

2022 ARCADIA □

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Packet 2: [10e] Connie Eble’s pioneering 20-year study of these people’s slang uses the sentence “The gweebs dissed the granolas on the yard” to illustrate their incomprehensibility and discusses the term “Crunge,” a flu-like illness common among these people. However, Eble did not mention these people’s noted inability to read.

ANSWER: undergraduate students at UNC – Chapel Hill [accept “University” of North Carolina in place of UNC; prompt on undergraduates or students] ([The Eble work is *Slang and Sociability*. None of the slang terms in this part were made up.](#))

Tossups

1. **This procedure, which fails for the 4D manifold E8, is easiest for manifolds with piecewise-linear structure. Every coloring of an instance of this procedure must have one “rainbow” by Sperner’s lemma, which he used to prove Brouwer’s fixed-point theorem. Euler (“OY-lur”) introduced the Catalan numbers to count the number of ways this procedure can be performed. In topology, this procedure constructs a homeomorphism to a simplicial complex. The dual graph of a (*) Voronoi diagram is created in one algorithm for this procedure. Given a discrete set of points, a mesh can be generated using an algorithm for this procedure named for Delaunay. For a convex polygon, this procedure can be done by picking a point and drawing line segments to all other points. For 10 points, name this process of dividing a planar object into three-sided shapes.**

ANSWER: **triangulation** [accept Delaunay **triangulation**; accept simplicial or combinatorial **triangulation**; prompt on **tessellation** or **tiling**; prompt on **making triangles**]

<KJ, Other Science: Math>

2. **One country’s ban on this resource was justified by infamous YouTube speeches that misinterpreted accounts by Pliny the Elder and chronic kidney disease data. A humanitarian shipment of 25 thousand tons of this resource to Togo is planned by Uralkali (“oo-ruhl-KAH-lee”), a major exporter of this resource, as other manufacturers like Yara and CF Industries have curbed their production of this resource. A ban on synthetic types of these substances greatly worsened the economic crisis that led to (*) Gōthābhaya Rājapaksa’s (“RAH-juh-puck-shuh’s”) downfall in Sri Lanka. Brazil’s dependence on Russia for these substances is exacerbating spikes in coffee and soybean prices worldwide. Sanctions against Belarusian potash (“POT-ash”) and China’s limits on urea exports have worsened shortages of, for 10 points, what substances that are added to soil to promote crop growth?**

ANSWER: **fertilizers** [accept synthetic **fertilizers**; accept nitrogen **fertilizers**, phosphate **fertilizers**, or potassium **fertilizers**; prompt on **pesticides** by asking, “What was the main target of the ban in question?”; prompt on **nitrates**, **urea**, **phosphates**, or **potash**; prompt on **agrochemicals**] ([The YouTube speeches were by Anuruddha Pādeniya, the leader of the Government Medical Officers’ Association and one of the main architects of Sri Lanka’s fertilizer ban.](#))

<AS, Current Events>

3. **John Judis’s biography of this person as a “patron saint” claims that the American-Chilean council was bribed to discredit Orlando Letelier. This person’s writings inspired Brent Bozell’s Catholic magazine *Triumph*. During one event, this person was compared to Myra Breckinridge and revealed an alleged note from Robert Kennedy suggesting an opponent be deported to Vietnam. The editorial “The Question of Robert Welch” illustrated this person’s disillusionment with the John (*) Birch Society. This person justified**

supporting Barry Goldwater with his namesake “rule” of supporting the “rightward most electable candidate.” After being called a “crypto-nazi,” this person threatened, “I’ll sock you in the god damn face,” during a 1968 debate with Gore Vidal. For 10 points, name this conservative host of *Firing Line* and founder of *National Review*.

ANSWER: William F. **Buckley**, Jr. [or William Frank **Buckley**, Jr.; or William Francis **Buckley**]

<GE, American History>

4. When it is derived from a black cat’s fetus, this substance can be sprinkled over one’s eyes to ascertain the presence of the *shedim*. Since 2007, various churches have participated in a “To Go” campaign named for this substance in which clergymen distribute it to passers-by in public areas. Tertullian advised penitents to wear coarse, animal hair garments called sackcloth while coating themselves in this substance in a gesture that emphasizes repentance and grief. Churches may place this substance in (*) columbarium niches. While heaping dirt on a casket, the officiant of an Anglican funeral recites “Earth to earth, [this substance] to [this substance], dust to dust.” Palm fronds are used to create this substance before its spread across the forehead in the shape of a cross on one holiday. For 10 points, Lent begins on a Wednesday named for what substance?

ANSWER: **ash** [or **eifer**; prompt on dust until read; accept **cremated remains** or equivalents; prompt on human bodies or remains by asking, “In what form?”]

