

Berkeley Late Spring Tournament—I Know Kung Fu (2004)
Questions by editors for the Masters team

1. The protagonist of this story uses a Ugandan trick to kill Ivan, the former official knouter of the Great White Czar, and almost wins with a Malay mancatcher. The hero wanders into Death Swamp in the southeast corner of Ship-Trap Island and constructs a Burmese tiger trap which claims a dog, but has to leap into the sea to escape General Zaroff. Zaroff finds a way to amuse himself after becoming bored with tigers and Cape buffalo. FTP, name this Richard Connell story in which Zaroff hunts Rainsford.

Ans: **The Most Dangerous Game**

2. John von Neumann proved that for every finite, zero-sum, two-person game, there exists at least one optimal one of these, and if there is more than one optimal one, there are infinitely many. In a game like Rock-Paper-Scissors, the optimal one is simply to choose each choice with probability one-third, since obviously no optimal pure strategy exists. For ten points, what is this strategy for playing a two-person game in which you choose among the different possibilities randomly?

Ans: **mixed strategy** (prompt on **strategy**)

3. On a manifold with symplectic form ω , his name is given to the volume measure $\omega^n/n!$ over n factorial. Though Cantor proved that transcendental numbers must exist, this man first exhibited one. His name and Sturm's are attached to a normal form for second order differential equations. For 10 points--which mathematician's name is perhaps most famously attached to the theorem in complex analysis that a bounded entire function is constant, from which the fundamental theorem of algebra is immediate?

Ans: **Joseph Liouville**

4. He once quipped that the bed of Windsor Castle was so big that he couldn't find his own wife. He moved from his peasant origins at Popowo to become an army corporal, and then an electrician in the shipyards of Gdansk where he would lead strikes calling for free trade unions and workers' rights. He was jailed on numerous occasions, but was finally elected President in 1990. FTP, name this former leader of the Solidarity movement in Poland.

Ans: **Lech Walesa**

5. It is located across the street from the wreckage of the Dowager Queen, and the song "Mad About Me" is a hit for the house band, Figgin' D'an and the Modal Nodes. Strangely, one character speaks in Quechua, including the line, "Oota goota, Solo?" That character is the Rodian bounty hunter Greedo. According to a Mark Davis parody song, "music and blasters and old Jedi masters," as well as "the weirdest creatures you've ever seen-a," can be found at, FTP, what bar in Mos Eisley on Tatooine, where Obi-Wan Kenobi hired Han Solo?

Ans: **Star Wars Cantina**

6. Repeated themes include Christian's drowning; the human soul's darkness, symbolized by Elsinore; and fast-moving skiers swerving both left and right. One man calls for new drafts, referring to his wife Margrethe's old job of typing and re-typing scientific manuscripts. The other man admits he did not do the diffusion calculations for U235, taking this as evidence that he didn't want to build Hitler a bomb. Uncertainty is a theme in, FTP, what Michael Frayn play re-examining Heisenberg's 1941 visit to Bohr's home in the title city?

Ans: **Copenhagen**

7. He and his Syrian allies turned back Shalmanesser III's Assyrian army at Karkar in 854 BCE, but the battle is not mentioned in the Bible. His daughter Athaliah married Jehoshaphat, ending the war between Israel and Judah. His wife's body was eaten by dogs, and his sons were slaughtered by Jehu, who was present when Elijah castigated this man for his wife's murder of Naboth. That wife is accused of killing the prophets of God, and turning this man to the worship of Baal. FTP, name this husband of Jezebel.

Ans: **King Ahab**

8. In q.e.d., the derivative of this quantity with respect to solid angle for the Compton effect is given by the Klein-Nishina formula. The optical theorem relates it to the imaginary part of the forward scattering

amplitude. In radiative transfer, the absorption coefficient is given by the number density times this quantity. It is often measured in barns, and represents the effective area for a nuclear interaction. FTP give this term which also denotes the intersection of a solid with a plane.

