

ACF Nationals 2013

Packet by Berkeley (Ankit Aggarwal, Sam Braunfeld, Tanay Kothari) and Rice (Henry Gorman, Lauren Zook, Victor Prieto, Will Otter, Chris White)

Tossups

1. A Leftover Lemma for privacy amplification is named for these entities and uses pairwise independent ones for randomness extraction. A one-way compression function is used to create one of these objects in the Merkle-Damgard construction. Good expected performance, even against an adversary, can be guaranteed by randomly picking one of these objects from a universal family. Padding the input of these mathematical objects is known as “salting.” One method to solve a major problem with them is chaining. Taking the modulus with respect to a prime is a common last step in algorithms implementing these computational functions. Exemplified by the SHA algorithms, these objects are subject to collisions when their one-to-one property breaks down. For 10 points, name these functions subject used to map data to fixed-length strings.

ANSWER: hash functions [or hashes]

2. Vasari wrote that this artist was an atheist who left Florence for his hometown after painting an unpopular altarpiece originally commissioned for Leonardo. Daphne turns into a laurel tree in the background of his *Combat of Love and Chastity*. The motto “Timete Deum” can be seen in his portrait of Francesco delle Opere, while John the Baptist and Mary Magdalene strangely adopt the same clasped hands pose in his *Crucifixion with Saints*. Although he taught Pinturicchio, his most famous student’s *Marriage of the Virgin* features a central structure taken from this artist’s best known work. That painting by this artist features two triumphal arches in the background, as well as scenes that depict the stoning of Christ and the tribute money. That Sistine Chapel fresco shows the Temple of Solomon in the background as a kneeling apostle receives the title golden object from Jesus. For 10 points, name this artist of *Christ Giving the Keys to St. Peter*, the teacher of Raphael.

ANSWER: Pietro Perugino [or Pietro Vannucci]

3. One novel written in this language chronicles the career of the artist Jed Martin, and includes a scene in which its author is decapitated by a laser. This language was also used to write a novel in which a doctor diagnoses Adam Pollo as clinically insane. Another novel written in this language focuses on a biologist whose research pioneers a way to free mankind from sexual reproduction. The contemporary novel *The Map and the Territory* was written in this language. An unfinished sequence of novels in this language begins with *Storm in June* and was posthumously published in 2004. *The Interrogation* and *The Elementary Particles* were both written in this language, which names a “suite” written by Irene Nemirovsky. For 10 points, name this native language of J. M. G. Le Clezio and Prix Goncourt winner Michel Houellebecq [WELL-beck].

ANSWER: French [or Francais]

4. This person defined the limits of conscious knowledge in terms of so-called ciphers of transcendence. This author’s program to categorize all modes of thought and being phenomenologically is known as *das Umgreifende*, or the Encompassing. Contra Marx, this thinker defended the *Bildungsbürgertum*, or educated bourgeoisie, as society’s essential stabilizer. This philosopher’s later humanist phase began with *The Origin and Goal of History*, in which he co-advocated Kant’s ideas for perpetual peace, in his version as an alliance of democracies with shared institutions. The orientational, existential, and transcendental modes of being are the subjects of *Philosophical World Orientation*, *The Illumination of Existence*, and *Metaphysics*, the three volumes of his *Philosophy*. For 10 points, name this German philosopher who sought a transition from *dasein* to *existenz* in *The Philosophy of Existence*.

ANSWER: Karl Theodor Jaspers

5. A future holder of this office placed the first rivet into the Statue of Liberty. The man who held this office under James Monroe unsuccessfully challenged DeWitt Clinton for the Governorship of New York. The man who held this executive branch office under Bill Clinton was appointed to head the Reinventing Government Commission. Another holder of this office was indicted for not reporting bribes as income to the IRS, and was forced to resign for tax evasion. Men who held this office in the 19th century include Daniel Tompkins and Garret A. Hobart. A recent holder of this office famously claimed he was not part of the Executive branch when dealing with an investigation into his advisor, “Scooter” Libby. For 10 points, name this office once held by Dick Cheney.