<KT, Beliefs>

5. When one man suggests getting this character’s opinion, his companion replies, “It might be better to strike the iron before it freezes.” A man mistakes the wind in the reeds for the sound of this character shouting at his horse. This character, who may have been named for a veteran racing cyclist, employs two young brothers, who work as a goatherd and shepherd, and are both known in the cast list as (*) “The Boy.”

A play titled for this character ends with the line “They do not move” after two men decide that they’ll hang themselves if they don’t meet this character. Lucky’s owner Pozzo is initially mistaken for this character, who is often thought to be a stand-in for God. For 10 points, name this character whom Vladimir and Estragon are *Waiting for* in a Samuel Beckett play.

ANSWER: **Godot** [accept *Waiting for Godot* or *En attendant Godot*]

<CM, British Literature>

6. In one dialogue, Ion is shown to contradict himself by saying that he only understands one practitioner of this discipline. A fragmentary treatise titled for the problems of a practitioner of this discipline rebuts Xenophanes’s criticism that said practitioner of this discipline defiles the Gods. Practitioners of this discipline are contrasted with a father who loses his child and silently bears his loss in another Platonic dialogue. A work (*) titled for this discipline uses the example of a suffering animal to illustrate how it can produce “tragic pleasure.” That work argues that this discipline originated from mimesis, or “imitation,” and introduced to this discipline the concept of “catharsis.” For 10 points, name this literary discipline that titles a treatise by Aristotle.

ANSWER: **poetry** [or **poëtikê**; accept *Poetics*; accept descriptions like writing poetry or **poems**; prompt on literature; prompt on art; anti-prompt (ask, “Can you be less specific?”) on plays, drama, tragedy, or comedy] (*The treatise in the second line is Homeric Problems by Aristotle, and the poet Xenophanes criticized is Homer.*)

<MB, Philosophy>

7. This person annually hung cascading, orange-flowered nasturtium vines captured in an Arthur Pope painting. Anders Zorn painted this person throwing open doors to announce a fireworks display at the *Palazzo Barbaro*. Venetian brocade forms a halo around this person’s head in a Sargent portrait evoking an icon. This art patron remodeled a music room with a Moorish arch to display Sargent’s (*) *El Jaleo* (“*hah-LAY-oh*”). Bernard Berenson worked with this art patron to acquire paintings like Titian’s *Rape of Europa* and Vermeer’s *Concert*. Empty frames in a museum named for this person commemorate a break-in during which

Rembrandt's *Storm on the Sea of Galilee* was stolen. For 10 points, name this founder of an eponymous Boston art museum.

ANSWER: Isabella Stewart Gardner [accept the Isabella Stewart Gardner Museum]
<AY, Visual Arts>

8. The presence of three men “with dusty and bloody shoulders...scorched by the sun” convince this character to embrace “merciless self-denial.” After being invited to kiss this character, one man has a vision of “a flowing river of faces” full of animals, people, and gods. After his child crosses the river, this character confesses his wound to the (*) ferryman, who instructs him to “listen to the river” where he hears a sacred sound that causes him to stop fighting his fate. This character becomes well-respected and rich despite treating the business of Kamaswami like a game. A small black snake bites and kills the former lover of this character, Kamala, who gave birth to this character's son. For 10 points, name this title Brahmin's son whose spiritual quest is the subject of a Hermann Hesse novella.

ANSWER: Siddhartha [reject “Siddhartha Gautama”]
<JF, European Literature>

9. An occultist society founded in this city named itself after the mythical northern land of Ultima Thule and was influenced by Helena Blavatsky's Theosophical ideas. Disgruntled with his rejection by the Thule Society, Anton Arco-Valley assassinated, in this city, the founder of a People's State formed after the Anif Declaration. A Soviet Republic governed from this city filled the political void left by the death of Kurt Eisner. The (*) “Blood Flag” was carried during an attempted coup in this city from which Erich Ludendorff was acquitted. Adolf Hitler wrote *Mein Kampf* during his imprisonment for orchestrating the Beer Hall Putsch in this city. By allowing the annexation of the Sudetenland, Neville Chamberlain appeased the Nazis in, for 10 points, an agreement signed in what Bavarian city?

ANSWER: Munich [or München; accept Munich Agreement; accept Munich Putsch; accept Munich Soviet Republic] (Many prominent Nazi Party members were in the Thule Society, which expounded a forerunner to the Nazi racial ideology.)
<GP, European History>

10. The Parrinello-Rahman method for maintaining this condition in molecular dynamics does not require that the rescaling be isotropic, as in Andersen's method. This condition describes the addition and rejection of heat in the Brayton cycle. The adiabatic index times the gas constant divided by the adiabatic index minus one equals a heat capacity described by this condition. It's not evaporation, but this condition describes a (*) process in which water is boiled in an open container. In this type of process, the change in volume is directly proportional to the [read slowly] change in heat minus the change in internal energy. Heat is equal to enthalpy for this type of process, which is represented by a horizontal line on a PV diagram. For 10 points, name this type of process in which pressure stays constant.