Ans: cross-section

9. This man was saved by Poliziano, who locked him in the sacristy after his brother was stabbed and killed during high mass on April 26, 1478 by members of the Pazzi Conspiracy, who wished to replace him with Girolamo Riario, the nephew of Pope Sixtus IV. Afterwards, the Archbishop of Pisa, who was part of the conspiracy, was hanged, and Sixtus excommunicated him. Known for his patronage of artists including Leonardo, Donatello, and Botticelli, for ten points, who is this famed leader of Florence from 1469 to 1492, a member of the ruling family of that city in the Renaissance?

Answer: Lorenzo di Piero de Medici (accept Lorenzo the Magnificent, il Magnifico)

10. Several types of *ukiyo-e*, including *shibai-e*, *yakusha-e*, and *shini-e* prints, commonly depict scenes and performers of this genre. The *mie* is a tense pose often standardized as part of the *kata* of a given role. It was founded by Okuni as a women's dance form, but today men known as *onnagata* play the female roles. Actors appear on stage without masks, distinguishing it from the earlier theatrical traditions that influenced it. FTP, name this popular form of Japanese drama which is less formal than Noh.

Ans: kabuki

11. To calm him down, his uncle sent out topless women to him, then dowsed him with three vats of cold water. He had 4 differently-colored dimples in each cheek and seven pupils in each eye, and studied on the Isle of Shadow. He was able to harass the army of Ailill during the cattle raid of Cooley because he wasn't affected by the pangs of the Ulstermen. Originally named Setanta, FTP name this Irish hero, sometimes called the Hound of Ulster.

Ans: Cuchulainn (accept Setanta and prompt on Hound of Ulster before mention in the question)

12. In this poem, the poet says he "by the tide/ Of Humber would complain" while the subject finds rubies "by the Indian Ganges' side." The poet proposes, "Let us roll all our strength and all/ Our sweetness up into one ball/ And tear our pleasures with rough strife/ through the iron gates of life," and urges, "Now let us sport us while we may;" noting "The grave's a fine and private place,/ But none, I think, do there embrace." The poet states, "at my back I always hear/ Time's winged chariot hurrying near," in—FTP—what Andrew Marvell poem?

Ans: To His Coy Mistress

13. When this molecule is excited, it decays by resonance energy transfer in the antenna complex. Pairs of the α type known as P700 and P680 are found in different reaction centers next to primary electron acceptors. The two types differ only in having a formyl group or a methyl group attached to the central porphyrin ring, which is centered on a magnesium ion. A hydrophobic tail attached to the porphyrin anchors it to the thylakoid membrane. FTP name this green pigment which takes part in photosynthesis.

Ans: chlorophyll

14. This country's main rebel group is locally called "tong tong" or "chop chop" for its followers' propensity to hack off limbs. That group, led by Joseph Kony and dedicated to restoring the 10 Commandments, is about 80% children and formally called the Lord's Resistance Army. For 10 points--the LRA has fucked up the north of which country since Yoweri Museveni began leading it in 1986, and in recent months terrorized refugees from its northern neighbor, Sudan?

Ans: Uganda

15. Designed by John Ericsson, it was lost at sea during a heavy storm on December 30, 1862, nine months after its first and only major action in battle. Described by observers as "a cheesebox on a raft", it had a screw drive and a rotating turret, both major innovations for ships at the time, but was most well-known for the feature which allowed it to battle the CSS *Virginia* to a standstill after the latter had destroyed two ships at Hampton Roads. For ten points, name this ship, the first ironclad.

Ans: USS Monitor

16. His uncle Anton Mauve, a member of the Hague School, introduced him to watercolor. He painted versions of the Millet works *Night*, *The Angelus*, and *The Sower*. A collection of his works is the centerpiece of the Kröller-Müller Museum, and his namesake museum can be found next door to the Stedelijk Museum. His reputation was secured by Johanna, the widow of his brother Theo. His late works include *Road with Cypress and Star* and *Wheatfield with Crows*. FTP, name this painter of *Potato Eaters*, *Starry Night*, and *Sunflowers*.

Ans: **Vincent Van Gogh**

17. There are three recorded cases of this event happening with the bases loaded before it was kept as an official statistic beginning in 1955, but only one time since then, in 1998 in a game against the Arizona Diamondbacks with Brent Mayne on deck. Prior to 2002, Willie McCovey held the single-season record with 45 in 1969, but a certain player shattered that record with 68 in 2002 and another 61 in 2003. For ten points, what is this event, all-too-frequently seen in plate appearances involving Barry Bonds?