ANSWER: Vice President of the United States

6. The first of these works includes a piece named for the hero of a novel by Etienne de Senancour, and ends with a piece evoking the sound of distant bells. The second of these works includes a sonata which begins with a series of jarring descending octave tritones. The last of these works was published in 1883, and includes a funeral march for Emperor Maximilian as well as two threnodies to the cypress trees of the Villa d’Este. The first of these suites incorporates many of the pieces from its composer’s previous collection *Album d’un voyageur*, such as “Beside a Spring” and “Obermann’s Valley.” They include the *Dante Sonata*, as well as other pieces inspired by their composer’s travels in Switzerland and Italy with his mistress Marie d’Agoult. For 10 points, identify these three Romantic piano suites by Franz Liszt named for periods of time he spent in foreign countries.

ANSWER: Annees de Pelerinage [or Years of Pilgrimage]

7. Manuel Gutierrez was thrown in jail until he composed a new anthem for this country, one which is still in use today. The first permanent settlement and initial capital of this country was Cartago, in 1563. Its most recent civil war lasted just forty-four days, which was ended by the National Liberation Party under José Figueres. The current president of this nation is Laura Chinchilla. After failing to claim conscientious objector status from the U.S. government, Quakers from Alabama moved to the town of Monteverde in this country. In 1856, this country sent an army to Nicaragua to drive out William Walker. Ninety two years later, that army was constitutionally abolished. For ten points, name this Latin American country with capital at San José.

ANSWER: Republic of Costa Rica

8. This ruler nearly drowned at the Battle of Vittsjö, and after losing one war he was forced to pay a substantial indemnity at the Peace of Knared. This ruler instituted the new parish regulations, making it easier for him to tax and conscript. His treasury was boosted by the Falun Copper Mine. This man promoted Scotsman Alexander Leslie to Field Marshal, and his army included the Scottish Mackay’s Regiment and General Johan Baner. This man defeated General Koniecpolski in a war that ended with the Peace of Altmark. The defense of Stralsund began this man’s most storied campaign, which reached its high water mark at the Battle of the Lech, where his nimble light artillery fatally wounded the Count of Tilly. For 10 points, name this man killed at the Battle of Leutzen, the King of Sweden during the Thirty Years War.

ANSWER: Gustavus Adolphus [or Gustav Adolph; or Gustav II Vasa]

9. Solutions to this set of relations have a corner if they satisfy the Weierstrass-Erdmann conditions. The key lemma to derive these equations states that, if the integral of f times h vanishes on an interval for all continuous h , then f is zero; these equations are thus equivalent to the condition that the variation in the time integral of the object function is zero. Rewriting these equations in canonical variables gives Hamilton’s equations. A necessary condition for the action to be stationary is that these equations are satisfied by their namesake function. For 10 points, name this set of differential equations that the Lagrangian must satisfy for any trajectory available to a system.

ANSWER: the Euler-Lagrange equations [or Lagrange equations; prompt on Euler equations]

10. In one of this author's novels, George McCaffrey sees a flying saucer after attempting to drown his former professor John Robert Rozanov. Another of this author's novels follows Bradley Pearson, who incriminates himself in Rachel Baffin's murder of her husband Arnold. This author of *The Philosopher's Pupil* also wrote a novel whose title object is thrown into a lake near Imber Abbey after a nun refuses to disclose an affair. She had a lifelong affair with Philippa Foot, despite being married to John Bayley, and won the Booker Prize for a novel in which Charles Arrowby becomes obsessed with his first love, Mary Fitch. Before writing *The Black Prince* and *The Bell*, she began her literary career with a novel about the aspiring author Jake Donaghue. For 10 points, name this 20th century British author of *The Sea*, *The Sea* and *Under the Net*.

