## Scobol Solo 2022 <br> Championship I (Phase I: Questions 1-20)

1. This statement contradicts the forcing axioms but is supported by the inner-model axiom. This statement and the axiom of choice were proven to be logically independent of the Zermelo-Fraenkel axioms by Paul Cohen and Kurt Gödel ["girdle"]. Proving or disproving this statement was Hilbert's first problem. This statement is equivalent to saying 2 raised to the aleph-null power equals aleph-1. This statement is sometimes stated as "any uncountable set is in one-to-one correspondence to the reals". Name this statement that no set can have cardinality larger than the integers but less than the real numbers.

Answer: continuum hypothesis [prompt on CH]
2. On the Minnesota Multi•phasic Personality Inventory, this trait is equated with positive emotionality. Hans Eysenck ["EYE-sank"] measured the amount of this trait alongside neurotic•ism and psychotic•ism, and he said that people with this personality trait seek to increase their arousal. One way that Carl Jung [yoong] defined this trait was to live in a way that "corresponds directly with objective conditions and their claims". Jung contrasted people who have this trait with people who are more subjective because they turn inwards. Name this trait that is represented by an 'E' on a Myers-Briggs Type Indicator and which is possessed by outwardly social people.
Answer: extraversion [accept extravert(s) or extroversion or extrovert(s)]
3. According to a dissent, "This case is decided upon an economic theory which a large part of the country does not entertain." That dissent to this case was written by Oliver Wendell Holmes, while in the majority opinion, Rufus Peckham wrote "Liberty of contract relating to labor includes both parties to it." This decision was a reaction to a law that limited certain workers to 10 hours per day and 60 hours per week. This Supreme Court case invalidated that law setting maximum working hours for bakers in New York. Name this 1905 decision that became the namesake of an era during which the Supreme Court often struck down state economic regulations based on a creative interpretation of the 14th amendment.

Answer: Lochner v. New York [accept parties in either order; prompt on New York]
4. In this story collection, David Hardy's mother was blamed for not living happily together with her husband, but she is delighted when David is found after being lost. In this collection, David goes to live with his grandfather, a religious farmer named Jesse Bentley. Elizabeth, who is the mother of the protagonist of this story collection, is often sick and eventually marries Doctor Reefy. During the last part of this story collection, George Willard takes a train out of the title town. Name this short story cycle set in the Midwest and written by Sherwood Anderson.
Answer: Winesburg, Ohio
5. A set of five portraits by this painter, starting with St. Nicholas of Bari and centered with Mary with Baby Jesus, was made for the Badia Fiorentina [BAH-dee-ah fyor-en-TEE-nah] in Florence. This painter made one of the earliest Western depictions of a kiss in a depiction of Joachim and Anne, who are Mary's parents, Meeting at the Golden Gate. That work is part of a cycle by this painter showing the life of Mary, which is in a chapel where this painter also depicted the life of Jesus. According to legend, the Renaissance began when this painter's mentor Cimabue [chee-mah-BOO-ay] tried to swat a fly that this person had painted. Name this artist who painted Padua's Scrovegni [skroh-VAYN-yee] Chapel.
Answer: Giotto (di Bondone) [JAWT-toh] [accept Giottus; prompt on Bondone]

