

## 2020 ACF Fall

### Packet H by Editors

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#### Tossups

1. The MacArthur–Forrest process can be used to extract this element from ores like telluride by complexing it with cyanide. Nanoparticles of this element can be suspended in water to form a purple or red colloid. Palladium and this element are often used to sputter coat samples in preparation for scanning electron microscopy. This element fails to react with nitric acid alone, but dissolves in a solution of nitric and hydrochloric acid known as aqua regia. An alloy of this metal and silver is called electrum, and alloying this metal with copper produces its “rose” form often used in jewelry. For 10 points, name this metal whose atomic number is 79 and whose chemical symbol is Au.

ANSWER: **gold** [accept **Au** until read]

<Chemistry>

2. The protagonist of a novel by this author drops a toad down the shirt of a man who catches her cheating at a game in which they bet where a fly will land. This author created Archduke Harry, who pursues a character who falls in love with the Russian Princess Sasha. A man in a novel by this author spends a day in the park with his Italian wife Rezia, where he is observed by Peter Walsh. A 300-year-old lover of Elizabeth I who changes gender was based on this author’s lover, Vita Sackville-West. In a novel by this author, Septimus Smith jumps out of a window on the day Clarissa plans a party. For 10 points, name this British author of *Orlando* and *Mrs. Dalloway*.

ANSWER: Virginia **Woolf**

<British Literature>

3. One player of this instrument wrote a blues called “Summit Ridge Drive” for his “band within the band,” Gramercy Five. That bandleader rose to fame for his extended swing recording of Cole Porter’s “Begin the Beguine (“beg-EEN”).” Another musician who played this instrument formed one of the first racially integrated jazz trios with pianist Teddy Wilson and drummer Gene Krupa. That bandleader and his orchestra played a landmark 1938 concert at Carnegie Hall, which concluded with a long performance of Louis Prima’s “Sing, Sing, Sing.” For 10 points, name this instrument played by Artie Shaw and Benny Goodman that plays an opening glissando in *Rhapsody in Blue*.

ANSWER: **clarinet**

<Other Arts>

4. This economist conjectured that the Treasury could bury bottles of money and leave it to private enterprises to dig them back up to solve the problem of unemployment. Étienne Mantoux (“man-TOO”) mocked this economist in the subtitle of a book which argues that he drastically underestimated German iron and steel production capability. He argued that the marginal propensity to consume determines the fiscal multiplier in a work that proposed government spending to end the Great Depression. For 10 points, name this economist who advocated deficit spending in *The General Theory of Employment, Interest and Money*.

ANSWER: John Maynard **Keynes** (“canes”)

<Philosophy/Social Science>

5. Arthur Goldreich helped hide this man, who was given the nickname “Pimpernel” due to his ability to evade authorities. Along with Oliver Tambo, this man led the Defiance Campaign. This man disguised himself as a gardener while hiding at Liliesleaf Farm. He wrote about his activist experiences in *Long Walk to Freedom*. After the Sharpeville Massacre, this man co-founded the Spear of the Nation. This man declared “I am prepared to die” during the Rivonia Trial, after which he was imprisoned for decades on Robben Island. For 10 points, name this former leader of the African National Congress, the first president of post-apartheid South Africa.

ANSWER: Nelson Rolihlahla **Mandela**

<World History>

6. With respect to generalized velocity, the derivative of a function named for this scientist yields a coordinate’s conjugate momentum. This scientist’s reformulation of mechanics centers around his namesake function, equal to the time derivative of action. In a common optimization method, a function’s gradient is set equal to the gradient of a constraint function times one of this scientist’s namesake multipliers, symbolized lambda. A small body will be stationary relative to two large orbiting bodies if it is on one of this man’s namesake points. For 10 points, what Italian-French scientist names an equation with Euler?

ANSWER: Joseph-Louis **Lagrange** [or Giuseppe Luigi **Lagrangia**; or Giuseppe Ludovico De **la Grange** Tournier; accept **Lagrangian** mechanics, **Lagrange** multipliers, **Lagrange** points, or Euler-**Lagrange** equation]

<Physics>

7. After he was cursed by Demeter for cutting down a sacred tree, Erysichthon (“air-ih-SICK-thon”) took this action until he died. Athena withheld immortality from Tydeus (“TID-ee-us”) after he performed this action outside Thebes. As part of a revenge plot, Thyestes (“thigh-ESS-teez”) accidentally performed this action while visiting his brother Atreus. After failing to trick Zeus into performing this action, Lycaon (“ly-KAY-on”) was turned into a wolf. After Demeter accidentally performed this action, Hephaestus made an ivory shoulder for Pelops. Tantalus tried to trick the gods into performing this action. Gaia used a stone wrapped in baby clothes to protect Zeus from, for 10 points, what specific action which Kronos performed on his other children?