ANSWER: Dame Iris Murdoch

11. Those in the presence of a holder of this office were expected to perform the submission ritual of *madegdeg*, in which they removed their shawl, tied it around their waist, and bowed. Holders of this office were assisted by an official called the "Mouth of the King." One holder of this office imprisoned the diplomat Hormuzd Rassam, resulting in his country being the target of a British expedition led by Robert Napier and forcing that holder of this office to commit suicide. Holders of this office are traditionally crowned at the Church of Our Lady Mary of Zion. Zewditu I was the last woman to hold this title, having deposed Iyasu V. Another holder of this office signed the disputed Treaty of Wuchale. This office lost most of its authority during the Era of the Princes, and the emblem of this office features a tricolor flag being held by a lion, the "Lion of Judah." For 10 points, name this royal title last held by Haile Selassie.

ANSWER: Emperor of Ethiopia [or Emperor of Abyssinia; or Negus; or Negusa Nagast]

12. In one of this director's films, newsreel footage from the Spanish Civil War is interspersed with a scene of Ignat reading a letter. His diploma-winning film from VGIK contains a famous shot of a wrecking ball destroying an old building. Another of his films opens with Alexander planting a tree with his son in a nine-and-a-half minute tracking shot characteristic of his later films. This director of *The Steamroller and the Violin* collaborated with the authors of *Roadside Picnic* for a film where the title figure agrees to guide "The Professor" and "The Writer" into "The Zone." Theophanes the Greek invites the title character to paint the Cathedral of the Annunciation in one of his films. Kris begins to see his dead wife while investigating the death of one of three men orbiting the title water planet in a film by this director based on a Stanislaw Lem novel. For 10 points, name this Soviet director who chronicled a 15th century icon painter's life in *Andrei Rublyov* and also directed *Solaris*.

ANSWER: Andrei Arsenyevich Tarkovsky

13. One leader of this organized religion changed his name to Anaxagoras. Payan condemned this religion for being excessively feminine. Adherents of this religion erected statues representing sleep on top of graves, and posted the inscription "Death is an Eternal Sleep" at cemeteries. This religion's holidays included the "Feast of Victory" and "Feast of Brutus" and this religion's places of worship were adorned with the scripture "To Philosophy." To discourage idolatry, Sophie Momoro was selected to portray this religion's namesake figure, most prominently at a ceremony where this religion's temple was established inside the desecrated Cathedral of Notre Dame. Replaced by the Cult of the Supreme Being, for 10 points name this atheistic cult adopted as the state religion of Revolutionary France.

ANSWER: Cult of the Reason [or Culte de la Raison; prompt on "atheism"]

14. In yeast, the effector phase of this phenomenon was determined to be dependent on GW182, a protein necessary for formation of discrete processing bodies, sometimes called decay centers. This phenomenon was first identified by Napoli, Lemieux, and Jorgensen, who were trying to determine if chalcone synthase was the rate-limiting step of anthocyanin biosynthesis. It was later confirmed by Ramano and Macino in *Neurospora*, though they referred to it as quelling. Tuschl established the existence of two separate phases in this phenomenon; these are the initiator phase that includes such proteins as Pasha and Drosha and the effector phase that takes place in the Argonaute-containing RISC complex. Work in *C. elegans* by Fire and Mello demonstrated that this phenomenon functioned by means of a double-stranded construct, cut by the ribonuclease Dicer. For 10 points, identify this process in which the presence of specific double-stranded nucleic acids leads to the inhibition of gene expression.

ANSWER: **RNA Interference** [prompt on **co-suppression**; prompt on **quelling** before mentioned]

15. This poem observes that no “haunt of prophecy” or “old chimera of the grave” has endured “as April’s green endures.” This poem’s third stanza imagines a time when “the sky will be much friendlier...not this indifferent and divided blue” after asking “shall our blood fail? Or shall it come to be the blood of paradise?” Its second-to-last stanza describes “a ring of men” who chant “their boisterous devotion to the sun” in response to a woman who feels “the need of imperishable bliss.” This poem’s final line provides the title for Helen Vendler’s study of its author’s long poetry, *On Extended Wings*. Its opening lines describe how “the holy hush of ancient sacrifice” is dissipated by “Complacencies of the peignoir, and late coffee and oranges in a summer chair.” This poem declares that “death is the mother of beauty,” and was published in its author’s collection *Harmonium*. For 10 points, name this meditation about Christianity by Wallace Stevens, whose title refers to a time when many believers attend church.