ANSWER: isobaric [accept constant pressure until “pressure” is read; accept isenthalpic-isobaric ensemble; accept Parrinello-Rahman barostat or Andersen barostat; accept isobaric heat capacity or constant pressure heat capacity]
<JF, Physics>

11. A 2004 photo book titled for one of these locations features Charles, a bearded man dressed in aviation gear and holding two model airplanes. Alec Soth captured a road trip through America's heartland in a photo collection titled *Sleeping by* [one of these locations]. Until the 2022 sale of Man Ray's *Le Violon d'Ingres* (“luh vee-oh-LOAN DAN-gruh”), the most expensive photo ever sold was a bare photo of one of these locations by Andreas Gursky. A photo by Margaret Bourke-White of a structure near one of these (*) natural locations was the first-ever cover of *Life* magazine. One of these locations in the foreground of an Ansel Adams photograph

of Grand Teton (“**TEE-tawn**”) National Park appears curved. For 10 points, what kind of natural location names a school of American landscape painters led by Thomas Cole?

ANSWER: **rivers** [accept Hudson **River** School; accept *Sleeping by the Mississippi*; accept *Rhein II*]

<VD, Other Arts: Visual>

12. After the Earl of Nottingham passed the “No Peace without Spain” amendment through the House of Lords, this politician did the same in the House of Commons, but it was overwhelmingly defeated. This politician was provoked into unjustly punishing the city of Edinburgh over fallout from when an angry mob stormed Tolbooth prison and hanged a town guard captain who had received a pardon from Queen Caroline. The Patriot Whigs formed to oppose this politician, whose (*) decades-long grasp on British politics was termed the “Robinocracy.” This politician cracked down on the Porteous riots. This politician resigned after a British defeat at the Battle of Cartagena de Indias during the War of Jenkins’s Ear, and he burst the South Sea Bubble. For 10 points, name this first British prime minister.

ANSWER: Robert **Walpole** [or Robert Walpole, 1st **Earl of Orford**]

<GP, Other History: British>

13. This person is the subject of a novel that opens with the narrator watching Moroccan men play *bourré* under a statue of him. A book section discussing “Structures and Restructures” argues that this author’s story about the beheading of John the Baptist was influenced by his affair with the Egyptian dancer Kuchuk Hanem. Jean-Paul Sartre’s monograph on this person, *The Family Idiot*, is repeatedly referenced in a novel that recounts this man’s relationship with (*) Louise Colet and interpolates his “Dictionary of Received Ideas.” This author, who declared of his most famous character, “she is me,” is the namesake of a novel whose protagonist searches for the inspiration of a dead pet bird in this author’s story “A Simple Heart.” For 10 points, a Julian Barnes novel is titled for the “Parrot” of what French author of *Madame Bovary*?

ANSWER: Gustave **Flaubert** (The second sentence refers to Edward Said’s *Orientalism*.)

<HG, Other Literature>

14. A type of these words in English was the subject of the namesake inkhorn debate, which led to figures like Charles Dickens promoting the use of words like “yblent” (“**IBB-lent**”). Phono-semantic matching often occurs during the formation of these words, like with the Swahili plural *vitabu*. These are the most common words in which marginal phonemes, such as the voiceless velar fricative in English, are used. (*) Calques (“**kalks**”) differ from these words in that they are translated. Katharevousa (“**kah-thah-RAY-voo-sah**”) sought to remove these words from Greek as part of a movement similar to those of Icelandic or Tamil that advocate linguistic purism. In Japanese, these words are the main words written in the *katakana* syllabary. For 10 points, name these words that in English include pizza and karaoke, as they are borrowed from foreign languages.

ANSWER: **loan**words [prompt on foreign words; prompt on gairaigo]

<AS, Social Science>

15. An increase in the production of this substance can result from abnormal vagal stimulation of M3 receptors in the setting of increased cranial pressure. In an adaptation to overexposure to this substance, HOXA13-expressing stem cells give rise to columnar epithelium that outcompetes squamous epithelium. The cephalic (“**seh-FAH-lick**”) phase is the first of three phases of release of this substance. (*) H2 antagonists block this substance’s production because histamine secreted from enterochromaffin-like cells promotes its release. Drugs like omeprazole prevent this substance’s production by inhibiting a hydrogen/potassium ATPase. Parietal cells secrete this substance, which activates pepsinogen. For 10 points, heartburn is caused by reflux of what substance whose low pH helps digest food?