## Check the score.

6. A rule used to quantify this effect multiplies the number of nearby electrons by 0.35 , while the number 0.85 is multiplied by the number of another set of electrons. This effect is used to explain why electron affinity increases as you move right on the periodic table. This effect can be roughly expressed using the expression " $Z$ minus sigma", where $Z$ is the number of protons and sigma is the number of inner electrons. This effect consists of a reduction of the effective nuclear charge on the electron cloud. Name this effect caused by the repulsion of inner electrons, though its name implies that it is caused by the electrons getting in the way.
Answer: (atomic or electron) shielding effect [accept electric-field screening; prompt on orbital penetration effect or Slater's rules or effective nuclear charge]
7. This dynasty ended when King Nan had the Nine Tripod Cauldrons taken from him. After a king of this dynasty made a rule that he could kill anybody who criticized him, this dynasty had an interregnum called the Gong He Regency following the Compatriots Rebellion. This dynasty was the first one that justified itself using the Mandate of Heaven. The Spring and Autumn period and the Warring States period, which was when Confucius lived, took place late in this dynasty. Name this ancient dynasty that ruled much of China between the Shang and Qin [chin] dynasties.
Answer: Zhou [joh] dynasty [or Zhou Cháo or Chou Cháo]
8. This justice wrote the 2020 Hernandez v. Mesa decision that decided a U.S. agent cannot be sued for a cross-border shooting that kills a person in Mexico. In September, this justice claimed "Saying or implying that the court is becoming an illegitimate institution or questioning our integrity crosses an important line." Earlier this year, this justice stated that earlier decisions "have enflamed debate and deepened division". The two decisions this person referred to were Casey and Roe. Name this justice who wrote the Dobbs v. Jackson Women's Health Organization decision.
Answer: Samuel (Anthony) Alito (Jr.)
9. This poem refers to Gérard de Nerval's The Chimeras [kie-MEER-uhz] both in its epigraph and by invoking the name Melusina [may-loo-SEE-nah]. The narrator of this poem respects a goddess by saying "You take on the likeness of a tree, a cloud, you are all birds and now you are a star." This poem also shows reverence towards "the calm course of a star." This poem refers to a river that "advances and retreats, goes roundabout, arriving forever." Those words are at both the beginning and end of this poem. Name this poem that is 584 lines long to reflect the path of Venus, is cyclical to reflect the Aztec calendar, and which was written by Octavio Paz.
Answer: "Sunstone" [or "Piedra de Sol"]
10. Barbara McClintock observed that the repair of these regions was suppressed in gamet•o•phytes [guh-MEET-oh-"fights"] but does occur in embryos. Elizabeth Blackburn, Carol Greider, and Jack Szostak shared a 2009 Nobel Prize for their study of these regions and the enzyme associated with them. The Hayflick limit gives a minimum size of these regions before cells stop dividing. The repetitiveness in these regions seems to have solved the end replication problem. These regions get smaller as people age. Name these regions of repetitive nucleotide sequences at the ends of chromosomes.

Answer: telomeres [TELL-oh-meerz]

## Check the score.

11. This person wrote the music for Daniel Pritzker's movie Bolden. After a start with drums, tambourine, and maracas, this trumpeter enters with two saxophonists in his song "Jig's Jig". That song follows "Levee Low Moan" on volume 3 of this musician's Soul Gestures in Southern Blue. Several of this composer's albums are titled Standard Time. This person and Eric Clapton are the lead performers on Play the Blues: Live from Jazz at Lincoln Center. This person won a Pulitzer Prize for the jazz oratorio Blood on the Fields. Name this contemporary trumpeter who often works for the Lincoln Center.
Answer: Wynton (Learson) Marsalis
12. This body of water is an inlet of an ocean, and the Minas ["minus"] Basin is an inlet within it. The north end of this body of water is near Hopewell Cape. The most famous part of this body of water is at Burnt•coat Head. This body of water is near Moncton, and the most populous city on this body of water is Saint John, which is close to where the Reversing Falls enter this body. This body of water is north of the Gulf of Maine. Name this body of water between New Brunswick and Nova Scotia that has the highest tidal range in the world.

Answer: Bay of Fundy
13. The first Golden Age of what is now this country was when Simeon I supported the Preslav Literary School in the 9th century, and its Second Golden Age was during the reign of Kaloyan [kuh-LOH-yun] and Ivan Asen II [ee-VAHN AH-sen "the second"] during the 13th century. During World War II, this country's Fatherland Front put Kimon Georgiev [kee-MOHN GYOR-gyev] in charge, leading to the rule of Georgi [GYORG-ee] Dimitrov, who aligned with the Soviet Union. This country is in what used to be Northern Thrace. In the 8th and 9th centuries, this country was subjugated by Byzantine emperor Basil II. This country aligned with the Axis during most of World War II. Name this eastern Balkan country whose capital is Sofia.
Answer: (Republic of) Bulgaria [accept (Republika) Bulgaria]
14. The circuit symbol for Schmitt triggers includes the curve named for this phenomenon because it uses this phenomenon to produce square waves. Though there are iso thermal and A.R.M. variants of remanence [REM-uh-nenss], it is most commonly caused by taking advantage of this phenomenon. Because of this phenomenon, some graphs of resultant magnetic field versus known external magnetic field are not functions because they are path-dependent, forming a "loop" named for this phenomenon. Name this phenomenon in ferromagnetic materials that consists of lagging magnetization.
Answer: hysteresis
15. One of this author's narrators describes his feeling towards women as "an artificial mixture of childlike curiosity and feigned sexual desire". This author has that narrator try to fall in love with Sonoko but fail because he is gay. Another one of this author's narrators is told that if he enters the Naval Engineering School, they will flog the stuttering out of him in a single day. In that novel by this author, Tsurukawa [soo-roo-kah-wah] commits suicide. The protagonist, Mizoguchi, sets fire to a beautiful building in that novel by this author. Name this author of Confessions of a Mask and The Temple of the Golden Pavilion.