Ans: **intentional walk** (do not accept or prompt on **walk**)

18. A charged particle experiences a quantum phase shift proportional to the path integral of this quantity. The canonical momentum equals linear momentum plus charge times this quantity, and its d'Alembertian is proportional to the current density under the Lorentz gauge. It forms a four-vector along with one over c times its electric scalar counterpart, and its divergence is set to zero in the Coulomb gauge. Its introduction is motivated by the zero divergence condition on the magnetic field. FTP, name this quantity whose curl gives the magnetic field.

Ans: **magnetic vector potential**

19. His actions result in newspaper reports of a "bloofer lady" and the landing of the Demeter, a Russian schooner, during a storm with its captain's corpse lashed to the steering wheel. With the help of a young solicitor he buys the Carfax estate, which is situated near an asylum whose inmates include Renfield. The asylum is the workplace of Dr. John Seward, and the solicitor who helps this character is Johnathan Harker. Based loosely on the historical Vlad the Impaler, FTP name this evil title character of a Bram Stoker novel.

Ans: **Dracula**

20. This relative of Miltiades was the son of Olorus, the king of Thrace. His gross negligence as strategos led to the surrender of Amphipolis to Brasidas, earning him a seven year exile. The fifth chapter of his best-known work presents arguments for and against the invasion of an island; the invasion succeeds, and the men are executed while the women and children enslaved. That work was continued by Xenophon in the *Hellenica*, and includes the aforementioned Melian dialogue and the funeral oration of Pericles. FTP, name this author of *The History of the Peloponnesian War*.

Ans: **Thucydides**

2004 Berkeley Late Spring
Masters Team

1. Answer the following on a class of organic compounds FTPE.

10) As opposed to aliphatic compounds, these compounds are always resonance stabilized. They were given their name because many of them have distinctive odors.

Ans: aromatic compounds or arenes

10) According to Hückel's criteria for aromaticity, aromatic compounds must have delocalized electrons in these molecular orbitals formed by sideways overlap of p orbitals.

Ans: pi orbitals

10) Hückel's rule gives this formula for the allowed numbers of delocalized pi electrons in aromatic compounds.

Ans: $4n + 2$ (accept equivalents)

2. Identify these colorfully nicknamed U.S. Supreme Court justices for 10 points each.

10) For his prominence in a Federalist faction supporting the War of 1812, he was called "King Coody."

Ans: Roger Brooke Taney

10) For winning a foot race against one of his soldiers during the Revolutionary War while wearing white-heeled socks, this officer earned the nickname "silver heels."

Ans: John Marshall

10) He was called the "Cerberus of the treasury" for his vigilant attention to disbursements while serving as a Connecticut Senator from 1789-96.

Ans: Oliver Ellsworth

3. Answer the following on graphic novels FTPE.

10) The two parts of this graphic novel are subtitled *My Father Bleeds History* and *And Here My Troubles Began*. The French are depicted as frogs, Americans are dogs, and Germans are cats.

Ans: Maus

10) The title group of characters includes The Comedian, Nite Owl, and Rorschach.

Ans: Watchmen

5;5) FTPE, name the creator of *Maus* and the artist or writer of *Watchmen*

Ans: Art Spiegelman; Dave Gibbons or Alan Moore

4. Name these collections of short stories by American authors given some titles in the collection, FTPE.

10) *The Bell Tower*; *Benito Cereno*; *Bartleby*; *The Scrivener*

Ans: The Piazza Tales (Herman Melville)

10) *The Book of the Grotesque*; *Hands*; *Godliness*

Ans: Winesburg, Ohio (Sherwood Anderson)

10) *Fifty Grand*; *Hills Like White Elephants*; *The Killers*

Ans: Men Without Women (Hemingway)

5. Name these mortals who challenged the Greek gods and fared poorly, FTPE.

10) This man tried to ride Pegasus to Olympus. Zeus sent a gadfly to sting Pegasus, and this man was thrown into a thorn bush and lamed. Earlier he had killed the Chimera with the help of Pegasus.

