

Fall Open 2019

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Tossups

1. The leading term in this quantity for ferromagnets is temperature to the three-halves power, because the magnon density of states depends on the square root of omega. An empirical formula valid on both sides of the lambda point sets this quantity equal to a constant plus a different constant times the log of the absolute value of the quantity “ T minus T -lambda.” The thermal conductivity of an ideal gas is one-third of the product of the following: (read slowly) density, mean free path, average velocity, and this quantity. The cube root of the quantity “6-pi-squared times number density” is the cutoff (*) phonon wavenumber in a model that predicts a temperature-cubed dependence for this quantity at low temperatures. The partial derivative of internal energy with respect to temperature defines this quantity that is studied in solids with the Debye (“duh-BYE”) model. The change in Q equals this quantity times mass times the change in temperature. For 10 points, name this quantity that for water is one calorie per gram per degree Celsius.

ANSWER: specific heat capacity [accept heat capacity; accept molar heat capacity; prompt on C; prompt on C-sub- ν or C-sub- p] (The equation in the second clue can be found in the section on superfluidity in Feynman’s lectures on statistical mechanics)

<JS, Physics>

2. An artist from this country copied the title of J. M. W. Turner’s *Fishermen Upon a Lee-Shore, in Squally Weather* for a painting of a shirtless man clutching a tree branch, which he included in his series *In Search of the Miraculous*. A portrait from this country depicts its grey-skinned subject in a dress partly decorated with a Mondrian-inspired grid of red, pink, and yellow rectangles. For his series *An Economy of Grace*, an artist from this country controversially painted Judith clutching the decapitated head of a (*) white woman. That artist from this country painted a man seated in a wooden chair in front of a backdrop of thick foliage interspersed with chrysanthemums (“cry-SAN-thuh-mumz”), jasmine, and African blue lilies. That 2018 portrait from this country joined earlier works in the same genre, such as the unfinished Athenaeum portrait, at the National Portrait Gallery. For 10 points, identify this country home to artists Amy Sherald and Kehinde Wiley, who produced portraits of Michelle and Barack Obama.

ANSWER: United States of America [or the U.S.A.]

<INB, Other Academic>

3. Historian John Bossy alleged that Giordano (“jor-DAH-no”) Bruno wrote reports to this man using the pseudonym Henry Fagot (“fah-GO”). This man secured an alliance against Spain with the Treaty of Blois (“bl’WAH”) after replacing Henry Norris. This man’s cousin Thomas employed Ingram Frizer, the supposed killer of Christopher Marlowe. While serving as ambassador to France, this man protected Protestant refugees during the St. Bartholomew’s Day Massacre, including his daughter’s eventual husband, (*) Philip Sidney. While under this man’s employ, Gilbert Gifford used a beer barrel cork to transport an intercepted letter that was then decoded by Thomas Phelippes (“phillips”). This man, who often worked with Secretary of State William Cecil, uncovered Catholic plots led by Francis Throckmorton and Anthony Babington, leading to the execution of Mary, Queen of Scots. For 10 points, name this spymaster under Elizabeth I (“the-first”) of England.

ANSWER: Sir Francis Walsingham

<KS, European History (Commonwealth, Ancient, Historiography)>

4. A philosopher from this country developed a method of asking wise elders questions to uncover philosophical truths, which he calls “sage philosophy.” A 2012 book by an author from this country distinguishes between “orality” and “orature” and introduces the term “cyborality” as part of the title

spherical framework. This country, home to Henry Odera (“oh-DAIR-uh”) Oruka, was also the birthplace of the author of *Globalectics* who described the confining of Peter Brook’s concept of “empty space” in his country behind “barbed wire in prisons and detention camps.” That author from this country described understanding how the “physical violence of the battlefield was replaced by the (*) psychological violence of the classroom” and that “language was the means of spiritual subjugation” after attending “A Conference of African Writers of English Expression.” For 10 points, “Decolonising the Mind” advocated writing in the Kikuyu (“kee-KOO-yoo”) language of what home country of Ngũgĩ wa Thiong’o (“ung-GO-gay wah thee-ONG-oh”)?