ANSWER: **“Sunday Morning”**

16. **WARNING:** Two answers required!

The Battle of Ongal was the first clash between these two countries, who also fought each other during the Peter Delyan rebellion. These two countries allied with each other to stop an offensive led by Prince Maslamah. Michael Rangabe was paralyzed in one battle between these countries. The leader of one of these countries made a cup from the skull of the leader of the other polity after the Battle of Pliska. After these two polities met in the Battle of Kleidion, the losing army was allegedly blinded and forced to march home. For 10 points, name these two rival powers in the Balkans, who clashed during the reign of Basil II.

ANSWER: **Bulgaria** and the **Byzantine** Empire [or **Bulgars** and the **Eastern Roman** Empire]

17. The Perkow reaction reacts a trialkyl compound containing one form of this element with a haloketone and is useful in making effective donor compounds of this element. A sulfide of this element is used in the creation of Lawesson’s reagent, a compound important to thiation reactions. Overexposure to this element and some of its compounds may cause osteonecrosis of the jaw. When this element in the pure form is burned in sufficient oxygen, it forms a compound whose common name derives from the empirical formula, and therefore identifies it as this element’s pentoxide. With indium, it forms a semiconductor used in high frequency applications. Salts containing this element can be reacted with alkyl halides to form ylides important to the Wittig reaction. For 10 points, identify this reactive element with a highly pyrophoric white allotrope.

Answer: **Phosphorus**

18. Chris Knight argued that this practice became linked with hunters eating their own kills instead of sharing them in a book subtitled “Menstruation and the Origins of Culture.” Joseph Shepher wrote a book taking a “biosocial view” of this practice, whose “second type” was analyzed by Francoise Heritier. George Murdock’s book *Social Structures* presents a list of 250 societies where this practice does not occur. Malinowski theorized that this practice leads to fundamentally disruptive rivalries, in contrast to Levi-Strauss, who argued that restrictions on it led to the origin of human culture and caused expanding group alliances through exogamy. Studies of the kibbutz system support the idea of a “natural aversion” to this practice caused by the Westermarck effect, which prevents it from occurring between people who grow up together. For 10 points, name this type of sexual behavior which many societies hold taboo.

ANSWER: incest

19. Near the beginning of this play, one character complains that a meal he prepared at Pylos was stolen by the antagonist. That crime is brought up repeatedly in this play, and is a reference to the battle of Sphacteria. In an anapestic sequence, this play's chorus reviews the fall from popularity of the authors Magnes and Cratinus. The protagonist boils another character back to youth during this play's second parabasis. In this play, two slaves wearing masks identifying them as generals steal a set of oracles that describe successive leaders of Athens as a rope peddler, a sheep peddler, and a hide peddler, who is toppled in turn by the sausage peddler Agoracritus. This comedy roundly abuses the politician Cleon. For 10 points, name this comedy by Aristophanes whose chorus consists of members of the Athenian cavalry.

ANSWER: *The Knights* [or Hippeis]

20. An inscription at Magnesia on the Maeander indicates that at least some of these people trace their descent from Ino, who became the sea goddess Leucothea. Persecution of them in Edonia was the ultimate cause of the downfall of its king Lycurgus after he developed a murderous aversion to ivy. A hazy association with wool spinning gives this group the alternate names of Mimallones and Klodones, used by Plutarch. Their characteristic objects include the bassaris and thyrsus, the former of which lends them the alternative name Bassarides, or fox skin-wearers. A group of them from Ciconia practiced their characteristic rituals of omophagia and sparagmos on a sun-worshipping demigod near Mount Pangaion. Responsible for the deaths of Pentheus and Orpheus, for 10 points, name these roving bands of female followers of Dionysus, who will tear you to pieces and eat you.