Ans: Bellerophon or Bellerophontes

10) This satyr challenged Apollo to a musical competition. Apollo played his lyre upside down, but this poor schmuck couldn't follow suit on the flute, so Apollo flayed him alive and hung his skin on a tree.

Ans: Marsyas

10) This dolt liked to ride around in a chariot, crashing cymbals and throwing torches to imitate the thunder and lightning of Zeus. One day Zeus noticed and smote him with the real stuff.

Ans: Salmoneus

6. Identify these terms from ecology FTPE.

10) This term denotes the relatively stable community that results from ecological succession through a sequence of seres.

Ans: climax community

10) This quantity is defined as the maximum stable population that a particular environment can support over a relatively long period of time.

Ans: carrying capacity

10) This model incorporates a carrying capacity and has a characteristic sigmoid shape.

Ans: logistic equation or logistic curve or logistic model or logistic population growth or Verhulst equation or Verhulst-Pearl equation

7. Name these people associated with South Africa and apartheid FTPE.

10) The main architect of apartheid, he was South Africa's prime minister from 1958 to 1966 where he oversaw the Sharpeville Massacre and the banning of the African National Congress.

Ans: Hendrik Frensch Verwoerd

10) President from 1984 to 1989, he was seen as a hardliner, but actually relaxed the Group Areas Act. However, he still withheld voting rights from non-whites.

Ans: Pieter Willem Botha

10) His lifting of the ban on the African National Congress and release of Nelson Mandela from prison would pave the way for the ending of apartheid with the granting of free elections in 1994.

Ans: Frederik Willem de Klerk

8. Answer the following on an early European novel genre FTPE.

10) Grimmelshausen's *Adventures of Simplicius Simplicissimus* is an example of this genre featuring roguish heroes living by their wits. The name comes from the Spanish for "rogue" or "rascal."

Ans: picaresque novel

10) The title character of this anonymously authored novel, generally considered the first picaresque novel, serves a series of masters, starting with a blind beggar.

Ans: The Life of Lazarillo de Tormes and of His Fortunes and Adversities

10) This man's novel *Moll Flanders* is sometimes considered picaresque.

Ans: Daniel Defoe

9. Given the title of a portion of a piece of music, name the larger work it is part of and its Russian composer FFPE.

5;5) Polovtsian Dances

Ans: Prince Igor; Alexander Porfiryevich Borodin

5;5) Flight of the Bumblebee

Ans: The Tale of Tsar Tsaltan; Nikolai Andreyevich Rimsky-Korsakov

5;5) The Great Gate of Kiev

Ans: Pictures at an Exhibition; Modest Petrovich Mussorgsky

10. Answer the following relating to structure formation on a 15-5 basis.

15) We know that this stuff is cold because structure formation proceeded in a bottom-up fashion. It accounts for about 25% of the Universe's density.

5) This self-explanatory name refers to gravitating stuff that we can't see. Candidates include WIMPs and MACHOs.

Ans: dark matter

15) This man lends his name to the mass or radius at which a cloud of material will spontaneously collapse under its own gravity.

5) A classical treatment of blackbody radiation is named for him and Rayleigh.

Ans: Jeans

11. Answer the following on movie villains with similar disabilities, FTPE.

10) This first Bond film features the titular mad scientist, who sabotages US missile launches into space, and Ursula Andress in a bikini.

Ans: Dr. No

10) In this Bruce Lee movie, the villain Han, a Shaolin rebel who runs a martial arts tournament on his own island, is killed in a labyrinth whose walls are coated in mirrors.

Ans: Enter the Dragon

10) Han lost one of these appendages, possibly in a gun-related incident; Dr. Julius No lost both in an accident working with radioactive materials. Dr. No replaces them with steel, while Han sometimes uses a bear claw.

Ans: hands

12. Answer the following about the *Twenty-Four Histories*, FTPE.

10) One of the books in the *Twenty-Four Histories* is a text by Chen Shou covering this period of Chinese history, marked by the struggle between the states of Wei, Wu, and Shu. It is also the setting of a famous romance.

Ans: Three Kingdoms period

10) This man's masterpiece, *The Records of the Grand Historian*, covers Chinese history from the mythical Yellow Emperor to his own time in the Han dynasty.

