

## 2003 MASEL

### Round 4

#### Toss-up Questions

1. With a few exceptions, their genetic code is the same for all organisms, with, for example, three uracils indicating phenylalanine for all living things. Transfer RNA has an opposite version for bonding with mRNA, but the three stop versions have no opposites, hence no productive capacity. Read in ribosomes, they have 64 possible combinations for 20 amino acids, but are redundant because more than one codes for each amino acid. AUG is the start and produces methionine. FTP, name these three-letter codes in mRNA made from combinations of amino acids.

#### Codons

2. In 1853 his advice to Richard King led that man to purchase land for the 1300-square mile King Ranch in Texas. He did engineering work on the Mississippi until given command in what is now West Virginia. His campaign there was an utter failure and he would have been sent to defend the Confederacy's southeast coastline if Joseph Johnston hadn't been wounded at Seven Pines. Winfield Scott's choice to head the Union Army, his genius failed only when he disregarded Longstreet's advice and ordered a frontal charge on July 3, 1863. FTP, name this Virginian who received a presidential pardon in 1975, 110 years after his surrender at Appomattox.

#### Robert Edward Lee

3. It contains the first funeral march incorporated in a symphony. The first theme is a simple four-bar melody which starts with cellos and has other instruments joining one by one. The second theme is subdued, but soon gives way to great dissonance. A cycle of violence alternating with repose in the form of gentle woodwinds and violins playing a theme of death continues until the coda. This evokes movements of a "Grand Army of the soul" bent on conquering the world. Another man's name was first inscribed over the composer's on the title page. FTP, name this Beethoven work originally dedicated to Napoleon.

#### Symphony No. 3 in E-flat major or Eroica

4. The Hicksian version is steeper than the Marshallian because Hicksian only accounts for substitution effects. That of a monopolist is also that of the whole industry and that for each oligopolist is more elastic than for the industry as a whole. The more firms there are, the more elastic it becomes. It always slopes down and depends both on consumer preference and the ability of other firms to meet needs. FTP, name this graphical representation of the relationship between price asked and product desired.

#### Demand Curve

5. It is the Koran's forbidden fruit in Eden. Greek soldiers discovered it in Asia, but Europeans didn't cultivate it until the 10<sup>th</sup> century. Britain's oldest was found in a 500-year-old Tudor rubbish pit and America's first were sold at the 1876 Centennial Exposition for 10 cents each. Its name is Portuguese from an African root and India now grows the most. There are 300 kinds, but *Musa sapientum* is

commonly eaten in America. FTP, name this curved yellow fruit.

Banana

6. Ptolemy first observed its basic attribute of light bending at the boundary of a medium while its namesake showed the sine of the two angles related. It governs relations <sup>between</sup> three angles: the angle of incidence, where light enters the medium; and the two angles of refraction, produced when the light bends in the medium and again when it exits to a new medium. FTP, name this idea that the ratio of the sine of the angle of incidence to the sine of the angle of refraction is equal to the ratio of the refracting medium's index number to the original medium's index number.

Snell's Law

7. He never slept with fewer than five girls from his harem, who serviced him for three straight days before being replaced with a new team. When he ate, his attendants, all female, stuffed napkins in their mouths to avoid contaminating his food. Anyone who looked at his funeral bier was killed with the injunction, "Your master needs you. Go serve him in Heaven." After he defeated his brother Arigh Boke in a civil war, he ruled more men than any previous king. He founded a new capital at Shangdu, defeated the Song and sent two expeditions against Japan. FTP, name this first Yuan emperor, employer of Marco Polo.

Kublai Khan

8. He wished to be buried in Florence, but the pope wouldn't allow it, so his nephew secretly shipped out the body in an unmarked packing crate. The antiquities collection of Lorenzo de' Medici inspired his early work Battle of the Centaurs and Lapiths and he completed the Palazzo Farnese. In Rome, he designed uniforms for the Vatican guards and worked on the reconstruction of St. Peter's for a while. The face of St. Bartholomew in The Last Judgement is his and he also created a famous series of Pietas. FTP, name this artist who painted the ceiling of the Sistine Chapel.