ANSWER: Maenads [or Bacchae; accept Mimallones or Klodones or Bassarides]

TB 21. A Banach-Tarski-like paradox discovered by this person has the complement of a countable subset of the sphere divided into three congruent parts that are somehow congruent to the union of only two of the parts. This scientist showed that Zorn’s lemma is equivalent to the statement that every totally ordered subset of a partially ordered set is contained in a maximal totally ordered set. A quantity discovered by this mathematician is the zero-diameter limit of the infimum of the sum of some power of the diameters of all countable covers of a set; that is his namesake measure, which is used to classify fractals. For 10 points, identify this topologist who also names topological spaces in which any two distinct points have non-intersecting neighborhoods.

ANSWER: Felix Hausdorff

Bonuses

1. Answer some questions about some underappreciated luminaries of the *Mabinogion* for 10 points each.

[10] In his tale, this dude dreams of a beautiful woman, the daughter of Kynan, and travels to Britain to find her. He later returns to Rome and conquers a whole bunch of stuff with the help of his new British friends, becoming Emperor.

ANSWER: Maxen Wledig [or Magnus Maximus]

[10] This kingly dude shows up in *The Dream of Rhonabwy*, where he plays gwydbwyll with Owein, and then lets his pages kill Owein's ravens. He and his servants Kai and Bedwyr later help Culhwych win Olwen. His wife Guinevere and sword Excalibur are pretty clearly from Annwn, even in later, non-Welsh stories.

ANSWER: Arthur

[10] This dude's cunning shows in his trade of illusionary horses and dogs for Pryderi's infernal pigs. He also had to trick Arrianrhod into giving his son Llew Llaw Gyffes his name and his arms.

ANSWER: Gwydion fab Dôn

2. The title character of this opera dies after sniffing poisoned flowers sent by her rival, who also loves Maurizio. For 10 points each:

[10] Name this opera whose central conflict stems from a love triangle involving the Princess of Bouillon, the Count of Saxony, and the title actress.

ANSWER: Adriana Lecouvreur

[10] Like Francesco Cilea, the composer of *Adriana Lecouvreur*, this composer is best known for his repertoire of *verismo* works, including one that ends with Maddalena going to the guillotine with her lover, the poet Andrea Chénier.

ANSWER: Umberto Menotti Maria Giordano

[10] A more famous example of *verismo* is this Ruggero Leoncavallo opera, in which Canio sings "Vesti la giubba" after discovering that his wife Nedda has been unfaithful.

ANSWER: I Pagliacci

3. This author included his essays "On the Pleasure of Painting" and "On Milton's Sonnets" in his collection *Table Talk*. For 10 points each:

[10] Name this English literary critic, who included sketches on contemporaries such as William Godwin and Jeremy Bentham in *The Spirit of the Age*.

ANSWER: William Hazlitt

[10] In *The Spirit of the Age*, Hazlitt criticized this poet for relying too much on the brooding heroes of poems such as *Childe Harold's Pilgrimage* and *Don Juan* [joo-an].

ANSWER: Lord Byron [or George Gordon]

[10] The final essay in *The Spirit of the Age* discusses this author and Washington Irving. His own essays include "Old China" and "Dream-Children."

ANSWER: Charles Lamb [or Elia]

4. This protein was named for its weight in kildodaltons, though the figure given by SDS-PAGE overstated the true weight by some 10 kD due to effects from its many proline residues. For 10 points each,
[10] Identify this protein and transcription factor which halts the cell cycle if it detects DNA damage. HPV E6 induces the degradation of this molecule, lowering the expression of downstream genes that help suppress cell growth and division.

ANSWER: **p53** [or tumor **protein 53**]

[10] p53 binds to p21, which controls the regulation of this class of molecules responsible for driving the cell cycle forward. If p53 is damaged, p21 never binds to these molecules, thus allowing the cell cycle to continue without DNA repair enzymes kicking in.

ANSWER: **CDKs** [or **cyclin-dependent kinases**]

[10] This autosomal dominant condition is associated with congenital mutations in the p53 gene, and causes a predisposition to soft tissue cancers for afflicted individuals.

ANSWER: **Li-Fraumeni** syndrome [or **Li-Fraumeni-like** syndrome; **LFS**; or **LFL** syndrome]

5. This leader finally picked up her 1991 Nobel Peace Prize in May 2012. For 10 points each:

[10] Name this leader of Myanmar's National League for Democracy party, which won an election in 1989 that would have made her Prime Minister. Instead, she spent the better part of two decades under house arrest.

