New Trier Scobol Solo 2010
Round 5
Questions written and edited by David Reinstein
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1. The servants of this goddess, who moved so slowly that they always appeared to be still, are Ganglati and Ganglot. This goddess used a knife called Famine and a plate called Hunger, and she was the youngest offspring of Angrboda (AHN-gur-BOH-dah) and Loki (LOH-kee) after Fenrir and Jörmungandr (YOR-mun-gahn-dur). After Odin kicked this goddess out of Asgard, she built her house Eljudnir in Niflheim (NIH-ful-haim). Because Thökk did not cry, this woman kept possession of Balder after he died. The name of this goddess is also the name of her location, which is where people went who died of disease or old age. Name this goddess whose name is still associated with a bad place to go after death.
ANSWER: **Hel**a

2. An exotic energy form of this process is used to manufacture ceramic powders, and it is the easiest method for vitrifying water. It is also the preferred means of creating high-purity chalcogenide (KAL-kuh-juh-nid) glass, and synthetic diamonds can be made by the chemical-vapor type of this process. More common examples of this process include the formation of snow in clouds and frost on windows. The reverse of sublimation, identify this process in which a gas changes directly into a solid without first becoming a liquid.
ANSWER: **deposition**

3. This agreement set up a commission to identify what was meant by the Saint Croix River, deciding that a previous agreement should have named the Schoodiac River. An article added to this agreement opposed its limit on trade in the West Indies. After a leak by Senator Stevens Mason, this treaty became unpopular, and the House threatened not to fund it, but it passed by a single Senate vote. Debts were sent to arbitration, the United States agreed to limit cotton exports, and Britain agreed to withdraw from the Northwest Territories. Name this treaty whose namesake, who was burned in effigy throughout the United States, was the first Supreme Court Chief Justice.
ANSWER: **Jay**'s Treaty [or Treaty of **Amity, Commerce, and Navigation**]

4. One novel by this author begins with a schoolmaster wondering what to do with his piano when he moves. That schoolmaster, Mr. Phillotson, eventually marries a woman who gives birth to the children of his former student; that wife is Sue Bridehead. In another novel by this author, there is a problem with the marriage certificate for Thomasin Yeobright and Damon Wildeve. This author also wrote about Richard Newson, who purchases Susan and Elizabeth-Jane Henchard. He also wrote about a woman, the mother of Sorrow and wife of Angel, born with the last name Durbeyfield. Name this author of *Jude the Obscure*, *The Return of the Native*, *The Mayor of Casterbridge*, and *Tess of the d'Urbervilles*.
ANSWER: Thomas **Hardy**

5. The Cayley-Hamilton theorem applies to these entities when they are part of an abelian (uh-BEE-lee-un) group, stating that each one satisfies its own characteristic equation. That characteristic equation is used to find scalars which multiply certain vectors to give the same result as multiplying by these entities; those scalars are called eigenvalues. Transition ones of these entities are used in Markov chains, and Gauss-Jordan elimination can be applied to these structures to convert them into reduced row-echelon form. An adjoint of one of these equals its inverse times its determinant. Name these mathematical structures that usually consist of rectangular arrays of numbers.
ANSWER: square **matrices** [or **matrix**; accept **linear transformation**s before they are mentioned; prompt on **transformation**s]

6. This leader's brother, who was killed at the Battle of Pampremis by Inaros, put down rebellions in Egypt. This King was assassinated after twenty years in power, and historians argue about whether the murder was plotted by his sons and committed by Artabanus. His name is carved into the entrances of The Gate of All Nations in Persepolis, which he continued to develop upon work started by his grandfather Cyrus the Great and his father Darius the First. Name this Persian who fought the Greeks at the Battles of Salamis and Thermopylae.
ANSWER: **Xerxes I** [prompt on partial answer; prompt on **Xerxes** of Persia; accept **Xerxes** the **Great**]

7. One of this author's novels features Sorrow, who comes ashore during a shipwreck, and is set largely on Jacob Vaark's farm. Another novel by this author is set in the Bottom in Ohio and is about Nel Wright and the Peace family. Another novel by this author is set at 124 Bluestone Road, where a mother lives with her daughter Denver after her sons Howard and Buglar ran away. That novel, featuring Sethe, is named after Sethe's dead daughter. Name this author of *A Mercy*, *Sula*, and *Beloved*.
ANSWER: Toni **Morrison** [or Chloe Ardelia **Wofford**]