ANSWER: Republic of Kenya

<AK, Other Academic>

5. A failed ambush by a marine “Blue Division” during this battle is dramatized in a painting by Alphonse de Neuville set inside a disheveled house. The dentist Thomas W. Evans helped a Spanish empress escape to Kent in the aftermath of this battle. Jean Auguste Margueritte died of his wounds from an attempt to break open an escape route during this battle, whose early phase took place in the village of Bazeilles (“bah-ZAY”). The situation at this battle was compared to being in a (*) “chamber pot” by Auguste-Alexandre Ducrot (“d’yoo-CRO”). During this battle, Emmanuel Félix de Wimpffen (“duh VIMP-fen”) attempted to escape encirclement by attacking La Moncelle (“mon-SEL”). The results of this battle led to the formation of the Government of National Defense. This battle began after the Army of Châlons (“shah-LON”) of Patrice MacMahon was forced to abandon plans to meet with Marshal Bazaine’s (“bah-ZEN’s”) besieged army at Metz. Napoleon III (“the-third”) was taken prisoner after, for 10 points, what disastrous French defeat in the Franco-Prussian War?

ANSWER: Battle of Sedan [accept Battle of Bazeilles during the first sentence]

<KS, European History (Continental)>

6. This thinker’s work is considered as the “Modern Reconstruction of Classical Thought” in a book by Jeffrey Alexander. This thinker described cognitive, evaluative, and cathectic elements of motivational orientation. Energy flows up and control flows down in a “cybernetic hierarchy” devised by this thinker. This thinker described “allocative” and “coordinative” decisions corresponding to different “subsectors” as methods of (*) goal attainment in a model he developed. This man was a doctoral advisor for Harold Garfinkel and Clifford Geertz (“gerts”) at Harvard, and also developed a model that includes adaptation, integration, and latency as part of a system’s four functions. This thinker formulated the “unit act,” developed “pattern variables” and the AGIL paradigm in books like *The Social System*. For 10 points, name this structural functionalist, a sociologist who wrote *The Structure of Social Action*.

ANSWER: Talcott Parsons

<AK, Sociology>

7. The Yugoslav wars inspired this artist’s piece consisting of a table with human bones tagged with silver bands. This artist of *Lustmord* was introduced to Wislawa Szymborska (“VEES-wah-vuh shim-BOR-skah”) through collaborations with Henri Cole. This artist’s time at the Whitney Independent Study Program produced a series of neon posters pasted around Times Square. This artist described being reminded of Malevich’s Suprematism when looking at documents obtained through FOIA (“F-O-I-A”) requests. This artist used bronze plaques for her *Living Series* and created a multicolored installation that (*) spiraled down the ramp of the Guggenheim in 1989. A recent series by this artist projects poetry in block letters onto the facades of buildings. The phrase “Abuse of power comes as no surprise” appears in her series of short slogans and maxims. For 10 points, name this contemporary artist whose *Truisms* series includes LED signs displaying her signature snippets of text.

ANSWER: Jenny Holzer

<AK, Painting and Sculpture>

Bonuses

1. The wealthy Creel-Terrazas family was part of this faction, who adopted their politics from a former education minister, Gabino Barreda. For 10 points each:

[10] Give this common term for a group of advisors who subscribed to the positivist philosophy of Auguste Comte. They were led by Secretary of Finance José Yves Limantour, who implemented the gold standard in his country.

ANSWER: **Científicos** (“see-en-TEE-fee-co’s”) [prompt on, but do **NOT** reveal, Porfirio Díaz’s cabinet or similar answers]

[10] Limantour and the Científicos advised this president of Mexico. Despite initially campaigning against the idea of re-election, he served seven terms in office until he was unseated at the beginning of the Mexican Revolution.