ANSWER: **gastric acid** [or **stomach acid**; or **gastric juice**; accept **HCl** or **hydrochloric acid**; prompt on acid]

<AY, Biology>

16. During this decade, Anna imagines taking a sex-fueled tour of Europe with her brother Carl in the play *The Baltimore Waltz*. The protagonist laments that his rival Bruce does not want to “be a soldier” in a play set in this decade that was followed by *The Destiny of Me*. In a play set in this decade, the ghosts of two of the protagonist’s ancestors visit him to announce a character who refers to herself as “I-I-I-I.” A line from (*) “September 1, 1939” titles a play set in this decade in which the death of a *New York Times* writer leaves Ned Weeks bereft. The ghost of Ethel Rosenberg haunts a man who dies in this decade of what he claims to be liver cancer, but is actually a condition that also affects Prior Walter. For 10 points, Larry Kramer’s *The Normal Heart* and Tony Kushner’s *Angels in America* portray what decade’s AIDS epidemic?

ANSWER: the 1980s (*The Baltimore Waltz* is by Paula Vogel.)

<HG, American Literature>

17. A cascade of “toehold mediated” displacement reactions of these molecules is the basis for one type of circuit. These molecules form stabler products than a related class when engineered to have very high affinity to selected analytes by the SELEX method. Len Adleman introduced a subfield of molecular computing based on these molecules. Many “staples” direct the self-assembly of a long “scaffold” one of these molecules to create designer shapes called (*) “origami.” Nanostructures of this molecule can be created by connecting Holliday junctions with sticky ends. In nature, this molecule has three conformations: left-handed Z, right-handed A, and right-handed B. Phospho-di-ester bonds link the sugars on the backbone of this molecule. For 10 points, helicases separate the two strands of what polymer that consists of base-paired nucleotides?

ANSWER: DNA strands [accept single-stranded DNA or ssDNA or deoxyribonucleic acid; prompt on oligonucleotides or aptamers by asking, “Of what molecule?”; prompt on nucleic acids; prompt on polymers; reject “RNA” or “ribonucleic acid”]

<VD, Chemistry>

18. An arrest warrant over his role in an event involving six members of this organization has forced disgraced president Alfredo Cristiani to live in exile in Italy. Polaroid pictures of the bullet-ridden bodies of those members of this organization were left behind by soldiers of the Atlácatl Battalion. A member of this organization penned a letter to Jimmy Carter criticizing the American backing of the JRG military junta in (*) El Salvador. Roberto D’Aubuisson (“dow-bwee-SOHN”) was arrested, but later released, for his role in the death of that member of this organization, Óscar Romero. This organization struggled to manage support of the “preferential option for the poor” inherent in liberation theology. For 10 points, name this religious institution that appoints archbishops from the Vatican City.

ANSWER: Roman Catholic Church [accept the Vatican until read; accept the Papacy or the Holy See; accept Jesuits or Jesuit Order; accept Jesuit University of Central America; prompt on Christian Church or the Church]

<GP, World History>

19. Alexander of Myndos alleged that this creature was defeated with the aid of a sparrow-eating serpent born from the earth. It’s not a stingray, but a tomb was erected for one hero’s detached finger after he lost it while fighting this creature. 360 men from Cleonae were given the honors that came with slaying this creature after they fell in battle. This figure was thrown from the moon by his mother, Selene, at the request of Hera. The shepherd Molorchus joined a hero in sacrificing a (*) ram to Zeus Soter following this creature’s death. A hero blocked off the entrance to a two-mouthed cave to corner this creature and then strangled it to death. Athena advised that hero to skin this creature’s invulnerable pelt with its own claws. For 10 points, name this monster whose slaying formed the first labor of Heracles.

ANSWER: Nemean Lion [or Leon Nemeios; prompt on lion; prompt on Leo]

<KT, Beliefs>

20. *Two answers required.* **One of these composers made a four-hands piano transcription of a piece by the other that he had once accused of neglecting form. One of these composers spent “a week of continuous work and three sleepless nights” writing a commission in response to the other’s two-part piece for a “chromatic” Pleyel instrument. The older one of these composers begged the younger one to “not touch a single note” in a piece whose scherzo (“SCARE-tso”) uses the tempo *Assez vif* (“ah-say VEEF”) from his own piece in the same genre. These composers each wrote a string (*) quartet whose second movement is mostly played *pizzicato*. In his *Introduction and Allegro*, one of these composers mimics a harp glissando that follows an “arabesque” flute solo in a Mallarmé-inspired “Prelude” by the other. For 10 points, name these composers, one of whom wrote *Boléro* and threatened to reorchestrate the other’s *La Mer*.**

ANSWER: Maurice **Ravel** AND Claude **Debussy** [or Joseph Maurice **Ravel** AND Achille-Claude **Debussy**] (The pieces in the second clue are *Introduction and Allegro* and *Danse sacrée et danse profane*.)