Michaelangelo Buonarroti

9. He was arrested in 1951 for dressing as a priest and fraudulently soliciting funds for lepers in Miami Beach. A shell-passer in several World War II battles and married to a stripper, he joked about Hitler in show business and stewardesses throwing babies from airplanes, as well as Catholics, homosexuals and the Ku Klux Klan. Norman Mailer and James Jones defended him after his obscene material got him was arrested in 1964, but he was dead of a drug overdose two years later. FTP, name this filthy comic whom REM claimed was not afraid.

Lenny Bruce or Leonard Alfred Schneider

10. Their viciousness during the Inquisition got them called "hunting dogs of God," a Latin pun. One of them, Riccoldo di Monte Croce, wrote a refutation of the Koran in 1320, one of the only medieval works based directly on Arabic

sources. Created by Innocent III, they practiced strict poverty and included women from the start, rejecting the title abbeys for convents. They were given special authority to start up crusades against Muslims, Livonians heretics and their ranks included Albertus Magnus. FTP, name this order whose namesake founding saint sent them out to spread the Gospel.

Dominicans or Order of the Friars Preachers

11. One third of it is composed of glycine and much of the rest is proline and hydroxyproline. It is a triple chain 1400 amino acids long and wound into a helix. Its synthesis requires vitamin C for oxygen addition, so new amounts of it can't formed in cases of scurvy. Teeth and bones form by mineralizing it. It forms strings that strengthen tendons and sheets to support skin and organs and it breaks down when cooked to form gelatin. FTP, name the most abundant protein in mammals, which makes up about 1/4 of your body weight.

Collagen

12. It appeared on Boy Scout merit badges until the Thirties and voters in Nepal draw it beside favored candidates' names. Estonia, Finland, Latvia, India and the secessionist Republic of Tule in Panama all formerly used it on their flags. Also known as the hakenkreuz, an Irish version called Brigit's cross wards off evil and it is well-known as a Buddhist symbol. FTP, name this symbol originally put it to its most famous use by a dentist from Starnberg, a fact which Hitler admitted in Mein Kampf.

Swastika

13. An individual's karma will be revealed before his eyes just before passing and this collection holds advice, mostly gathered by the Nyingma school, on knowing the end is coming and controlling the process. It reveals that one of six worlds awaits: that of gods, demi-gods, men, evil ghosts, animals or demons. Life will be entirely new, but station determined by past actions. Survivors may perform rites to ease the sufferings of those trapped with devils in such places as Avici, the "hell without respite." FTP, name these Himalayan volumes of sutras and tantras that serve as guides to the afterlife.

Tibetan Books of the Dead

14. It is the only U.S. state to which cactus is not native, as well as the only one that produces coffee. Salt Lake is its major body of freshwater and it contains the world's biggest dormant volcano. Waimea canyon has walls 2900 feet high and Mount Waialeale is Earth's rainiest spot. Measured from a submarine base, it includes the world's tallest mountain, Mauna Kea and most of its 132 components are uninhabited, but Oahu and seven others are populated. FTP, name the world's longest island chain, a state with capital at Honolulu.

Hawaii

15. His amazement at the Chateau, the town's new picture palace, leads him to exclaim, "You got to go some to beat this dump!" He has "zip and zowie" and is

proud of his wife Myra's cocktail party and his own election to vice-presidency of the Booster Club, but all crumbles when his best friend, Riesling, commits murder. Life doesn't seem worth living until he flirts with Mrs. Tanis Judique for a while and comes away a changed man, even if he does return to the conservative life of a Zenith businessman. FTP, name this titular real estate broker in a Sinclair Lewis novel.

George Babbitt

16. Mercury has one and Mars doesn't, but the Moon possessed one billions of years ago. Earth's appeared 780,000 years ago and has been decreasing in strength since 1830. Its current orientation is referred to as normal and it extends 37,000 miles into space. Its lines are perpendicular to the surface at poles and parallel at the equator. No ore in the interior makes it because heat is too great below 20 miles. Instead, it comes from electrons moving in molten iron of the core, stirred up by Earth's rotation. FTP, name this property that exists because our planet is a huge self-exciting dynamo.

