 4000 B.C.
 - c. 800 A.D.
 - d. 1300 A.D.
11. Which of the following is NOT true about the Carib Indians?
 - a. The sea was named after them.
 - b. They were peaceful fishermen, hunters, and farmers.
 - c. They ate human flesh.
 - d. They settled after defeating the Arawak Indians.
12. According to the passage, the Carib Indians were finally defeated by
 - a. sickness and forced labor.
 - b. the more aggressive Arawak tribe.
 - c. the Dutch West India Company.
 - d. the French explorers.
13. One can infer from the passage that the underlined word strife means
 - a. Cannibalism.
 - b. War.
 - c. duty-free.
 - d. chief.
14. According to the article, present-day St. Maarten
 - a. belongs to the Spanish.
 - b. is independent.

- c. is shared by the French and the Dutch.
- d. is part of the U.S. Virgin Islands.

A metaphor is a poetic device that deals with comparison. It compares similar qualities of two dissimilar objects. With a simple metaphor, one object becomes the other: Love is a rose. Although this does not sound like a particularly rich image, a metaphor can communicate so much about a particular image that poets use them more than any other type of figurative language. The reason for this is that poets compose their poetry to express what they are experiencing emotionally at that moment. Consequently, what the poet imagines love to be may or may not be our perception of love. Therefore, the poet's job is to enable us to experience it, to feel it the same way that the poet does. We should be able to nod in agreement and say, "Yes, that's it! I understand precisely where this person is coming from." Let's analyze this remarkably unsophisticated metaphor concerning love and the rose to see what it offers. Because the poet uses a comparison with a rose, first we must examine the characteristics of that flower. A rose is spectacular in its beauty, its petals are velvety soft, and its aroma is soothing and pleasing. It's possible to say that a rose is actually a veritable feast to the senses: the visual, the tactile, and the aural [more commonly known as the senses of sight, touch, and sound]. The rose's appearance seems to border on perfection, each petal seemingly symmetrical in form. Isn't this the way one's love should be? A loved one should be a delight to one's senses and seem perfect. However, there is another dimension added to the comparison by using a rose. Roses have thorns. This is the comprehensive image the poet wants to communicate; otherwise, a daisy or a mum would have been presented to the audience as the ultimate representation of love—but the poet didn't, instead conveying the idea that roses can be treacherous. So can love, the metaphor tells us. When one reaches out with absolute trust to touch the object of his or her affection, ouch, a thorn can cause great harm! "Be careful," the metaphor admonishes: Love is a feast to the senses, but it can overwhelm us, and it can also hurt us. It can prick us and cause acute suffering. This is the poet's perception of love—an admonition. What is the point? Just this: It took almost 14 sentences to clarify what a simple metaphor communicates in only five words! That is the artistry and the joy of the simple metaphor.

- 15. The main idea of this passage is
 - a. poetic devices are necessary for poets.
 - b. poetry must never cater to the senses.
 - c. always use words that create one specific image.
 - d. the metaphor is a great poetic device.
- 16. It can be inferred that a metaphor is
 - a. a type of figurative language.
 - b. the only poetic device.
 - c. not precise enough.
 - d. a type of flower in a poem.
- 17. According to the passage, thorns
 - a. protect the rose from harm.
 - b. reduce the ability to love another.
 - c. add a new element to the image of love.
 - d. are just more images to compare to a rose.
- 18. It can be inferred that the true meaning of the love is a rose metaphor is that
 - a. love is a true joy.

- b. love comes only once in a lifetime.
 - c. love is never permanent.
 - d. love is a combination of good and bad experiences.
19. According to the passage, the poet's intention is
- a. to release anger.
 - b. to announce heartache.
 - c. to enable you to experience the poet's point of view.
 - d. to reward the senses.

The composer Wolfgang Amadeus Mozart's remarkable musical talent was apparent even before most children can sing a simple nursery rhyme. Wolfgang's older sister Maria Anna (who the family called Nannerl) was learning the clavier, an early keyboard instrument, when her three-year-old brother took an interest in playing. As Nannerl later recalled, Wolfgang "often spent much time at the clavier picking out thirds, which he was always striking, and his pleasure showed that it sounded good." Their father Leopold, an assistant concertmaster at the Salzburg Court, recognized his children's unique gifts and soon devoted himself to their musical education. Born in Salzburg, Austria, on January 27, 1756, Wolfgang had composed his first original work by age five. Leopold planned to take Nannerl and Wolfgang on tour to play before the European courts. Their first venture was to nearby Munich where the children played for Maximilian III Joseph, elector of Bavaria. Leopold soon set his sights on the capital of the Hapsburg Empire, Vienna. On their way to Vienna, the family stopped in Linz, where Wolfgang gave his first public concert. By this time, Wolfgang was not only a virtuoso harpsichord player, but he had also mastered the violin. The audience at Linz was stunned by the six-year-old, and word of his genius soon traveled to Vienna. In a much-anticipated concert, the Mozart children appeared at the Schonbrunn Palace on October 13, 1762. They utterly charmed the emperor and empress. Following this success, Leopold was inundated with invitations for the children to play, for a fee. Leopold seized the opportunity and booked as many concerts as possible at courts throughout Europe. A concert could last three hours, and the children played at least two per a day. Today, Leopold might be considered the worst kind of stage parent, but at the time, it was not uncommon for prodigies to make extensive concert tours. Even so, it was an exhausting schedule for a child who was just past the age of needing an afternoon nap.