ANSWER: Aung San **Suu Kyi**

[10] Suu Kyi's gradual return to involvement in Burmese politics has been facilitated by this current Burmese President's decision to ease up on censorship and reinstate Suu Kyi's party.

ANSWER: Thein **Sein**

[10] Suu Kyi has faced criticism from human rights groups for remaining silent on the issue of the government's treatment of the Rohingyas, a minority group in Myanmar who practice this religion. Other minorities who practice this religion include the Pomaks in Bulgaria.

ANSWER: **Islam**

6. The Riesz representation theorem explains the use of this notation. For 10 points each:

[10] Name this notation developed by Dirac for quantum mechanics. Its namesake elements represent quantum states in a Hilbert space and their duals.

ANSWER: **bra-ket** notation

[10] The time evolution operator of a quantum system must have the unitary property, which means that the operator's adjoint is this for the operator. Applying this to its corresponding operator gives the identity operator.

ANSWER: **inverse** operator

[10] The unitarity of evolution operators is the key to proving this theorem. It states that there is no way to copy an arbitrary quantum state.

ANSWER: **no-cloning** theorem

7. Examples of this policy included the creation of public schools and a law giving city councils control of places of worship. For 10 points each:

[10] Give this French term, used to denote the Third, Fourth, and Fifth Republic's policies of strict separation of church and state.

ANSWER: **laicite**

[10] The French public school system owes much to this Third Republic politician, whose two namesake laws made public education free and mandatory, respectively.

ANSWER: Jules **Ferry**

[10] Today, France's tradition of laicite and its growing immigrant community are clashing over a French law that bans this practice. Muslims argue that this ban is discriminatory.

ANSWER: **wearing a veil** or **covering the face** or **covering the head** [accept synonyms]

8. The protagonist of this novel impregnates an *osu* named Clara and is caught giving bribes. For 10 points each:

[10] Name this novel by Chinua Achebe in which Obi Okonkwo receives a scholarship from the Umuofia Progressive Union to study in England. It's the sequel to *Things Fall Apart*.

ANSWER: **No Longer at Ease**

[10] An author from this nation, Yahya Haqqi, wrote about Ismail, who is "corrupted" by his romance with Mary while studying in England in his novel *The Saint's Lamp*. A leading poet from this nation, Taha Hussein, wrote the autobiography *The Days*.

ANSWER: **Egypt**

[10] In this novel, Mustafa Sa'id kills his manipulative lover, Jean Morris, while finishing his collegiate studies in England. Its narrator drowns himself after Mustafa's wife, Husna, kills her second husband, Rayyis.

ANSWER: A **Season of Migration to the North**

9. Ahijah the Shilonite prophesied that this man would become a king as punishment for Solomon's worship of pagan gods. For 10 points each:

[10] Name this son of Nebat who angered the Lord by establishing golden calves in Bethel and Dan, the first king of Israel who was not also the king of Judah.

ANSWER: **Jeroboam**

[10] A "man of God" prophesied to Jeroboam that this future king of Judah would attack the idolatrous practices established by Jeroboam. This king's repentant response to the priest Hilkiah's discovery of the Book of the Law caused God to postpone the Babylonian Captivity until after his death.

ANSWER: **Josiah**

[10] This king of Israel hated Elijah, illicitly obtained the vineyard of Naboth, was killed despite disguising himself in a battle against the Arameans, and was married most famously to the Sidonian princess Jezebel.

ANSWER: **Ahab**

10. A group of horribly deformed veterans play the title card game in this artist's *Die Skatspieler*. For 10 points each:

[10] Identify this member of the New Objectivity group who exposed German social inequality in his triptych, *Metropolis*.

ANSWER: (Wilhelm Heinrich) Otto **Dix**

[10] Otto Dix chronicled this conflict in his print series, *Der Krieg*. Scenes from this war like *Soldier and Nun* and *Shock Troops Advance under Gas* were included in that series.