Planetary Magnetic Field

17. Said by John Donne to be meant to "perplex the mind of the fair sex," its title is in third person, but all the rest is in first person. It makes fun of the language of courtship, speaking of "wooing on the banks of Ganges...Till the conversion of the Jews" and has "quaint" in "All your quaint honor turn to dust" referring to female pudendum. Elsewhere, it is all carpe diem, as in "It's either me or the worms." FTP, name this Andrew Marvell poem about the seduction of a shy girl.

To His Coy Mistress

18. Said to be able to trace his ancestry to Charlemagne, the Federalist and the Bible were always near him. Assured a place in the Dewey administration if that candidate had won, he ended up negotiating the peace treaty with Japan for Truman. He advocated letting Chiang Kai-Shek invade the Chinese mainland and tried to secure British assistance in bombing Dien Bien Phu. He was successful in organizing SEATO and his policies are the basis for the term "brinkmanship." FTP, name this Secretary of State who wanted to liberate Communist nations, the guiding force behind the Eisenhower Doctrine.

John Foster Dulles

19. Its scene of French prisoners singing the Marseillaise when a French victory is scored is repeated in Casablanca. Von Rauffenstein, played by Erich von Stroheim, shoots down two Frenchmen, who are imprisoned with a wealthy Jew named Rosenthal. Though their treatment is humane, they make many escape attempts and finally make it when the aristocrat Boieldieu sacrifices himself for the other two and Marechal and Rosenthal are helped by a farm woman in going to Switzerland. FTP, name this 1937 Jean Renoir movie.

The Great Illusion or La Grande Illusion

20. In 1999 his ashes were discovered lying on a shelf in Italy's National Central



Library, some 678 years after his death from malaria. His *De vulgari eloquentia* was the first attempt to classify Italy's dialects, with which he was quite familiar after a long exile from Florence. His *La vita nuova* tells of meeting Bice, daughter of Folco Portinari, and loving her until her 1290 death. He is reunited with her in his most famous book when she and Virgil guide him through Hell, Purgatory and Heaven. FTP, name this Italian admirer of Beatrice who wrote *The Divine Comedy*.

Dante Aligheri

21. It was once thought to be similar to the light emitted by dyes exposed to light, but its namesake showed that it lacked gradual decrease in light. A similar effect is gamma rays having enough energy to pass light and make a visible cone. It exists when high-energy radiation passes through transparent material, so it can be seen as a blue glow in the water surrounding the core of a reactor. FTP, name this effect similar to a sonic boom, in which charged particles passing through a medium at a speed greater than that of light produce visible light.

Cherenkov Effect or Radiation

22. Newton made money from it by getting out at the top. It actually existed until 1853, but the estates of the directors were confiscated by Parliament much earlier. Robert Walpole's government survived it, but the Chancellor of the Exchequer was expelled. It was founded to trade slaves in Spanish America, but its business languished until George I became governor in 1718. Its stock price skyrocketed from 128 ½ to 1000 in seven months when it proposed to assume the national debt at 6% interest, but its collapse left many destitute. FTP, name this speculative scheme of 1720.

South Sea Company or Bubble

23. He opposed the idea of progress and said no advance could assist in the making of decisions, which is man's only way to fend off the horror of uncertainty. He said God places us in paradoxical situations to test our faith, putting us in a constant state of dread like the one described in *Fear and Trembling*. If all that sounds dismal, it may explain why he felt he was too downbeat to marry the girl he loved in his youth and spent his life opposing Hegel from Copenhagen. FTP, name this "melancholy Dane" who wrote *Sickness Unto Death* and *Either-Or*.

Soren Kierkegaard

24. Told through a series of letters, the title character loves a handsome nobleman and refuses to marry the elderly Mr. Solmes to improve her finances. When her parents imprison her and attempt to force the marriage, she flees with Robert Lovelace. He drugs and rapes her because her family has insulted him and he hates her moral superiority. He offers to marry her, but she dies of a broken heart and her beloved is killed in a duel with her cousin. FTP, name this 1747 Samuel Richardson work about Miss Harlowe, subtitled *the History of a Young Lady*.