ANSWER: **cannibalism** [or **anthropophagy**; or **eating a person** or **eating humans** or equivalents; accept **eating himself** or **autophagy** until “Tydeus” is read; accept **eating brains**; prompt on **eating**]

<Mythology>

8. In a play written in this language, the title character loses a ring in the river, but the ring is swallowed by a fish and later presented to a king. *The Cloud Messenger* is a poem in this language. In a section of a work in this language, one character loses his wealth, kingdom and family after gambling them in a loaded dice game against Shakuni. Plays such as *The Recognition of Shakuntala* were written in this language by Kalidasa. An epic poem in this language depicts the Kurukshetra War between the Kauravas and Pandavas, and also contains the *Bhagavad Gita* (“BA-ga-vud GEE-ta”). The *Mahabharata* (“ma-ha-BA-ra-ta”) and *Ramayana* (“ruh-MY-uh-nuh”) are written in, for 10 points, what ancient language of India?

ANSWER: **Sanskrit**

<World/Other Literature>

9. In this state, Oliver Sipple successfully blocked Sara Jane Moore from assassinating President Gerald Ford. The proposal of the intolerant Briggs Initiative in this state led to the formation of the Log Cabin Republicans. A politician from this state was nicknamed the “Mayor of Castro Street” and enjoyed the backing of the Peoples Temple, a cult based in this state and led by Jim Jones. The so-called “Twinkie Defense” was used by a former politician from this state who in 1978 killed George Moscone (“maw-SKO-nee”) along with its first openly gay elected official. For 10 points, Harvey Milk served alongside Diane Feinstein in which state’s city of San Francisco?

ANSWER: **California**

<American History>

10. One of these things blocks the face of a woman in a white dress and parasol in Rene Magritte’s *The Great War*. Anthony Van Dyck (“van dike”) painted a self portrait with one of these things in which he shows off a gold chain he was awarded by the king. Two young girls play with paper lanterns in a John Singer Sargent painting named after three types of these things. In a Vincent Van Gogh painting of some of these things against a bright yellow background, these things were originally purple, but the pigment has faded and they now appear blue. In a Claude Monet (“mo-NAY”) painting, a mother and son walk through a field of red versions of these things. For 10 points, name these kinds of plants, which often appear in vases in still lifes.

ANSWER: **flowers** [accept specific types of flowers such as **sunflowers**, **irises**, or **poppies**]

<Painting/Sculpture>

11. Ohio State’s Big Ear radio observatory received the “Wow!” signal from the direction of this constellation. Messier 54, an extragalactic globular cluster that was originally thought to be part of the Milky Way, is in this constellation’s Dwarf Spheroidal Galaxy. Unusually, this constellation’s brightest star is [emphasize] *not* its alpha star, Rukbat, but instead is its epsilon star, which is found at the base of the “spout” in its teapot asterism. This constellation names a complex radio source that contains the supermassive black hole at the center of the Milky Way in its A\* (“A-star”) region. For 10 points, name this Zodiac constellation that depicts an archer.

ANSWER: **Sagittarius** [or **Sgr**; accept **Sagittarius A\***]

<Other Science>

12. A play by this author ends with a nun saying “pax vobiscum” after watching an avalanche kill Irene and the sculptor Arnold. A photographer created by this author speaks of his “great invention,” which is later revealed to be a “life-lie”; that photographer is Hjalmar (“HYAL-mar”). The title character in a play by this author urges her husband’s academic rival to “die beautifully” after a manuscript is destroyed by that academic, Eilert Løvborg. Hedwig goes to the loft to shoot the title animal at the end of a play by this author, who also wrote about a woman who marries the academic George Tesman. For 10 points, name this author of *The Wild Duck* and *Hedda Gabler*, a Norwegian playwright.