20. A good title for this passage would be
- a. Classical Music in the Eighteenth Century: An Overview.
 - b. Stage Parents: A Historical Perspective.
 - c. Mozart: The Early Life of a Musical Prodigy.
 - d. Mozart: The Short Career of a Musical Genius.
21. According to the passage, Wolfgang became interested in music because
- a. his father thought it would be profitable.
 - b. he had a natural talent.
 - c. he saw his sister learning to play an instrument.
 - d. he came from a musical family.
22. What was the consequence of Wolfgang's first public appearance?
- a. He charmed the emperor and empress of Hapsburg.
 - b. Word of Wolfgang's genius spread to the capital.
 - c. Leopold set his sights on Vienna.

- d. Invitations for the miracle children to play poured in.
23. Each of the following statements about Wolfgang Mozart is directly supported by the passage EXCEPT.
- a. Mozart's father, Leopold, was instrumental in shaping his career.
 - b. Maria Anna was a talented musician in her own right.
 - c. Wolfgang's childhood was devoted to his musical career.
 - d. Wolfgang preferred the violin to other instruments.
24. According to the passage, during Wolfgang's early years, child prodigies were
- a. few and far between.
 - b. accustomed to extensive concert tours.
 - c. expected to spend at least six hours per a day practicing their music.
 - d. expected to play for courts throughout Europe.
25. Based on information found in the passage, Mozart can best be described as
- a. a child prodigy.
 - b. a workaholic.
 - c. the greatest composer of the eighteenth century.
 - d. a victim of his father's ambition.

Section 3: Mathematics

Select only one option for each of the question in this section.

1. If $g(x) = 3x + 2$ and $g(f(x)) = x$, then $f(2) = (5)$
 - a. 0
 - b. 1
 - c. 2
 - d. 6
 - e. 8
2. The inverse of $f = \{(1,2), (2,3), (3,4), (4,1), (5,2)\}$ would be a function if the domain of f is limited to
 - a. $\{1,3,5\}$
 - b. $\{1,2,3,4\}$
 - c. $\{1,5\}$
 - d. $\{1,2,4,5\}$
 - e. $\{1,2,3,4,5\}$
3. The average (arithmetic mean) of a set of seven numbers is 81. If one of the numbers is discarded, the average of the remaining numbers is 78. What is the value of the number that was discarded?
 - a. 98
 - b. 99
 - c. 100
 - d. 101
 - e. 102
4. The slope of the line through points $A(3,-2)$ and $B(-2,-3)$ is
 - a. -5
 - b. $-1/5$
 - c. $1/5$
 - d. 1
 - e. 5
5. The y-intercept of the line through the two points whose coordinates are $(5,-2)$ and $(1,3)$ is
 - a. $-5/4$
 - b. $5/4$
 - c. $17/4$
 - d. 7
 - e. 17
6. The slope of the line perpendicular to line $3x - 5y + 8 = 0$ is
 - a. $-5/3$
 - b. $-3/5$
 - c. $3/5$
 - d. $5/3$
 - e. 3
7. The number of integers that satisfy the inequality $x^2 + 48 < 16x$ is
 - a. 0

- b. 4
c. 7
d. an infinite number
e. none of the above
8. An angle of 30 radians is equal to how many degrees.
a. $\pi/30$
b. $\pi/6$
c. $30/\pi$
d. $540/\pi$
e. $5400/\pi$
9. If a sector of a circle has an arc length of 2π inches and an area of 6π square inches, what is the length of the radius of the circle?
a. 1
b. 2
c. 3
d. 6
e. 12
10. If a circle has a circumference of 16 inches, the area of a sector with a central angle of 4.7 radians is:
a. 10
b. 12
c. 15
d. 25
e. 48
11. In $\triangle ABC$, $\angle A = 30^\circ$, $b = 8$, and $a = 4\sqrt{2}$. Angle C could equal:
a. 45°
b. 135°
c. 60°
d. 15°
e. 90°
12. In $\triangle ABC$, $\angle A = 30^\circ$, $a = 6$, and $c = 8$. Which of the following must be true?
a. $0^\circ < \angle C < 90^\circ$
b. $90^\circ < \angle C < 180^\circ$
c. $45^\circ < \angle C < 135^\circ$
d. $0^\circ < \angle C < 45^\circ$ or $90^\circ < \angle C < 135^\circ$
e. $0^\circ < \angle C < 45^\circ$ or $135^\circ < \angle C < 180^\circ$
13. Find the length of the longer diagonal of a parallelogram if the sides are 6 inches and 8 inches and the smaller angle is 60° .
a. 8
b. 11
c. 12
d. 7
e. 17
14. If $y = 25 - x^2$ and $1 \leq x \leq 5$, what is the smallest possible value of y ?