Clarissa

### Bonus Questions

1. Name these American industrialists of the 19<sup>th</sup> century FTPE.

He ran the only newspaper in Texas during its War of Independence. He surveyed land for Galveston, but made his fortune selling milk to the Union army.

Gail Borden

British involvement in the Crimean War made him successful when business at his London factory boomed. He had earlier given a gun to the president and staged a shooting display at his brother's trial for an ax murder.

Samuel Colt

This Scot made a fortune in oil, railroads and steel. His The Gospel of Wealth says rich men should use their money for public good, which he did.

Andrew Carnegie

2. Answer these questions about a Shakespearean play FTPE.

Several characters have names ending in "volio," Italian for will and Elizabethan slang for sex. Taking place at Duke Orsino's Illyrian court, its sexual confusion leads to its subtitle, What you will, meaning "Whatever turns you on."

Twelfth Night

This shipwrecked girl in Twelfth Night seeks service with the duke. Dressed as the page Cesario, her plans go awry when Olivia falls for her.

Viola

Olivia's uncle, he freeloads off everyone. He plots against Malvolio and spends much time carousing with Sir Andrew Aguecheek, making his surname appropriate.

Sir Toby Belch

3. Answer these questions about Euclid's Elements FTPE.

Although Theorem II.14 showed all rectilinear figures can be squared with a ruler and compass, it wasn't until 1882 that this figure was proved impossible to square.

Circle

Postulate 5 is better known by this name and mathematicians struggled with it until non-Euclidean geometry was created. It says only one line passes through a point without touching a second line.

Parallel Postulate or Parallel Axiom

Named for the difficulty beginners had with it, this proposition states the angles at the base of an isosceles triangle are equal to each other.

Asses' Bridge or Pons Asinorum

4. Answer these questions about a composer, 5-10-15.

5-In 1973 he wrote Halil to commemorate an Israeli flutist who died in the Yom Kippur War. He is better known for other Jew-themed works, including Jeremiah and Kaddish.

Leonard Bernstein

10-Bernstein collaborated with Stephen Sondheim and Jerome Robbins on this 1957 musical about fighting and love between the Jets and Sharks.

West Side Story

15-While still at Harvard, Bernstein performed in this Marc Blitstein work. Dealing with a steel strike, it's famous for a 1999 Tim Robbins movie about an Orson Welles production of it.

The Cradle Will Rock

5. 30-20-10, name the military leader.

30-Known to Iranians as "the Accursed," he's regarded as a saint by the Ethiopian church and Israelites placed him in the house of David as an ancestor of the Messiah.

20-Believing himself and his companion, Hephaestion, to be reincarnations of Achilles and Patroklos, he paid tribute at their tombs near the ancient site of Troy.

10-After communing with the ghost of Cyrus the Great, he gave a funeral for the Persian queen so fine that Darius offered to make him heir to the throne.

Alexander the Great

6. Answer these questions about African architecture FTPE.

The citadel of southern African kings from the 11th to 15th centuries, its huge stone walls are decorated with coursing. The monarchs buried there are accompanied by much of the gold on which their kingdom grew rich.

Great Zimbabwe

The cities of this people held palaces called afin near marketplaces to serve as obas' residences. They featured large courtyards overlooked by verandahs called kobi.

Yoruba

These structures are cattle enclosures surrounded by homes and are common among the Zulus. The word can also refer to the polygynous lifestyle of such villages, in which each wife has a separate hut.

Kraal

7. Answer these questions about an American author FTPE.

Coiner of the word "risky," Franz Schubert called for this man's novels on his deathbed. He wrote The Spy and The Last of the Mohicans.

James Fenimore Cooper

This old chief's son, Uncas, is the last of the Mohicans in The Last of the Mohicans. He helps Natty Bumppo get two girls past the Hurons to their father at Fort William Henry, but dies in The Pioneers.

Chingachgook

This third book of The Leatherstocking Tales has Bumppo as an old man. He leads a wagon train into the wilderness, fights the Sioux and dies content.

The Prairie

8. 5-10-15, answer these questions about a Greek myth.