<JE, Auditory Arts>

Bonuses

1. In a book from this country, a doctor describes this country's Patois ("PAT-wah") as "so musical it's like listening to Burning Spear and drinking coconut juice" to Nina Burgess, who responds that "[it's] coconut water." For 10 points each:

[10e] Name this country. The Singer in Marlon James's novel *A Brief History of Seven Killings* is based on this country's reggae singer Bob Marley.

ANSWER: **Jamaica** [accept **Jumieka**]

[10m] This poet used Jamaican Patois extensively in his *Songs of Jamaica*. This poet asserted, "Like men we'll face the murderous, cowardly pack" in a sonnet that urges not to do the title action "like hogs / hunted and penned."

ANSWER: Claude **McKay** (The sonnet is "If We Must Die.")

[10h] Another Jamaican poet, Linton Kwesi Johnson, has pioneered this style of spoken word by reading political Patois poetry over reggae rhythms.

ANSWER: **dub** poetry

<AS, World Literature>

2. Building on research by Norman Rosenthal, the simulation of one type of this phenomenon has been used to treat one presentation of bipolar II disorder. For 10 points each:

[10h] Name this phenomenon that, when altered, was thought to increase productivity in one study at Hawthorne Works. However, Henry Landsberger determined that the increased productivity was actually due to increased attention.

ANSWER: **lighting** [accept **illumination**]

[10e] Psychologists may use light therapy to treat reduced melatonin production from blue light exposure and to align this 24-hour internal sleep-wake cycle.

ANSWER: **circadian rhythm** [or **circadian cycle**]

[10m] Biodynamic lighting reduces sleeping disturbances in people with a form of this condition caused by abnormal alpha-synuclein deposits. TDP-43 or hyperactive tau proteins may cause this condition's frontotemporal form.

ANSWER: **dementia** [accept Lewy Body **dementia** or frontotemporal **dementia**; prompt on Parkinson's disease by asking, "Parkinson's may present with what other condition?"; reject "Alzheimer's"]

<GE, Social Science>

3. The most common epoxy resins are created by reacting this compound with epi-chloro-hydrin to form BADGE. For 10 points each:

[10h] Name this component monomer of many polycarbonates, which is routinely ingested by humans. This compound is an endocrine disruptor, as it weakly binds to estrogen receptors.

ANSWER: **bisphenol A** [or **BPA**]

[10m] Often-used flame retardants that are endocrine disruptors include diphenyl ethers substituted with this element. NBS is a source of this element, which undergoes anti-Markovnikov addition to alkenes in the presence of peroxides.

ANSWER: **bromine** [or **Br**]

[10e] Perhaps the most infamous endocrine disruptor is this insecticide whose devastating effect on bird populations prompted Rachel Carson to write *Silent Spring*.

ANSWER: **DDT** [accept **dichloro-diphenyl-trichloro-ethane**]

<VD, Chemistry>

4. Answer the following about sport in the Eastern Bloc, for 10 points each.

[10e] Władysław Kozakiewicz ("vwah-DISS-wahf ko-zah-KYEH-vich") gave an obscene gesture to the crowd at the

1980 Moscow Olympics after winning this country a gold medal in the pole vault over a Soviet competitor. Lech Wałęsa (“**vah-WEN-sah**”) led the Solidarity movement against Soviet influence in this country.

ANSWER: **Poland** [or **Polska**]

[10m] Hungary defeated the Soviet Union at water polo in the “Blood in the Water” match during the Melbourne Olympics held in this year. The match occurred one month after a Soviet invasion ended the Hungarian Revolution.

ANSWER: **1956**

[10h] Every five years, the Communist Party of Czechoslovakia organized the Spartakiad, a mass gymnastics display influenced by this nationalistic physical education movement that originated in the 19th century.

ANSWER: **Sokol** movement [accept **Sokol** slet]

<GP, European History>

5. Esa-Pekka Salonen conducted a 2020 spoof of this opera that replaced the first word of its title with “Covid” and featured Karita Mattila singing a parody of “In uomini, in soldati.” For 10 points each:

[10m] Name this opera in which the maid Despina encourages Fiordiligi and Dorabella to cheat on their fiancées during the aria “Una donna a quindici anni.”

ANSWER: **Così fan tutte** [or **Così fan tutte**, ossia *La scuola degli amanti*, K.588; accept **All Women are Like That** or rough translations like **So Do They All**; prompt on *La scuola degli amanti* or *The School for Lovers*]

[10e] Karita Mattila is a soprano from this country, where *Così fan tutte* was produced. This is the home country of Jean Sibelius.

ANSWER: **Finland** [or **Suomi** or Republic of **Finland** or **Suomen** tasavalta]

[10h] This composer dedicated the monodrama *Émilie* to Karita Mattila. Amin Maalouf wrote the French libretto for both *Émilie* and this composer’s opera about the troubadour Jaufré.