ANSWER: Henrik **Ibsen**

<European Literature>

13. In 2020, this company acquired ZeniMax Media, a video game holding company whose subsidiaries produce games like *The Elder Scrolls* and *The Evil Within*. The man who created this company's cloud computing service Azure, Satya Nadella, succeeded its longtime CEO Steve Ballmer in 2014. In 2018, this company purchased the version control and hosting service GitHub. This company's corporate video conferencing products are called Teams and Skype for Business. ByteDance rejected an offer from this company and partnered with Oracle instead to operate the US division of TikTok. For 10 points, what tech company's Office suite includes products like Excel?

ANSWER: **Microsoft**

<Current Events/Geography/Other Academic/Pop Culture>

14. In Chinese, the southern route of the Silk Road was named for these animals and tea. Heavenly varieties of these animals that could supposedly sweat blood were owned by the Dayuan kingdom of the Fergana Valley. The armies of the Scythians and the Parthians relied heavily on archers working with these animals. They are not elephants, but Hannibal was aided by the Numidian people, who were expert riders of these animals. Alexander the Great owned one named Bucephalus, while Caligula supposedly tried to make one named Incitatus a consul. For 10 points, the stirrup made it easier for cavalrymen to ride what animals?

ANSWER: **horses** [accept **Tea Horse** road or **Ferghana** horse; accept **Equus**]

<Other History>

15. The relative position of these structures can be determined using the toeprinting technique. In some cases, the products of these structures are recognized and bound by the signal recognition particle. Entrance into these cellular structures is mediated by proteins called elongation factors. Tetracycline suppresses the function of these organelles by competitively inhibiting charged tRNAs from binding to the A site. Svedberg units are used to categorize the 60S and 40S subunits of these organelles. The rough endoplasmic reticulum is covered by these organelles. For 10 points, what membraneless organelles facilitate mRNA translation and protein synthesis?

ANSWER: **ribosomes**

<Biology>

16. This composer's *Five Variants of Dives and Lazarus*, scored for harp and string orchestra, is based on one of the folk tunes he quoted in his *English Folk Song Suite*. This composer's first and longest symphony has a slow movement titled "On the Beach at Night, Alone," which makes use of a baritone and chorus. This composer scored a work for an expanded string orchestra divided into three parts – an orchestra, a smaller 9-player group, and a string quartet – which is based on the Renaissance melody "Why fum'th ("FYOOM-ith") in fight." For 10 points, name this British composer of *A Sea Symphony*, *Fantasia on a Theme by Thomas Tallis*, and *The Lark Ascending*.

ANSWER: Ralph ("rafe") **Vaughan Williams**

<Classical Music>

17. Souvenirs from this location were handed out to attendees of the Malta Summit. Remnants of this location have been incorporated into the Topography of Terror museum and were displayed in Washington D.C.'s Newseum until it closed in 2020. A mural painted on this location depicted two world leaders kissing and was titled "My God, Help Me to Survive This Deadly Love." Peter Fechter was left to bleed out in this structure's "death strip" after trying to cross it in 1962. Checkpoint Charlie was a crossing point along this structure, which mobs jubilantly tore down in 1989. For 10 points, name this structure built to separate the eastern and western sections of Germany's capital city.

ANSWER: **Berlin Wall**

<European History>

18. A poem by this author praises the artist Scipio Moorhead, who designed the frontispiece for a collection by this author. Another poem by this author expresses a hope that “The crown upon your brows may flourish long” and ends with the line “A monarch’s smile can set his subjects free!” while praising the repeal of the Stamp Act by George III. A poem by this author claims that “once I redemption neither sought nor knew” before “mercy brought me from my pagan land,” though this author died in poverty at age 31 soon after being freed. For 10 points, name this author of “On Being Brought from Africa to America,” the first African-American woman to be published.

ANSWER: Phyllis **Wheatley**

<American Literature>

19. In the 2019 playoffs, this team’s shortstop was controversially ruled out after colliding with Yuli Gurriel’s (“YOO-lee GUR-ee-ell’s”) glove. In that season, this team acquired Gerardo Parra (“heh-RAR-doh PAR-uh”), whose walk-up song “Baby Shark” became a rallying cry as this team rebounded from a 19-and-31 start. A 10th-inning grand slam by Howie Kendrick enabled this team to knock out the Dodgers, while they claimed a different series by winning back-to-back games pitched by Max Scherzer (“SHUR-zur”) and Stephen Strasburg (“STRAHS-berg”). Despite losing Bryce Harper to free agency, this NL East team won the 2019 World Series. For 10 points, what MLB team plays in the US capital?