- a. 0
b. 1
c. 5
d. 10
e. 18
15. If $x^{23}/x^m = x^{15}$ and $(x^4)^n = x^{20}$, then $mn =$
a. 13
b. 24
c. 28
d. 40
e. 55
16. If $2 = p^3$, then $8p$ must equal
a. p^6
b. p^8
c. p^{10}
d. $8\sqrt{2}$
e. p
17. Three times the sum of a number and four is equal to five times the number, decreased by two. If x represents the number, which equation is a correct translation of the statement?
a. $3(x + 4) = 5x - 2$
b. $3(x + 4) = 5(x - 2)$
c. $3x + 4 = 5x - 2$
d. $3x + 4 = 5(x - 2)$
e. $3x - 4 = 5x + 2$
18. Which expression represents the number of hours in w weeks and d days?
a. $7w + 12d$
b. $84w + 24d$
c. $168w + 24d$
d. $168w + 60d$
e. $84w + 15d$
19. Which verbal expression can be represented by $2(x - 5)$?
a. 5 less than 2 times x
b. 2 multiplied by x less 5.
c. twice the difference of x and 5
d. the product of 2 and x , decreased by 5.
e. twice the sum of x and 5
20. The length of a rectangle is three feet less than twice its width. If x represents the width of the rectangle, in feet, which inequality represents the area of the rectangle that is at most 30 square feet?
a. $x(2x - 3) \leq 30$
b. $x(2x - 3) \geq 30$
c. $x(3 - 2x) \leq 30$
d. $x(3 - 2x) \geq 30$
e. $x(3 + 2x) \geq 30$

21. In 1995, the U.S. federal government paid off one-third of its debt. If the original amount of the debt was \$4,920,000,000,000, which expression represents the amount that was not paid off?
- 1.64×10^4
 - 1.64×10^{12}
 - 3.28×10^8
 - 3.28×10^{12}
 - 3.28×10^4
22. If $3j - (k + 5) = 16 - 4k$, what is the value of $j + k$?
- 8
 - 7
 - 5
 - 4
 - 2
23. Last month, Sara, Ryan, and Taylor received a total of 882 emails. If Sara received 25% more emails than the sum of the number of emails received by Ryan and Taylor, how many emails did Sara receive?
- 448
 - 486
 - 490
 - 504
 - 554
24. A soccer team has played 25 games and has won 60% of the games it has played. What is the minimum number of additional games the team must win in order to finish the season winning 80% of the games it has played?
- 28
 - 25
 - 21
 - 18
 - 15
25. After a 20% increase, the new price of a radio is \$78.00. What was the original price of the radio?
- \$15.60
 - \$60.00
 - \$62.40
 - \$65.00
 - \$67.00
26. Which expression represents 72 kilometers per hour expressed as meters per hour?
- 7.2×10^{-2}
 - 7.2×10^2
 - 7.2×10^{-3}
 - 7.2×10^4
 - 7.2×10^{-4}

27. A recipe for 4 servings requires salt and pepper to be added in the ratio of 2 : 3. If the recipe is adjusted from 4 to 8 servings, what is the ratio of the salt and pepper that must now be added?
- 4 : 3
 - 2 : 6
 - 2 : 3
 - 3 : 2
 - 3 : 4
28. A school club includes only sophomores, juniors, and seniors, in the ratio of 1 : 3 : 2. If the club has 42 members, how many seniors are in the club?
- 6
 - 7
 - 12
 - 14
 - 16
29. A used-car lot has 4-door sedans, 2-door sedans, sports cars, vans, and jeeps. Of these vehicles, 40% are 4-door sedans, 25% are 2-door sedans, 20% are sports cars, 10% are vans, and 20 of the vehicles are jeeps. If this car lot has no other vehicles, how many vehicles are on the used-car lot?
- 300
 - 400
 - 480
 - 600
 - 680
30. In an opinion poll of 50 men and 40 women, 70% of the men and 25% of the women said that they preferred fiction to nonfiction books. What percent of the number of people polled preferred to read fiction?
- 40%
 - 45%
 - 50%
 - 60%
 - 65%
31. On a certain map, 1.5 inches represent a distance of 120 miles. If two cities on this map are 1 foot apart, what is the distance, in miles, between the cities?
- 180
 - 480
 - 960
 - 1,080
 - 1,250
32. A man drove to work at an average rate of speed of 60 miles per hour and returned over the same route driving at an average rate of speed of 40 miles per hour. If his total driving time was 1 hour, what was the total number of miles in the round trip?
- 12
 - 24
 - 30

- d. 48
 - e. 52
33. A freight train left a station at 12 noon, going north at a rate of 50 miles per hour. At 1:00 P.M. a passenger train left the same station, going south at a rate of 60 miles per hour. At what time were the trains 380 miles apart?
- a. 3:00 P.M.
 - b. 4:00 P.M.
 - c. 4:30 P.M.
 - d. 5:00 P.M.
 - e. 5:30 P.M.