5-This daughter of Zeus was carried off by Hades, but eventually allowed to live outside the underworld for two-thirds of the year.

Persephone

10-This mother of Persephone abandoned the world's plants to look for her daughter. She was celebrated in the Eleusinian mysteries.

Demeter

15-Demeter was extremely distraught when she met this Athenian girl, who cheered up the goddess by shaving her pubic hair, exposing herself and getting Demeter drunk.

Baubo

9. Answer the following questions about United States counties for 5 points each and an additional five for all correct.

It is America's most populous county and includes dozens of cities in the San Fernando Valley, as well as Santa Catalina and San Clemente Islands.

Los Angeles County

This large southern state's Loving County is the least populated in the lower forty-eight states.

Texas

This urban county, with a per-capita income of \$68,686 in 1997, is America's wealthiest by income.

New York

In the late '90's, Douglas county in this western state saw its population triple, making it the fastest growing in America.

Colorado

This Florida county has the oldest average age. It was the scene of voting irregularities in 2000.

Dade County

10. Identify these related geological features FTPE.

These are bends in rock strata arising from plastic deformation of horizontal layers. They are usually seen in sedimentary rocks.

Folds

This type of fold is convex and arch-like. It doesn't necessarily lead to creation of a valley.

Syncline

This type of fold occurs when prolonged pressure makes asymmetrical folds take large angles or become nearly horizontal.

Overtured Fold

11. People study classics because human nature never changes and the following question proves it. FTPE, name these animals from Aesop's fables. This pain in the butt wouldn't let a tired ox eat his hay, leading the ox to say, "People often grudge others what cannot enjoy themselves."

Dog in the Manger

He grew sick and lay down to rest. All his friends came by to ask how he was



and took a bit of food, so he ended up starving. "The wrong companions always do more harm than good."

#### Stag

This animal had an odd desire for some grapes, but could not reach them no matter how hard he tried. He cursed them, saying they must be sour and not worth his time. "People hate what they can't have."

#### Fox

12. 5-10-15, name these heavyweight champions from descriptions.

5-Asked what he thought of Africa after a bout with George Foreman in Zaire, he said, "Thank god my granddaddy got on that boat." He won the 1960 gold medal and held the title on and off from 1964 to 1979.

#### Muhammad Ali or Cassius Clay

10-A hard drinker while fighting, he later became a prohibition advocate and lecturer. Holding the title from 1882 to 1892, he was both the last bare knuckle fighter to be champion and one of the last white guys who could box.

#### John Sullivan

15-The first man to regain the heavyweight title, he was champ most of the time between 1956 and 1962, until Sonny Liston took him out.

#### Floyd Patterson

13. 5-10-15, name these Van Gogh works from descriptions.

5-A weird, black bush reaches for the sky in this depiction of evening over a French town or maybe an alien invasion.

#### Starry Night

10-Van Gogh did almost a dozen versions, but the most famous is the one made in Arles and now in Japan showing slightly wilted ones in a vase.

#### Sunflowers

15-Sold for \$83 million, it still holds the record for priciest painting. Digitalis used in Van Gogh's treatment is on the table, but his physician seems awfully fed up with the nutcase doing his picture.

#### Portrait of Dr. Gachet

14. Answer these questions about Russian steppe barbarians FTPE.

In 1949 the Soviet Academy of Sciences banned study of this and declared Russian Mongols to be descended from Bulgars. It is named for its glittering tents.

#### The Golden Horde

This founder of the Golden Horde led his cavalry into Russia in 1237 and began collecting tribute soon after.

#### Batu Khan

This czar took the Golden Horde capital, Kazan, in 1552. The water supply having been cut off, the Tartars burst out shouting, "We'll drink the last cup of water with you."

#### Ivan IV or Ivan the Terrible

15. The only known biologically active compound containing cobalt, deficiency causes pernicious anemia.

B12 or Cyanocobalamin

Deficiency usually causes rickets, but pregnant women without it suffer from osteomalacia. Its precursor is a sterol which opens in ultraviolet light.

D

One form is in green leaves, while the other is produced by E. coli. It is given to pregnant women so infants will have enough prothrombin to stop hemorrhaging.