ANSWER: **Washington Nationals** [accept either underlined part; or the **Nats**]

<Current Events/Geography/Other Academic/Pop Culture>

20. While performing this practice, members of the Twelver sect of Shia Islam are required to make use of a clay tablet called a *turbah*. At the conclusion of this practice, the *taslim* (“tahs-LEEM”) salutation is performed, once facing to the left and a second time facing to the right. This practice is divided into multiple units known as *rak’ah*, which entail assuming the positions of *ruku*, or bowing, and *sujud*, or prostration. Muslims must face *qibla* (“KIB-luh”), the direction of Mecca, while performing this action, which is required five times a day. For 10 points, identify this Pillar of Islam, known in Arabic as *salat*, in which Muslims direct worship to God.

ANSWER: Islamic **prayer** [or **salat**; or **salah**; accept specific instances of prayer, such as **Maghrib**, **Isha**, **Fajr**, **Zuhr**, and **Asr** prayer; accept **Jumu’ah** prayer or salat al-**Jumu’ah**]

<Religion>

## Bonuses

1. A work dedicated to all the author's friends and countrymen who died at Leningrad was entitled *Poem Without* one of these people. For 10 points each:

[10] Name this type of person. The character Pechorin is featured in a novel by Mikhail Lermontov titled for one of these people *of Our Time*.

ANSWER: **heroes**

[10] This author wrote *Poem Without a Hero*. This author wrote that "one hundred million voices shout through my tortured mouth" while lamenting the arrest of this author's son Lev Gumilev in the work *Requiem*.

ANSWER: Anna **Akhmatova**

[10] An earlier Russian antihero is the nameless narrator of this author's *Notes from the Underground*. This author also created the antihero Raskolnikov in *Crime and Punishment*.

ANSWER: Fyodor **Dostoevsky**

<European Literature>

2. Meyer London was the only congressman to vote against this measure in the House of Representatives. For 10 points each:

[10] Name this 1918 act that extended the earlier Espionage Act to limit speech that could be considered as interfering with the war effort.

ANSWER: **Sedition** Act of 1918

[10] The Espionage and Sedition Acts were passed during this war. The sinking of the *Lusitania* helped draw America into this war.

ANSWER: **World War I** [or **WWI**; or the **Great** War and **First World** War]

[10] This man ran for president while jailed under the Sedition Act. He earlier aided the Pullman Strike as leader of the American Railway Union.

ANSWER: Eugene Victor **Debs**

<American History>

3. This philosopher published his most noted works under a series of pseudonyms, such as "Hilarius Bookbinder" for *Stages on Life's Way* and "Johannes Climacus" for his *Concluding Unscientific Postscript*. For 10 points each:

[10] Name this Danish Christian philosopher, often interpreted as a proto-existentialist. This philosopher described a progression from the "aesthetic" sphere of existence to "ethical" and "religious" spheres in his work *Either/Or*.

ANSWER: Soren Aabye **Kierkegaard**

[10] Kierkegaard introduced the idea of the "leap of faith" in this work, which analyzes Abraham's abortive sacrifice of Isaac. In reference to that story, this book asks whether there is a "teleological suspension of the ethical."

ANSWER: ***Fear and Trembling*** [or ***Frygt ob Baeven***]

[10] Another text by Kierkegaard, *Sickness Unto Death*, is centrally concerned with this concept. Equating this concept with Christian sin, Kierkegaard attributes it to a disordered relation between aspects of the self.

ANSWER: **despair** [or **fortvivlelse**; prompt on depression; do not accept or prompt on "anxiety" or "angst"]

<Philosophy/Social Science>

4. The five types of cell movement that characterize this process are invagination, involution, ingression, delamination, and epiboly. For 10 points each:

[10] Name this developmental process during which a hollow sphere of cells called the blastula (“BLASS-chuh-luh”) reorganizes to establish the axes of the body and form different germ layers.

ANSWER: **gastrulation**

[10] Gastrulation occurs when animals are in this developmental stage, which begins with the creation of a zygote and ends with the organism developing into a fetus.

ANSWER: **embryonic** development [accept **embryogenesis**]

[10] This middle germ cell layer gives rise to muscle and bone. Triploblastic animals like humans contain this germ cell layer, while diploblastic animals like jellyfish do not.

ANSWER: **mesoderm**

<Biology>

5. This essayist claimed that “we tell ourselves stories in order to live” in the essay collection *The White Album*. For 10 points each:

[10] Name this essayist who also wrote the novel *Play It as It Lays*. The title essay charts this woman’s impressions of San Francisco in the collection *Slouching Towards Bethlehem*.