ANSWER: Kaija **Saariaho** (“**SAH-ree-ah-ho**”) [or Kaija Anneli **Saariaho**]

<IZ, Other Arts: Auditory>

6. Humans prized the blood of a Central Asian animal-plant hybrid named for this animal for its honey-like sweetness. For 10 points each:

[10h] Name this animal. Northern European legends attribute the existence of cotton to one of these animals that grows on the stalk of the *borometz* in Tartary.

ANSWER: **lamb** [or **sheep**; accept Vegetable **Lamb** of Tartary; accept Scythian **lamb**]

[10m] Another purported origin of the Vegetable Lamb of Tartary is the *yeduah*, a similar creature in the folklore of these people. These people’s aggadic stories include tales of the giant Og, an Amorite king of Bashan.

ANSWER: **Jews** [or **Jewish** people; or **Yehudim**]

[10e] Stories of the Vegetable Lamb may also be inspired by the fern *C. barometz*, found mainly in this country. Purported sightings of the apeman *yeren* triggered scientific expeditions near the end of this country’s Cultural Revolution.

ANSWER: **China** [or **People’s Republic of China** or **PRC** or **Zhōngguó** or **Zhōnghuá Rénmín Gònghéguó**; reject “Republic of China” or “Zhōnghuá Mínguó”]

<AS, Beliefs>

7. Letters thrown from rooftops and supposedly written by the Virgin Mary encouraged Indigenous revolts against this state’s secular reformist leader Mariano Gálvez. For 10 points each:

[10h] Name this state, the brainchild of Francisco Morazán. Conservative backlash led by Rafael Carrera ended this state, leaving the region susceptible to William Walker’s “filibustering” in the 1850s.

ANSWER: **Central American Republic** [or the Federal **Republic** of **Central America**; or the **United Provinces of Central America**; or **República** Federal de **Centroamérica**; or **Provincias Unidas del Centro de América**]

[10e] José del Valle praised this “Legislator of the World” for sending model legislation and locks of hair to new Latin American governments. This British thinker tried to spread his Utilitarian ideas, such as the Panopticon, in Colombia.

ANSWER: Jeremy **Bentham**

[10m] Bernardino Rivadavia traveled to Europe to consult with Bentham after fighting a war of independence for this modern-day country with Manuel Belgrano.

ANSWER: **Argentina**

<GE, World History>

8. These all-or-nothing events are examples of biological coincidence detection because they require encoding temporally close but spatially separate inputs. For 10 points each:

[10e] Name these events involving rapidly propagating membrane depolarization. These events occur after the axon hillock’s summation of IPSP and EPSP inputs reaches the threshold potential of negative 55 millivolts.

ANSWER: **action potentials**

[10m] AMPA and NMDA receptors mediate this other phenomenon and example of coincidence detection, in which a particular synaptic connection is strengthened when neurons are synchronously stimulated.

ANSWER: **long-term potentiation** [or **LTP**; prompt on neuroplasticity or potentiation; reject “long-term depression”]

[10h] *Description acceptable*. This other ability involves coincidence-detecting neurons in the superior olivary nucleus receiving asynchronous inputs made convergent by delay line axons and calculating an ITD value.

ANSWER: **sound localization** [accept any answer describing locating the origin of a sound]

<HK, Biology>

9. A cemetery for soldiers in this conflict is described as “half-open...to God’s deliberate eye” in the poem “Elegy for the Native Guards.” For 10 points each:

[10e] Name this conflict. A memorial honoring an all-black infantry in this conflict is the subject of Robert Lowell’s poem “For the Union Dead.”

ANSWER: American **Civil War**

[10h] “Elegy for the Native Guards” appears in this Mississippi-born poet’s collection *Native Guard*. This woman served as U.S. Poet Laureate from 2012 to 2014.

ANSWER: Natasha **Trethewey**

[10m] Trethewey contextualized “Elegy for the Native Guards” as a response to a poem by this author that begins, “Row after row with strict impunity,” titled “Ode to the Confederate Dead.”

ANSWER: Allen **Tate** [or John Orley Allen **Tate**]

<HG, American Literature>

10. Unsurprisingly, Neil DeGrasse Tyson claims to have coined the term for a form of this activity, inspired by a childhood trip with Gerald Hawkins. For 10 points each:

[10h] Describe this activity. Traffic is held up in various areas of New York City a few times each summer by people engaging in this activity during a phenomenon called “Manhattanhenge.”

ANSWER: **watching** the **sun**set [or **watching** the **sun**rise; accept synonyms such as **viewing** in place of **watching**; accept more specific answers like **photographing** or **filming** in place of **watching**; prompt on partial answer]

[10m] Manhattanhenge arose due to New York City skyscrapers framing the sun between them from the street, a layout called the “urban” form of this feature. World-famous light beams draw tourists to one of these features in Arizona called “Antelope.”