8. One work by this artist shows a nude woman that has just had a curtain taken off of her, with one foot on the Earth and holding the rays of the Sun. In addition to *Truth Unveiled by Time*, this artist designed a fountain with a base of four dolphins, with the title figure blowing the water through a conch shell, the *Triton Fountain*. One work by this sculptor shows an angel with a spear standing over a nun in pain, and another work shows a Biblical figure partially robed with a snake by his feet who is starting to use his slingshot. Name this sculptor of *Ecstasy of Saint Teresa* who, like Verrocchio, Donatello, and Michelangelo, created a work called *David*.
ANSWER: Gian Lorenzo **Bernini** [or Giovanni Lorenzo **Bernini**]

9. Caves found within this mountain range include Blanchard Springs, Crystal Dome, and Mystic Caverns. Located north of the Ouachita Mountains, which Mount Magazine is generally considered part of, this range features the tourist attraction of Peel's Ferry, which crosses Bull Shoals Lake. Its regions include Boston Mountains, Springfield Plateau, Salem Plateau, and the Saint Francois Mountains. Its highest peak is often listed as Turner Ward Knob, and part of this range is in Mark Twain National Forest. A small part of this range is in Kansas, and the southwestern part is in Oklahoma. Name this mountain range located primarily in Missouri and Arkansas.
ANSWER: **Ozark** range [or **Ozark**s; or **Ozark** plateau]

10. The artist of this painting claimed its challenge was to show the "extraordinary conquest of a life which most people would consider hopeless." The only person in this painting, a woman in its bottom half, is wearing a pink dress with a black belt. The top half of this painting shows where the woman lived, a group of farmhouses known as the Olson House. The woman, who suffered from polio, is crawling towards her house with her back to this painting. Name this work set in Cushing, Maine that was completed in 1948 by Andrew Wyeth.
ANSWER: *Christina's World*

11. J. Michael Bishop and Harold Varmus first identified these genes in chicken retroviruses; the first to be isolated is called *src* ("S R C"). "Anti-" examples of these include BRCA1 and p53, while normal forms of them often code for kinase enzymes involved in the signal transduction pathways of the cell cycle. They are grouped in families like *myc* (MIHK), *mas* ("mass"), and *ras* (RAAS), the latter being active in twenty-five percent of human carcinomas. Arising from amplification or mutations in their *proto-* forms, identify these genes that transform normal cells into tumor cells.
ANSWER: **oncogene**s [prompt on **cancer gene**; do not accept "proto-oncogene"]

12. This poet described death as the "goal of life" and "the only hope" in the poem "The Death of the Poor", and he also wrote "The Death of Lovers" and "The Death of Artists". This writer believed that our minds are occupied by "Folly, error, sin, and avarice." He also repeatedly begs "take pity on my long misery" in his "The Litany of Satan". A collection of fifty-one of his prose poems, including "The Foreigner", was published posthumously under the title *The Spleen of Paris*. Identify this poet whose best known collection was *The Flowers of Evil*, or *Les Fleurs du mal*.
ANSWER: Charles Pierre **Baudelaire**

13. This conflict included the defeat and beheading of Henry Beaufort by John Neville at the Battle of Hexham. Some historians claim it ended when supporters of the pretender Lambert Simnel were defeated at the Battle of Stoke Field, while others claim it ended when Thomas Stanley crowned his stepson at the Battle of Bosworth Field. Stanley's stepson became Henry VII, replacing Richard III, who had died in battle. This conflict spanned about thirty years in the fifteenth century and was between the Houses of Lancaster and York. Name this conflict that ended with the creation of the House of Tudor, named because of the red and white insignias used by the opposing sides.
ANSWER: War(s) of the **Roses**

14. This phenomenon occurs in certain circuits when the parallel admittance is minimized, or when omega times inductance is the reciprocal of omega times capacitance. This phenomenon is used to keep time using quartz clocks, and its nameaske frequency for a spring with spring constant k attached to a mass m is root k over m. A famous example of this phenomenon destroyed the first Tacoma Narrows Bridge; it is caused when a driving force matches an oscillating body's frequency, such as in a playground swing. Name this phenomenon that occurs when an object vibrates at its natural frequency, a term which provides the "R" in the medical abbreviation MRI.
ANSWER: **resonance** [accept word forms; accept additional information like "vibration"; prompt on **standing wave**s; do not prompt on "waves"]

15. This person was once asked whether he had heard about a course being taught by Kenneth Arrow, John Rawls, and some unknown guy by somebody who did not realize that this person was the other teacher. This writer was concerned with evaluating a person's ability to achieve various functions, which he called the human capabilities approach. He asked the questions "Why Equality?" and "What Equality?" in his work *Inequality Re-examined*. Arrow and Rawls helped him organize his work on social choice theory titled *Collective Choice and Social Welfare*. In 1998, this person was awarded a Nobel Prize for his contributions to welfare economics. Name this economist who also wrote the book *Development as Freedom* and the essay collection *The Argumentative Indian*.
ANSWER: Amartya **Sen**