Ans: Ssu-ma Ch'ien or Sima Qian

10) The *Twenty-Four Histories* cover Chinese history through to the time of this dynasty in the 17th century CE. It followed the Yuan and preceded the Qing.

Ans: Ming dynasty

13. Name these musical acts that have produced black albums, given songs from that black album FTPE.

10) "The Unforgiven," "Don't Tread on Me"

Ans: Metallica

10) "Tonight I'm Gonna Rock You Tonight," "Sex Farm"

Ans: Spinal Tap (sorry, no dieresis on the n)

10) "Justify My Thug," "December 4th"

Ans: Jay-Z

14. Name these Yeats poems from opening lines FTPE.

10) "I know that I shall meet my fate/ Somewhere among the clouds above"

Ans: An Irish Airman Foresees His Death

10) "Turning and turning in the widening gyre/ The falcon cannot hear the falconer"

Ans: The Second Coming

10) "A sudden blow: the great wings beating still/ Above the staggering girl, her thighs caressed"

Ans: Leda and the Swan

15. Given a quote from a speech by a President of the US, name the speech FTPE.

10) "The only thing we have to fear is fear itself."

Ans: Franklin Delano Roosevelt's First Inaugural Address

10) "We here highly resolve that these dead shall not have died in vain...that government of the people, by the people, for the people, shall not perish from the earth."

Ans: Lincoln's Gettysburg Address

10) "We must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex."

Ans: President Dwight David Eisenhower's Farewell Address

16. Consider the two by two matrix whose first row is 0 -1 and whose second row is 1 0. For 10 points each:

10) The characteristic equation is $\lambda^2 + 1 = 0$. Give both eigenvalues of the matrix.

Ans: i and -i

10) What geometrical transformation of the plane \mathbb{R}^2 with the standard basis does this matrix correspond to?

Ans: clockwise rotation by 90 degrees or clockwise rotation by π over 2 radians around the origin

10) What are all possible dimensions of subspaces of \mathbb{R}^2 (read: \mathbb{R}^2) left invariant by this map?

Ans: 0 and 2 [note: 0,1,2 are the only possibilities a priori, and 1 would correspond to a real eigenvalue]

17. Given a pair of phonemes, name the common place of articulation for five points, and the mode of articulation for another five.

5, 5) s and z

Answer: alveolar fricatives (prompt on sibilant)

5, 5) k and g

Answer: velar stops or plosives

5, 5) ch and dj

Answer: alveopalatar or postalveolar affricates

18. Name these Jane Austen novels which mention Anne Radcliffe novels on a 15-5 basis.

15) This novel mentions Radcliffe's novels *The Italian* and *The Mysteries of Udolpho*, a particular favorite of the heroine.

5) An overactive imagination leads that heroine, Catherine Morland, to suspect that General Tilney may have killed his wife.

Ans: Northanger Abbey

15) In the 4th chapter of this novel, we learn that Mr. Martin has never read Radcliffe's *Romance of the Forest*.

5) Characters in this novel include Mrs. Bates and Frank Churchill. The title character marries Mr. Knightley.

Ans: Emma

19. Answer the following about Germans named Hermann, FTPE.

10) A German named Hermann wiped out three Roman legions under Varus in this 9 CE beat-down.

Ans: Battle of the Teutoburg Forest or Teutoburger Wald

10) In this Pushkin story, Hermann the German loses everything and goes mad after he draws the title card.

Ans: The Queen of Spades

10) This German scientist's heat theorem was the first statement of the third law of thermodynamics.

Ans: Walther Hermann Nernst

20. Name these things from solid deformation FTPE.

10) This quantity, a measure of the stiffness of a solid, is given by stress over strain for small strains.

Ans: Young's modulus or elastic modulus or modulus of elasticity

10) When Young's modulus is constant over a large range of strains, the material is said to be linear, and follows this law. It states that the extension of an elastic spring is proportional to the tension.

Ans: Hooke's law

10) This dimensionless quantity is the ratio of the strain in the direction of the applied load to the strain in a direction perpendicular to the applied load.

Ans: Poisson's ratio