ANSWER: **World War I** [or the **Great War** of the **First World War**]

[10] Dix prominently featured these entities in his portrait of a topless Maud Arizona, also known as Suleika. The crossed out name of Olga can be seen in a painting titled for these entities by Norman Rockwell.

ANSWER: **Tattoos** [or **tattoo** artists]

11. The discovery of the “death squad dossier” advanced the genocide case against this leader, who was overthrown by Óscar Mejía. For 10 points each:

[10] Name this creator of his nation’s “Republican Front,” whose supporters caused the Black Thursday riots when controversy arose about his ineligibility to run in 2003. This promoter of the “guns and beans” campaign is currently under house arrest.

ANSWER: Efraín Ríos **Montt**

[10] The genocide case involving Ríos Montt designates this Nobel Laureate as the plaintiff. This Quiché rights advocate was the subject of a controversial autobiography that detailed her involvement in the United Peasant Committee.

ANSWER: Rigoberta **Menchú** Tum

[10] Like Ríos Montt, Rigoberta Menchú lost her most recent bid to serve as President of this country, which was the site of a brutal civil war in the 1980s. At one point, most of this nation’s land was owned by the United Fruit Company.

ANSWER: **Guatemala**

12. In January 2013, researchers from the University of Delaware described new tin-containing versions of this type of compound. For 10 points each,

[10] Name this type of compound that “traps” other molecules within its structure. Methane is notably trapped within hydrogen bonds of water ice, forming the methane type of this type of compound.

ANSWER: **clathrates**

[10] Clathrates are prominent in this field of chemistry, which deals with complexes of molecules that do not covalently bind to each other, but remain “stuck” to each other through non-covalent bonds. Crown ethers are another type of compound used frequently in this field.

ANSWER: **host-guest** chemistry

[10] These compounds are crown ether derivatives with a bridging system across the ring that creates a cavity. The most important of these has the nomenclature 2.2.2; it is used in the stationary phase of some ion chromatography columns.

ANSWER: **cryptand**

13. The speaker of this poem claims that he will “rage on raw meat like a vandal” and asks “Why should I care about Faust?” For 10 points:

[10] Name this poem published in 1915, whose speaker tells artists and poets that “With brass knuckles / This very moment / You must split the world's skull!” Its speaker claims to be the title phenomenon instead of a man.

ANSWER: “A **Cloud in Trousers**”

[10] “A Cloud in Trousers” was written by this early 20th-century Russian Futurist, whose plays include *The Bedbug*.

ANSWER: Vladimir **Mayakovsky**

[10] Mayakovsky also wrote an essay about his discovery of this country. Ilf and Petrov described this country as “one-storied” in a book about their road trip across it during the Great Depression.

ANSWER: **America** [or the **United States** of America; or the **USA**]

14. This man made Naevius Sutorius Macro the head of the Praetorian Guard. For 10 points each:

[10] Name this Roman Emperor, who created a vacancy when he executed his previous Praetorian Commander, Sejanus.

ANSWER: **Tiberius** [or **Tiberius** Julius Caesar Augustus]

[10] Augustus adopted Tiberius on the condition that Tiberius adopt this man, the nephew of Tiberius, father of Caligula, and brother of Claudius. This talented general fought against Arminius in the region that gave him the name by which he is best known, and his death in 19 CE brought suspicion upon Emperor Tiberius.

ANSWER: **Germanicus** Julius Caesar

[10] Tiberius became emperor because these two adopted grandchildren of Augustus, who were his preferred heirs, died in 2 and 4 CE.

ANSWER: **Gaius** Julius Caesar and **Lucius** Julius Caesar [require both]

15. This composer's fifth symphony begins with violas suddenly oscillating between the notes C and A, and only contains two movements. For 10 points each:

[10] Name this composer, whose fourth symphony calls for two timpanists to play clashing tritones on opposite sides of the orchestra.

ANSWER: Carl **Nielsen**

[10] The first movement of Nielsen's fifth symphony calls for this percussion instrument to improvise maniacally in an attempt to disrupt the rest of the orchestra. This instrument is usually placed between the knees of someone playing a standard drum kit, and maintains a constant ostinato throughout Ravel's *Bolero*.