Answer: Yukio Mishima [accept names in either order]

## Check the score.

16. One way to show support for this religious figure is to visit the city of Pawapuri, and some people believe that the tradition of lighting lamps during Diwali started as a way to honor this person. The five great vows named for this person are based on his extreme asceticism [ass-ET-ih-sizm]. This person based his beliefs on the teachings of Parsh•va•natha, and texts attributed to this person are treated with more authenticity by the Svetambara [shweh-TUM-buh-ruh] than by the Digambara [dig-UM-buh-ruh]. This person may have lived at the same time as the Buddha. Name this 24th and last of the present cosmic age Tirthankaras [tir-TUNG-kur-uhs] of Jainism.
Answer: Mahavira [accept Vardhamana; prompt on Tirthankara]
17. This instrument is the lead in Ciranda das sete notas [see-RAHN-dah dahss seh-teh NOH-tahsh] by Heitor Villa-Lobos [ay-TOR vee-lah LOH-bohsh]. This instrument is the lead in John Williams' The Five Sacred Trees, which was written for Judith LeClair. The performer of this instrument is supposed to dress like Elvis Presley for Michael Daugherty's Dead Elvis. This instrument plays an unusually high solo at the beginning of Igor Stravinsky's The Rite of Spring. This instrument plays the theme of the grandfather in Sergei Prokofiev's Peter and the Wolf. There is a "contra" version of this instrument that is the largest common woodwind. Name this double-reed instrument that is larger and lower than the oboe.

Answer: bassoon
18. Though Margaret Burbidge supported the steady-state theory of the universe, her study of these objects supported the Big Bang theory. Maarten Schmidt explained the emission lines from these objects by applying a red-shift, which worked if the brightest example was 2 billion light-years away. These objects are located by searching for what looks like blue stars. The Cloverleaf and Einstein Cross are examples of these things. The halos surrounding these objects were explained in the 1980s by stating that these objects contain supermassive black holes and are active galactic nuclei. Name these very distant, very bright objects.
Answer: quasars
19. One of the main characters in this play states "My salad days, when I was green in judgment: cold in blood, to say as I said then!". Those words are spoken in this play after Alexas promises to find "twenty several messengers" and Charmian says "I sing but after you." One of the main characters in this play is described by the line "Age cannot wither her, nor custom stale her infinite variety", which is spoken by Enobarbus when a man considers marrying Octavia. Name this play by William Shakespeare that ends with one of the title characters committing suicide with an asp after the Battle of Actium.

Answer: (The Tragedy of) Antony and Cleopatra
20. This military leader gave the order that led to Jean-Pierre Firmin Malher's [zhahn pyair feer-maa mal-er'z] successful attack at the Battle of Günzburg. A lack of coordination between this military leader and Joachim Murat is blamed for the escape by Dmitry Neverovsky's troops at the First Battle of Krasnoi [KRASS-nee]. This person promised to bring back his leader alive in an iron cage both before and after working for that leader. This person was eventually executed for treason during the Second White Terror. Name this military leader who, soon after Quatre Bras [kwaht-ruh brah], lost the Battle of Waterloo while leading troops for Napoleon.
Answer: (Marshal) Michel Ney [mee-shell neh](, 1st Duke of Elchingen, 1st Prince of the Moskva) [prompt on Elchingen or Moskva]

## This is the end of the packet.