K

16. 30-20-10-5, name the author from works.

30-Unfashionable Observations, Daybreak

20-The Antichrist, The Gay Science

10-The Will to Power, The Birth of Tragedy

5-Thus Spoke Zarathustra

Friedrich Nietzsche

17. 30-20-10, name the man.

30-The world's first mass-produced coins were made by him, but he was so sickly as a child that he never went to school and was thought mentally retarded.

20-He made a living building mathematical instruments and befriended Joseph Black, who developed the concept of latent heat.

10-His great invention was inspired when he saw a kettle's lid rattling and realized Newcomen's machine let heat escape after water's state changed.

James Watt

18. 5-10-15, answer these questions about a Chinese dynasty.

5-The long braid its subjects wore symbolized the tail of the horse, whose speed and endurance made it possible. Founded by Jurchens in 1644, its name means pure.

Qing or Ching

10-Although the Qing capital was soon established at Beijing, Nurhachi chose this Liaoning city as first capital. It also saw a great Russo-Japanese war battle.

Mukden or Shenyang

15-This venereal disease-ridden, bisexual Qing emperor died at 19 from smallpox he contracted in a whorehouse. He refused to rebuild the Summer Palace and received the American ambassador without a kowtow.

Tong Zhi

19. Answer these questions about the Freudian unconscious FTPE.

This is the source of a person's sexual or aggressive energy. It works for its own ends without regard for morals or social norms.

Id

The id works under this notion. It leads to attempts at immediate gratification by satisfying impulses.

Pleasure Principle

This grows from the id and seeks to realistically satisfy needs. It knows what is safe and possible and curbs desires.

Ego

20. 10 points each, name the following greenhouse gases. You get 5 points if you need the formulas.

10-It makes up most of natural gas and is the principle greenhouse gas after carbon dioxide. It traps heat as well as affecting ozone and water vapor levels.

5-CH<sub>4</sub>

Methane

10-Lots of it is created by fertilizers and other agricultural practices. It is only destroyed by photolysis in the stratosphere, so it lasts a long time.

5-N<sub>2</sub>O

Nitrous Oxide

10-Easily the most potent greenhouse gas, it stays in air for 3,200 years and has a global warming potential rating of 23,900, compared to methane's 21.

5-SF<sub>6</sub>

Sulfur Hexafluoride

21. 5-10-15, answer these questions about Alice in Wonderland.

5-This sequel has Alice jumping through a mirror over the mantle to play chess with the Red Queen and chat with Humpty Dumpty.

Through the Looking Glass

10-Lewis Carroll is represented in the book by this pedantic animal who declared everyone a winner in the race. His name arose from Carroll's stuttering.

Dodo

15-This Chinese author of Imperfect Paradise rewrote Alice in Wonderland as Alice in China. He wrote no fiction from 1949 to his 1988 death, but is still enormously popular.

Shen Cong Wen

22. Answer these questions about Indian philosophy FTPE.

This can be called the philosophy of Hinduism as its many schools attempt to prescribe proper Hindu conduct. Vivekananda introduced it the West.

Vedanta

This word refers to the greatest divine reality, a God that pervades the whole universe and is greater than any other being.

Brahman

These books were written almost three thousand years ago and are appended to the Vedas. They speculate on the relationship of individual souls to Brahman.

Upanishads

23. 5-10-15, answer these questions about a figure from American history.

5-Celebrated in the writings of Hugo, Emerson and Whitman, he studied for the ministry and memorized the Bible as a child. He led the raid on Harper's Ferry.

John Brown

10-Less than two weeks after John Brown's defense against attack on this Kansas location, a drama about his exploits appeared on Broadway.

Ossawatimie

15-This respected group of northern philanthropists included several clergymen. They gave Brown money and encouragement.

The Secret Six

24. 5-10-15, identify these French waterways.

5-This river enters the Atlantic at Nantes and connects Paris to other cities by canals.

Seine

10-This longest river of France enters the Atlantic at Nantes.

Loire

15-This canal connects the Bay of Biscay to the Mediterranean.

Languedoc Canal