ANSWER: **canyons** [accept urban **canyon**; accept Antelope **Canyon**]

[10e] Chicago and this city feature “henges” famous for aligning with the equinoxes due to their east-west grid systems. Camden Yards, where the Orioles play, helped revive the Inner Harbor of this Maryland city.

ANSWER: **Baltimore**

<HG, Other Academic>

11. An illusionist describes this character's name as one that "preserve[s] the historical traditions of the Fatherland" before mimicking the voice of this character's love Silvestra. For 10 points each:

[10h] Name this title character of a novella who, after being made to kiss a hypnotist on stage, shoots that hypnotist twice before a mob swarms upon him.

ANSWER: Mario [accept Mario and the Magician or Mario und der Zauberer (by Thomas Mann)]

[10e] The hypnotist Cipolla is often read as an allegorical leader of this ideology. Fourteen features of this ideology are listed in an essay whose author recalls being disappointed after hearing Benito Mussolini speak live.

ANSWER: fascism [prompt on totalitarianism or authoritarianism or Nazism]

[10m] This author listed the fourteen features in "Ur-Fascism." Braggadocio becomes convinced that Mussolini survived World War II while two hack journalists have an affair in a novel by this author.

ANSWER: Umberto Eco (The novel is *Numero Zero*.)

<GP, European Literature>

12. Answer the following about what happens when a CPU receives an instruction to divide by zero, for 10 points each.

[10e] Attempting to divide by zero triggers this kind of recoverable exception, meaning that the program can restart itself without loss of continuity. Attempting to access memory that you do not own leads to the "segmentation" type of these events.

ANSWER: faults [accept segmentation fault or segfault]

[10h] The processor responds to the divide-by-zero exception by invoking the appropriate handler in *this* data structure. In the x86 and AMD64 architectures, the divide-by-zero handler is the first entry in this data structure.

ANSWER: interrupt table [accept interrupt vector table or IVT; accept Interrupt Descriptor Table or IDT]

[10m] In early x86 implementations, the interrupt vector table consisted of a fixed number of the far type of these objects, which include a segment selector. In C, the return type of "malloc" and "calloc" is this data type.

ANSWER: pointers

<KJ, Other Science: Computer Science>

13. Dutar virtuoso Turgun Alimatov became a national hero by reclaiming a form of Uzbek and Tajik music named for using six of these patterns. For 10 points each:

[10h] Name these patterns that are analogous to scales and modes but also dictate ornaments, modulations, and aesthetic convention. In their original tradition, these tonal frameworks consist of several *ajnas*.

ANSWER: maqāmāt ("muh-KAHM") [accept shashmaqam; prompt on dastgāh]

[10e] Alimatov was as proficient on the sato, a tanbur in *shashmaqam* that is played with one of these objects. The Arabic *rabāb* is the oldest string instrument played with this rosined wood-and-horsehair object.

ANSWER: bows [accept qaws or 'aqwās'; accept kamonho]

[10m] To preserve tanbur and dutar music, *shashmaqam* musicians developed the Khorezm system of this notation. Modern *oud* players may use this notation that denotes fingerings and not pitch.

ANSWER: tablature [accept tabs]

<AS, Auditory Arts>

14. This state became the first to offer reparations to disproportionately Black victims of its sterilization program, which was the subject of the 2002 exposé "Against Their Will." For 10 points each:

[10m] Name this state where the Red Shirts and Secret Nine pulled off a white supremacist insurrection in 1898. A group of four college students protested segregation at a Woolworth lunch counter in this state.

ANSWER: North Carolina [or NC]

[10h] North Carolina passed new laws following this 1927 Supreme Court case that upheld a Virginia Statute regarding the sterilization of intellectually disabled people. Oliver Wendell Holmes, Jr. declared, “Three generations of imbeciles are enough,” in his majority opinion for this case.

ANSWER: **Buck v. Bell**

[10e] American sterilization laws were promoted by Charles Davenport and Harry Laughlin, proponents of this movement that advocated scientific racism and selective breeding to “purify” the human population.

ANSWER: **eugenics**

<KT, American History>

15. In one essay, this thinker claimed that the creation of boundaries by subdividing space is integral to the localization of social formations. For 10 points each:

[10m] Name this thinker who, in “The Metropolis and Money” claimed that rural residents can extensively form meaningful relationships with each other while urban residents can form a meaningful relationship with money.

ANSWER: Georg **Simmel**

[10e] Simmel distinguishes a person of this type from the outsider and the wanderer, characterizing them as non-belonging to a group. Mary Ainsworth observed attachment among children in a study named for a situation of this type.

ANSWER: **strange** [or **stranger**; accept “The **Stranger**”; accept **strange** situation]

[10h] This American sociologist applied Simmel’s concept of social boundaries to his studies of urban ecology in Chicago. With Ernest Burgess, this sociologist wrote *Introduction to the Science of Sociology*.