ANSWER: Porfirio **Díaz** [or José de la Cruz Porfirio **Díaz** Mori]

[10] The Científicos competed for influence with this military leader who modernized Nuevo León and created an alternative Second Reserve that Díaz later disbanded. He was killed while participating in the attack on the National Palace that started the Ten Tragic Days.

ANSWER: Bernardo **Reyes** [or Bernardo Doroteo **Reyes** Ogazón]

<KS, Other History>

2. Virginia Williams provided the first improvement to the asymptotic runtime of a certain task since this algorithm was introduced in 1987. For 10 points each:

[10] Name this algorithm that has a runtime of big- O of n -to-the-2.375. This algorithm builds on a slower algorithm’s trilinear form and hashes indices of blocks to elements of a Salem-Spencer set.

ANSWER: **Coppersmith-Winograd** algorithm

[10] Coppersmith and Winograd based their work off of the Strassen algorithm, which uses this recursive technique. Dynamic programming can be viewed as an extension of this technique when sub-problems overlap

ANSWER: **divide-and-conquer**

[10] The Coppersmith-Winograd and Strassen algorithms compute this operation. The performance of naïve algorithms for this operation depend on loop order and whether memory is in row-major or column-major order.

ANSWER: **matrix multiplication** [or **multiplying matrices**; do **NOT** accept or prompt on “multiplication”]

<JS, Computer Science>

3. Answer some questions about the materials Pablo Picasso used, for 10 points each:

[10] Give this two-word French term for collages that exclusively used a certain material. The first piece of this type was created by Georges Braque with his *Fruit Dish and Glass*, which greatly influenced Picasso’s later collages.

ANSWER: **papiers collés** (“pahp-yay COL”)

[10] Picasso adopted a muted palette for this large oil painting created in response to the bombing of a Basque town during the Spanish Civil War.

ANSWER: **Guernica** (“gher-NEE-cah”)

[10] Picasso often used this common French enamel paint popular during the early 1900s. In *The Decorative Art of Today*, Le Corbusier (“lay cor-b’yoo-zee-AY”) asked citizens to cover their walls in a white hue of this paint in his “Law of” this paint.

ANSWER: **Ripolin**

<AK, Painting and Sculpture>

4. Name these artists of the 20th and 21st century known for their paintings of grotesque nudes. For 10 points each:

[10] This British artist and grandson of an Austrian psychoanalyst painted pale nudes using thick *impasto* in portraits like *Girl with a White Dog* and one showing “Big Sue” Tilley lying on a couch, *Benefits Supervisor Sleeping*.

ANSWER: Lucian **Freud** [or Lucian Michael **Freud**]

[10] Gustav Klimt mentored this Austrian Expressionist, who painted several contorted nude self-portraits, many of which feature his muse Wally Neuzil (“NOY-tsil”).

ANSWER: Egon **Schiele** (“SHEE-luh”)

[10] This artist overlaid mirrored cursive writing over a distorted nude portrait of herself in *Propped*, one of the many portraits of this contemporary British artists that has drawn comparisons to the work of Lucian Freud.

ANSWER: Jenny **Saville**

<AK, Painting and Sculpture>

5. Some of these compounds formed from two tren subunits have ellipsoidal cavities and are effective anionic (“ANN-ionic”) receptors in water. For 10 points each:

[10] Name these compounds that bind cations (“CAT-ions”) and anions (“ANN-ions”) in their three dimensional cavity. The 222 one of these compounds has two ethereal oxygen atoms in each of its three bridge between two nitrogens.

ANSWER: **cryptands** [or **crypts**; accept **cryptates**]

[10] Jean-Marie Lehn’s work on cryptands led to him sharing a Nobel with Donald Cram and Charles Pedersen, who worked on the crown type of these compounds. An oxygen atom is bonded to two alkyl groups in these compounds.

ANSWER: **ethers** [accept crown **ethers**]

[10] Cryptands and crown ethers are useful as these species because they allow alkali metal salts to be dissolved in organic solvents. Charles Starks first studied how quaternary ammonium salts act as these species.

ANSWER: **phase-transfer catalysts** [or **PTCs**]

<JS, Chemistry>