ANSWER: Joan **Didion**

[10] The title of *Slouching Towards Bethlehem* is taken from “The Second Coming,” a work by this Irish poet who also wrote “Sailing to Byzantium” and “Easter, 1916.”

ANSWER: William Butler **Yeats** (“yates”)

[10] This work by Didion charts the year following the death of her husband, John Gregory Dunne. The title anthropological phenomenon is exemplified by a story in which Didion keeps her husband’s shoes in case he needs them when he returns.

ANSWER: *The **Year of Magical Thinking***

<American Literature>

6. This piece’s first movement, an *Adagio sostenuto* in C-sharp minor, became so popular in its composer’s lifetime that he told his pupil Carl Czerny (“CHAIR-nee”), “Surely I’ve written better things.” For 10 points each:

[10] Name this piano sonata by Beethoven subtitled “Quasi una Fantasia” that gained a nickname evoking a nocturnal phenomenon shimmering above Lake Lucerne.

ANSWER: **Moonlight** Sonata [or Piano Sonata No. **14**, Op. 27 No. 2]

[10] Beethoven’s Piano Sonata No. 15, composed directly after the *Moonlight Sonata*, is often given this nickname. It also names his Sixth Symphony.

ANSWER: **Pastorale** [or **Pastoral** Symphony]

[10] This piano sonata by Beethoven has a programmatic structure, and was written after his patron Archduke Rudolphe fled Vienna. The three chords that open this piece have the syllables “Le-be-wohl” (“LAY-buh-vole”) written above them.

ANSWER: **Les Adieux** (“lay zahd-YEW”) Sonata [or Piano Sonata No. **26** in E-flat major, Op. 81a]

<Classical Music>

7. The “Poem” and the “Bulletin” are two surviving sources on this battle, where one side was aided by the Sherden pirates. For 10 points each:

[10] Name this largest chariot battle ever fought, a defeat for Hittite forces under Muwatalli II (“MOO-wuh-TAH-lee the second”).

ANSWER: Battle of **Kadesh**

[10] This “great” pharaoh was victorious against the Hittites at the Battle of Kadesh. This husband of Nefertari had a complex of temples dedicated to him constructed at Abu Simbel.

ANSWER: **Ramesses** the Great [or **Rameses** II]

[10] During the battle, spies misled Rameses into thinking the Hittites were in this city. A citadel in this capital of the Yamhad Empire included a temple dedicated to the storm god Hadad.

ANSWER: **Aleppo** (“uh-LEP-oh”) [accept **Halab**]

<Other History>

8. According to Black Elk, participants of this tribe have their chests, and sometimes backs, pierced with bones with the aim of tearing their flesh during one of their rituals. For 10 points each:

[10] Name this tribe that practices the *Inipi* sweat lodge ceremony. This tribe’s interpretation of the Ghost Dance ritual introduced apocalyptic elements, including predictions of the disappearance of all white men.

ANSWER: **Lakota** [or **Sioux**]

[10] The Lakota usually perform this ritual after the Inipi. Many Plains Indian tribes place central importance on this ritual, which often involves piercing the skin with bones attached to rawhide thongs.

ANSWER: **Sun Dance**

[10] Black Elk described the Lakota Sun Dance in a book titled for a “sacred” one of these devices, which was given to the Lakota by White Buffalo Calf Woman. These devices were smoked by the Lakota to seal peace treaties.

ANSWER: peace **pipes**

<Religion>

9. The Richat (“ree-SHAHT”) Structure is a 25-mile-wide eroded dome in Northwest Africa. For 10 points each:

[10] The Structure is known as the “eye” of this massive African desert.

ANSWER: **Sahara** Desert

[10] The swirling rings of the Richat Structure are entirely within this Saharan country. Its capital of Nouakchott (“noo-AHK-shot”) is a port city on the Atlantic coast.

ANSWER: **Mauritania**

[10] The Structure also contains many of these dry valleys and river beds, which are common throughout the Sahara. Their four letter name comes from Arabic.

ANSWER: **wadis** (“WAH-deez”)

<Current Events/Geography/Other Academic/Pop Culture>



10. Susan Merritt proposed an “inverted taxonomy” of these algorithms that classifies them based on “split” and “join” procedures. For 10 points each:

[10] Name these algorithms that arrange a list’s elements in a specific order.