ANSWER: Robert **Park** [or Robert Ezra **Park**]

<KJ, Social Science>

16. This artist’s style was inspired by accidentally painting a tiny hole in an image of a mandolin. For 10 points each:

[10m] Name this Colombian artist who compared his series criticizing the American torture of Iraqi prisoners in *Abu Ghraib* to Picasso’s *Guernica*. His style includes round, voluptuous figures that often critique the upper class.

ANSWER: Fernando **Botero** [or Fernando **Botero** Angulo]

[10e] Colombian artists like Guahce and DjLu offer social critiques through this medium. Banksy’s protest art is often made in this medium by spray painting a stencil onto a public space.

ANSWER: **graffiti** [or stencil **graffiti**; accept **street art**]

[10h] Doris Salcedo created a massive crack cast from a Colombian rock face through the floor of this location to represent racial divides. In 2003, another artist represented the sun at this place with a large ball of yellow-orange light for his *Weather Project*.

ANSWER: **Turbine Hall** [prompt on the **Tate Modern**]

<AY, Visual Arts>

17. Rae Langton used a theory about these events in philosophy of language to analyze the ways in which women’s ability to refuse sex is silenced. For 10 points each:

[10m] Name these events. J. L. Austin developed a theory of these events to understand them in three distinct stages through study of their “illocutionary force.”

ANSWER: **speech acts** [accept **speech act** theory; anti-prompt (ask, “Can you be less specific?”) on **performative utterances**; reject “speeches”]

[10h] Rae Langton argues that pornography silences women at this stage of speech because it causes women’s refusal of sex to not be recognized. This part of the speech act is understood as the aim of illocution.

ANSWER: **perlocutionary** stage [accept **perlocutions**; accept **perlocutionary** silencing]

[10e] This philosopher used speech act theory to illustrate how gender is socially constructed in her book *Gender Trouble*.

ANSWER: Judith **Butler** [or Judith Pamela **Butler**]

<KJ, Philosophy>

18. Answer the following about humor derived from male impotence in Restoration writings, for 10 points each.

[10e] This author mocked bad writers as those who “Rhyme with all the Rage of Impotence” in his *Essay on Criticism*. This British satirist also wrote *The Dunciad*.

ANSWER: Alexander Pope

[10m] Lady Fidget’s husband and Mrs. Squeamish’s grandmother listen to Horner deliver double entendres about his “china collection” while pretending to be impotent in this Restoration comedy by William Wycherley.

ANSWER: *The Country Wife*

[10h] The shepherd Lysander falls “weeping in his Hands” due to impotence in this poet’s “The Disappointment.” Though first credited to the Earl of Rochester, this poet republished it alongside homoerotic poems about Amintas in “Poems upon Several Occasions.”

ANSWER: Aphra Behn

<GE, British Literature>

19. The removal of the pointed tip and the chipping away of the outer lip suggests that Paleolithic peoples used a conch shell discovered in this country’s Marsoulas (“mahr-soo-LAH”) cave for musical purposes. For 10 points each:

[10e] Name this country where 22 vulture bone flutes were found in Isturitz cave. Paintings of extinct fauna decorate the walls of this country’s Lascaux (“lass-KO”) cave network.

ANSWER: France [or French Republic or République française]

[10m] A *pututu* conch shell is held in the Lanzón deity’s hand in a carving found at a site in this country known for its weird acoustic phenomena. Hiram Bingham III (“the third”) rediscovered a site in this country that contains the Temple of Three Windows.

ANSWER: Peru [or Republic of Peru or República del Perú] (The unnamed sites are Chavín de Huántar and Macchu Picchu.)

[10h] Conch shell trumpets have been found at the Jackrabbit Ruin site in this state. A massive canal system within this U.S. state was established by the Hohokam culture, who resided at sites like Snaketown.

ANSWER: Arizona

<KT, Other History: Ancient>

20. Despite the many experimental successes of the Standard Model, including the discovery of the Higgs Boson, many unanswered questions about it remain. For 10 points each:

[10m] A Millennium Prize problem involves proving the existence of these non-abelian gauge theories for any simple compact group in R_4 , as well as their associated nonzero mass gap, and would give a key mathematical foundation for the Standard Model.

ANSWER: Yang–Mills theories

[10e] The discovery of the oscillation of these particles implies that contrary to the Standard Model, these small, neutral leptons have a nonzero mass.

ANSWER: neutrinos

[10h] In April 2022, Ashutosh Kotwal led a team that used data from this particle accelerator to determine that the mass of a W boson exceeds the mass predicted by the Standard Model with a significance of 7σ (“7-sigma”). The top quark was discovered at this particle accelerator in 1995.

ANSWER: Tevatron [prompt on Fermilab or Fermi National Accelerator Laboratory]

<AS, Physics>