ANSWER: **snare drums**

[10] The finale of this piece by Nielsen includes eleven variations on his chorale "My Jesus, make my heart to love thee." Nielsen died before he could compose individual concertos for each instrument that plays it, only completing concertos for flute and clarinet.

ANSWER: **Wind Quintet** [or **Quintet for Winds**; or Nielsen's **Opus 43**]

16. Prominent members of this language family include Burmese. For 10 points each:

[10] Name this language family, which has the second most speakers after Indo-European, and whose other languages include Hui and Yue.

ANSWER: **Sino-Tibetan** [do not accept "Sinitic" or "Chinese," as Burmese is no such thing]

[10] The most prominent Sino-Tibetan language is Mandarin, which like many Sino-Tibetan tongues is this kind of language, where pitch and inflection alter the meaning of words.

ANSWER: **tonal** language

[10] In more ancient times, people in Burma spoke the Mon language, which is not Sino-Tibetan, but instead belongs to this family whose other members include Vietnamese and Khmer, the language of Cambodia. Curiously, this family also dominates the Nicobar Islands.

ANSWER: **Austro-Asiatic** family

17. This phenomenon was discovered by Nansen on the *Fram* expedition. For 10 points each:

[10] Name this phenomenon in which the Coriolis force causes net transport via ocean currents perpendicular to wind direction.

ANSWER: **Ekman transport** [or **Ekman spiral**]

[10] Also caused by the Coriolis force is this effect, in which boundary currents on one side of ocean gyres are faster, narrower, and deeper.

ANSWER: **western intensification**

[10] Thermohaline circulation is driven not by wind or the Coriolis force, but instead by gradients in temperature and this other variable.

ANSWER: **salinity** [or **salt concentration**; or **solute density**; or **molarity** of salt; or **salt density**]

18. This man was appointed US Ambassador to France during the Quasi-War, and thus was involved in the XYZ Affair. For 10 points each:

[10] Name this Federalist from South Carolina, who made two unsuccessful runs for the Presidency, losing to Jefferson and Madison.

ANSWER: Charles Cotesworth **Pinckney**

[10] Pinckney's running mate in both elections was this New York Senator, who became the last Federalist presidential candidate in 1816, losing badly to Monroe.

ANSWER: Rufus **King** [do not accept **William Rufus King**]

[10] This other Federalist served as Treasury Secretary for John Quincy Adams, and was Adams's running mate in the 1828 election.

ANSWER: Richard **Rush**

19. In this play, an affair between the milkman Sankey and Anna Maurrant causes her husband to kill them both. For 10 points each:

[10] Name this play set in a New York tenement that ends with Rose spurning her admirers, Sam Kaplan and Harry Easter, after witnessing the arrest of her father.

ANSWER: **Street Scene**

[10] This American author of *Street Scene* wrote about a clerk named Mr. Zero who kills his boss after being replaced by a mechanical device in his expressionist play *The Adding Machine*.

ANSWER: Elmer **Rice** [or Elmer Leopold **Reizenstein**]

[10] In *The Adding Machine*, Zero wakes up in this location after being executed before being told by Lieutenant Charles that he's being reincarnated. A *Streetcar Named Desire* is set on a street with this name.

ANSWER: the **Elysian Fields**

20. This semiotician cited the works of historian Jules Michelet to that distance from objects of analysis is essential. For 10 points each:

[10] Identify this thinker who argued that language and style are products of convention and that writing consists in rearranging them in *Writing Degree Zero*.

ANSWER: Roland Gérard **Barthes**

[10] Barthes' analyzed Balzac's *Sarazine* in *S/Z* using five of these semiotic entities, which define what Barthes called networks of meaning. Barthes called his five Hermeneutic, Proairetic, Semic, Symbolic, and Referential.

ANSWER: **codes**

[10] This work of fiction by Barthes concerns itself with the title character's efforts to meaningfully proclaim his affections, including a notable passage about how the declaration of affection loses its meaning after the first utterance.

ANSWER: A **Lover's Discourse: Fragments** [or **Fragments d'un discours amoureux**]