16. One work by this composer, whose last three sections are about the pleasures of vengeance, power, and love, and which in its entirety was based on a sixth century Arab warrior, is *Antar*. An overture by this composer is based on obikhod themes such as "Let God Arise" and "Christ is arisen". Another piece this composer completed in 1888 is a symphonic suite that contains a bass theme representing the sultan. Those pieces are the *Russian Easter Festival Overture* and *Scheherazade*. Name this composer who also wrote the opera *The Tale of Tsar Saltan*, which contains the interlude *Flight of the Bumblebee*.
ANSWER: Nikolai **Rimsky-Korsakov**

17. When this function is applied to the natural logarithm of the golden mean it returns one half. The derivative of this function's inverse is the reciprocal of the square root of the quantity x squared plus one, and any solution with initial condition y equals zero to the differential equation of y double-prime equals y must be a multiple of this function. For small values of x, this function can be approximated by x plus x cubed over six. This function itself is given by the formula one half times the quantity e to the x, minus e to the negative x. Name this function that, when it is inputted half of the area confined by the x-axis, the right half of the curve x squared minus y squared equals one, and a segment connecting the origin to that curve, returns the y-coordinate of the point of intersection.
ANSWER: **hyperbolic sine** function [do not accept or prompt on a partial answer; accept **sinh**; accept **sinch**; accept **shine**]

18. An unsuccessful assassination attempt against this leader was led by Otto Skorzeny and was called the Seventh anti-Partisan Offensive, and he later told Stalin to, "stop sending people to kill me". The MASPOK movement challenged this leader to allow citizens to take pride in their republic, leading him to arrest some protesters but also giving ground with a new constitution passed in 1974. The first Secretary-General of the Non-Aligned Movement, he was a Communist who kept his country independent from Russia throughout his thirty-seven years in power. His country consisted of six socialist republics that are no longer unified and two autonomous provinces, including Kosovo. Name this Prime Minister and President of Yugoslavia until his death in 1980.
ANSWER: Marshall Josip **Broz**ovich **Tito** [accept either or both parts]

19. Search ones of these facilitate range queries, while ones used in database engines have a very high fan-out of around 200. One type of them can achieve amortized $O(\log n)$ ["big O of log n"] lookup; that is the self-balancing search variety, while classical examples of these structures are typically binary. For arbitrary graphs, Prim's Algorithm finds the minimum spanning one of these structures. Any connected graph with a unique path between any two vertices is this type of graph. Name this type of recursive data structure in which the number of edges is one less than the number of vertices, because they have no cycles.
ANSWER: **tree**s

20. One work by this writer features the beheading of Governor Georgi Abashvili before focusing on a dispute between Natella and Grusha over the child Michael. In another work by this playwright, a woman predicts that one of her three children will die from bravery, one from honesty, and the other from kindness; that work is set during the Thirty Years' War. In a musical work by this writer, Peachum becomes upset that his daughter Polly is with Macheath. That work contains "The Ballad of Mack the Knife" and was written in collaboration with Kurt Weill (vayl). Name this author of *The Caucasian Chalk Circle*, *Mother Courage and Her Children*, and *The Threepenny Opera*.
ANSWER: Bertolt **Brecht**

Read the tiebreaker questions only if there is a tie after the above 20 questions. The first correct answer wins the match.

TB 1. This philosopher stated that ontological anxiety was the key to authenticity in *Our Existential Predicament*. He also examined the way that creativity can impact the understanding of society in his article "The Origin of the Work of Art". This writer is associated with a term he defined as "that entity which in its Being has this very Being as an issue." That term, which is translated as "awareness", "existence", or "being there", is Dasein. This writer's most famous work is *Being and Time*. Name this German philosopher who was criticized for his involvement with the Nazi Party.
ANSWER: Martin **Heidegger**

TB 2. Upon turning fifty, this person wrote, "I go to school to youth to learn the future." In one work by this writer, Mary tells her husband Warren to be kind to a bank director's brother she finds asleep against their barn-door. In another work, this poet imagines climbing a certain kind of tree until it dips its top and sets him down again. In one poem he is tired because "there were ten thousand thousand fruit to touch," while in another he favors fire as the way the world will end. In another work, this poet wants to point out to his neighbor that they do not have cows, making an annual ritual unnecessary, but his neighbor says, "Good fences make good neighbours." Identify this poet of "The Death of the Hired Man", "Birches", "After Apple-Picking", "Mending Wall", and "The Road Not Taken".
ANSWER: Robert **Frost**

TB 3. Name the mode of transportation that…was needed by the king in Shakespeare's *Richard III*; was used by cavalry soldiers; and was ridden into battle by knights both in and at Medieval Times.
ANSWER: **horse**s