ANSWER: **sorting** algorithm

[10] Under the inverted taxonomy, this sorting algorithm is “hardsplit/easyjoin,” because the “split” step selects a pivot then partitions the list into sets of values less than and greater than the pivot, while the “join” step connects the sorted sublists.

ANSWER: **quicksort** [accept **partition-exchange** sort]

[10] Easysplit/hardjoin sorting algorithms such as mergesort generally have this property, which quicksort lacks. Sorts with this property can be iterated, such as alphabetizing people by last name and then again by first name.

ANSWER: **stability** [or word forms like **stable**]

<Other Science>

11. One building of this type is made of concrete and has large intersecting cutouts on one of its walls, letting in a pattern of light. For 10 points each:

[10] Name this sort of building. One of these buildings made partially out of cardboard was built in New Zealand after a 2011 earthquake.

ANSWER: **churches** [or **cathedrals**]

[10] The architects of the Church of the Light and the Cardboard Cathedral, Tadao Ando and Shigeru Ban (“bahn”), are from this country. After the Kobe earthquake in this country, Ban constructed Paper Houses to serve as temporary shelters.

ANSWER: **Japan**

[10] Shigeru Ban designed an outpost of this museum in Metz (“mess”). The original Paris location of this modern art museum was designed by Renzo Piano and Richard Rogers, and features colored piping on its exterior.

ANSWER: Centre **Pompidou** (or **Pompidou** center)

<Other Arts>

12. Counterculture icon Timothy Leary conceived of a “tunnel” named for this concept that he later fleshed out in his book *Neuropolitique*. For 10 points each:

[10] *Neuropolitique*’s “tunnel” named for this concept is similar to the theory of it put forth in a foundational text by Peter Berger and Thomas Luckmann named for this concept’s “social construction.”

ANSWER: **reality** [accept **reality** tunnel or *The Social Construction of **Reality***]

[10] In *The Social Construction of Reality*, Berger and Luckmann argue that this process happens through the assignment of “roles” such as the “father-role.” An earlier thinker wrote about “mechanical” and “organic” solidarity in a text about this concept “in society.”

ANSWER: **division of labor** [accept ***Division of Labor in Society***]

[10] That earlier thinker was this sociologist who postulated four types of the namesake action in *Suicide* and wrote *The Rules of Sociological Method*.

ANSWER: Émile **Durkheim**

<Philosophy/Social Science>

13. An author from this country completed a trilogy in 2020 with the novel *This Mournable Body*. For 10 points each:

[10] Name this home country of the author of *Nervous Conditions*, Tsitsi Dangarembga (“dan-ga-REM-ga”), who was arrested in July 2020 for protesting against government corruption in this country.

ANSWER: **Zimbabwe**

[10] Dangarembga’s novel *This Mournable Body* has been shortlisted for this award, which was jointly won in 2019 by Bernardine Evaristo’s *Girl, Woman, Other*. This UK-based prize is awarded for English-language fiction.

ANSWER: **Booker** Prize [or Man **Booker** Prize]

[10] *This Mournable Body* is narrated in this way, characterized by the narrator being addressed as “you.” This unusual perspective is much less commonly used for narrative prose than than third person.

ANSWER: **second** person

<World/Other Literature>

14. These systems result from phonon interactions, causing coupling to occur at unusually long distances. For 10 points each:

[10] Name these composite bosons that flow through a material’s lattice like a superfluid. Electrons couple into these systems at very low temperatures.

ANSWER: **Cooper pairs** [or **BCS pairs**]

[10] Cooper pairs occur in these materials, whose electric resistance drops to zero when cooled below a critical temperature. Placing an insulator between these materials creates a Josephson junction.

ANSWER: **superconductors** [accept type I **superconductors** or type II **superconductors**; do not accept or prompt on “conductors”]

[10] In a Josephson junction, a supercurrent flows across the insulator due to this quantum phenomenon in which a particle bypasses a classical barrier.

ANSWER: quantum **tunneling**

<Physics>

15. This event led to the passage of the hyper-reactionary Six Acts. For 10 points each:

[10] Name this event in which protestors in Manchester listening to Henry Hunt were attacked by cavalry. Protestors killed in this event were demonstrating in large part to oppose the Corn Laws.

ANSWER: **Peterloo** Massacre

[10] The Corn Laws were ultimately repealed by this conservative British prime minister. He earlier founded the London Metropolitan Police.