Sample Test

Section 4: Data and Economics

Select only one option for each of the question in this section.

1. Which of the following values is used as a summary measure for a sample, such as a sample mean?
 - a. Population parameter
 - b. Sample parameter
 - c. Sample statistic
 - d. Population average.
 - e. Population estimates

2. Resources in an economy?
 - a. Are always found.
 - b. Can never decrease.
 - c. Always increase over time.
 - d. Are limited at any moment of time.
 - e. None of above

3. An increase in supply _____ the price and _____ the quantity demanded.
 - a. Lowers, raises.
 - b. Raises, lowers.
 - c. Lowers, lowers.
 - d. Raises, raises.
 - e. Cannot be determined.

4. "Capitalism" refers to:
 - a. The use of markets
 - b. Government ownership of capital goods
 - c. Private ownership of capital goods
 - d. Private ownership of homes and cars
 - e. None of above

5. When analyzing the impact of a variable on the economic system, the other things?
 - a. Must be kept constant.
 - b. Must also be analyzed.
 - c. Must not be taken into consideration.
 - d. All above
 - e. None of above

6. Inputs are combined with technology to produce outputs. The fundamental inputs (also called the factors of production) are?
 - a. Land and capital
 - b. Land and labor
 - c. Land, labor, and capital
 - d. Land, labor, capital, and investment
 - e. None of above

7. The branch of economics that deals with overall performance of the economy is known as?

- a. Microeconomics
 - b. Macroeconomics
 - c. Econometrics
 - d. Statistics
 - e. Keynesian economics
8. In economics, the word "Utility" means:
- a. Versatility and flexibility
 - b. Rationality
 - c. Pleasure and satisfaction
 - d. Purposefulness
 - e. None of Above
9. Data analysis is the process of?
- a. Inspecting data
 - b. Cleaning data
 - c. Transforming data
 - d. All above
 - e. None of above
10. Taxes are used to discourage _____ of a commodity?
- a. Consumption
 - b. Production
 - c. Saving
 - d. Investment
 - e. Inflation
11. Subsidies are used to encourage _____ of a commodity?
- a. Consumption
 - b. Production
 - c. Saving
 - d. Investment
 - e. Inflation
12. Which economic term is used to measure the overall performance of an economy?
- a. GDP
 - b. GNP
 - c. Gini
 - d. HDI
 - e. None of above
13. Productive efficiency occurs when an economy cannot produce _____ of one good without producing _____ of another good?
- a. More, more
 - b. More, less
 - c. Less, less
 - d. Less, more
 - e. None of above
14. The price elasticity of demand is the percentage change in _____ demanded divided by the percentage change in _____?
- a. Supply, price
 - b. Quantity, price

- c. Price, supply
 - d. Price, quantity
 - e. None of above
15. The term "recession" refers to the?
- a. High employment
 - b. High unemployment
 - c. High supply and demand
 - d. Low supply and demand
 - e. None of above

Sample Test

Answer key

Reading

Question number	Correct answer
1	C
2	D
3	C
4	C
5	E
6	B
7	B
8	A
9	D
10	B
11	B
12	C
13	E
14	B
15	C
16	A
17	C
18	E
19	D
20	A
21	B
22	E
23	B
24	A
25	D
26	C
27	C

Writing

Question number	Correct answer
1	A
2	C
3	B
4	B
5	D
6	B
7	B
8	C
9	B
10	B
11	B

12	A
13	B
14	C
15	D
16	A
17	C
18	D
19	C
20	C
21	C
22	B
23	D
24	B
25	A

Mathematics

Question number	Correct answer
1	A
2	B
3	B
4	C
5	C
6	A
7	C
8	E
9	D
10	C
11	D
12	E
13	C
14	A
15	D
16	C
17	A
18	C
19	C
20	A
21	D
22	B
23	C
24	B
25	D
26	D
27	C
28	D

29	B
30	C
31	C
32	D
33	B

Data and Economics

Question number	Correct answer
1	C
2	D
3	A
4	C
5	A
6	C
7	B
8	C
9	D
10	A
11	B
12	A
13	B
14	B
15	B

Sample Test