ANSWER: Robert **Peel**

[10] The Corn Laws were repealed to address a blight of this crop in Ireland. Irish dependence on this root vegetable led to the Great Famine in the 1840s.

ANSWER: **potatoes**

<European History>

16. A bawdy story in this collection is told by the drunken miller Robin. For 10 points each:

[10] Name this collection of stories told by pilgrims who are travelling to the shrine of Thomas Becket, a book by Geoffrey Chaucer.

ANSWER: *The Canterbury Tales* [or *Tales of Caunterbury*]

[10] Immediately after the Miller's Tale, which disparages a carpenter, this tale responds by mocking a Cambridge-based miller named Symkyn. This tale is told by a former carpenter named Oswald.

ANSWER: The Reeve's Tale

[10] This character's tale critiques medieval misogyny with its story of a Knight who quests to discover what women most desire. The prologue to this character's tale describes her being beaten by her husband, Jankyn.

ANSWER: the Wife of Bath [accept Alyson or Alys]

<British Literature>

17. Answer the following about weapons in Norse mythology, for 10 points each.

[10] This hammer wielded by Thor has a short handle because its dwarven creators were harassed by Loki in the form of a fly while creating it.

ANSWER: Mjolnir ("MYOLL-neer")

[10] In the Volsunga Saga, this hero asks the dwarven smith Regin to reforge his father's sword, Gram. This hero then uses Gram to slay the dragon Fafnir in just one blow.

ANSWER: Sigurdr [accept Siegfried]

[10] The god Freyr battles the giants Bali and Surtr with one of these objects because he gave away his sword that can fight on its own in order to marry the giantess Gerth.

ANSWER: antler [or stag's horn or deer horn; prompt on horn]

<Mythology>

18. This artist is one of the subjects of Asher Brown Durand's painting *Kindred Spirits*, along with William Cullen Bryant. For 10 points each:

[10] Name this leading painter of the Hudson River School. He painted *The Oxbow* and *The Titan's Goblet*.

ANSWER: Thomas Cole

[10] In this Cole work, a green curtain frames the right side of the painting, which features Greek, Roman, and Egyptian-style temples on one side of a river, and a Gothic cathedral on the other. Painted in 1840, this painting shows its title figure reclining on top of a massive column in the foreground.

ANSWER: *The Architect's Dream*

[10] Cole painted this five-painting series, which begins with a work titled *The Savage State* and ends with *Desolation*. This series of paintings shows the same landscape over time, as a civilization rises, peaks, is destroyed, and then falls back into wilderness.

ANSWER: *The Course of Empire*

<Painting/Sculpture>

19. Answer the following about the chemistry of baking, for 10 points each.

[10] Baking soda is a leavening agent that produces this gas when combined with an acid, so it is used to make a light and fluffy product. This gas is also produced by baker's yeast and gives seltzers their fizziness.

ANSWER: **carbon dioxide** [or **CO<sub>2</sub>**]

[10] Baking soda will also accelerate this reaction, which gives an umami flavor to browned foods like the crusts of baked goods. At high temperatures, this reaction can produce the carcinogen acrylamide.

ANSWER: **Maillard** ("my-YARD") reaction

[10] Basic environments speed up the Maillard reaction because its first step involves one of these functional groups nucleophilically attacking a reducing sugar. These functional groups contain a basic nitrogen atom with a lone pair.

ANSWER: **amines** ("uh-MEENS")

<Chemistry>

20. This leader was assassinated by bodyguards Satwat Singh and Beant Singh before an interview with Peter Ustinov. For 10 points each:

[10] Name this Prime Minister of India who controversially ordered a raid on the Golden Temple in Operation Blue Star.

ANSWER: **Indira Gandhi** [or **Indira Priyadarshini Gandhi**; prompt on **Gandhi**]

[10] Indira Gandhi was succeeded by her son Rajiv, who was implicated in a scandal involving this company. This Swedish arms company was accused of offering bribes in order to secure contracts with the Indian government.

ANSWER: **Bofors** AB [accept **Bofors** Scandal]

[10] Rajiv Gandhi was ultimately killed by the Tamil ("TUM-ill") Tigers, a militant group from this country. This southern neighbor of India has seen conflict between its Sinhalese majority and the Tamils.

ANSWER: **Sri Lanka** [or Democratic Socialist Republic of **Sri Lanka**]

<World History>