Michigan Fall Tournament (Written by Will Nediger, Kurtis Droge, Cody Voight, Saul Hankin, Ben Forster, Siddhant Dogra, and Peter Jiang)

Editors Round 9

Warm-Up Tossup (Optional)

In one scene in this film, after following two little white rabbit-like animals, a main character stumbles upon a hidden path in some bushes that leads into a camphor tree.The cover of this film shows a main character with a red umbrella waiting in the rain by a bus stop. The theme song of this film was parodied in the Cthulhu episodes on South Park. In one night scene, two little girls get out of bed to do a dance to help their seeds grow. Those girls ride a giant catbus several times in this film. For 10 points, what is this Miyazaki movie that sees Satsuki and Mei cavort with the titular spirit?
ANSWER: **My Neighbor Totoro**

Tossups

1. The polytropic relation for this process has exponent five-thirds. In stars, this process should occur when the Brunt-Väisälä frequency is imaginary. This process occurs when the temperature gradient is larger than quantity one minus one over gamma, the ratio of specific heats, times temperature over pressure, time the gradient of the pressure, according to the Schwarzschild criterion. The photosphere of the Sun is dotted by granules due to this process, which names the zone that surrounds the radiative zone. Newton's law of cooling describes this process. For 10 points, identify this process of heat transfer by movement of molecules in a fluid or plasma, as opposed to conduction or advection.
ANSWER: **convection**

2. One author from this country created a woman who tells her life story to a prison psychiatrist after accepting that she will die for stabbing a pimp in her novel *Woman at Point Zero*. **One series set primarily in this country includes the suicide of the novelist Pursewarden and the death of Capodistria at a duck hunt; that series centers on Darley and includes** *Justine* and *Balthazar*. In a different novel set in this country, Amina is hit by a car while her husband is out of town, highlighting her disobedience in having left the house by herself. That book, in which Yasin and his father, Al-Jayyad, both share a love of prostitutes and are the two main male figures in the Al-Jawad family, is titled *Palace Walk*. For 10 points, name this country, the setting of Lawrence Durrell's *Alexandria Quartet* and of Naguib Mahfouz's *Cairo Trilogy*.
ANSWER: **Egypt**

3. One of this director's films opens on a train, where Johan sees tanks passing by through a window. That film is about the sensual Ester, who is contrasted with her sickly intellectual sister Anna. That film, *The Silence*, **includes a scene in which a boy reads** *A Hero of Our Time*, **just like this director's film about the relationship between the nurse Alma and the** mute actress Elisabet Vogler. In another of his films, Marianne is planning to divorce Evald, the son of a professor who is travelling to receive an honorary degree, Isak Borg. He directed a film in which Jons saves a girl from being raped by Raval. In that film, a knight played by Max von Sydow plays chess with Death. For 10 points, name this Swedish director of *Persona*, *Wild Strawberries*, and *The Seventh Seal*.
ANSWER: Ingmar **Bergman**

4. In one society, a ritual involving this type of person used a blade which was also used to cut the umbilical cord after childbirth, the *peseshkaf*. These people wore crowns of justification. A symbolic ritual involving these people is known as the opening of the mouth ceremony. Statues known as ushabti were provided to these people. These people were involved in a ceremony which often took place in a mastaba. In that ceremony, spells were cast to help these people in their journey to Duat, and those spells are found in collections like the Pyramid Texts and a book named for these people. For 10 points, name this type of person who, in ancient Egypt, was often mummified.

ANSWER: **dead** people in ancient Egypt [accept **mummies** before "mummified"; accept equivalents; prompt on "ancient **Egyptian**s"]

5. In one work, this thinker consults with a monk to better understand the concept of proximate power. This thinker divided hypotheses into three categories depending on what absurdities would be implied by accepting the hypothesis as true or false. This man participated in the Formulary Controversy with a series of letters in which he attacked Antonio Escobar's use of casuistry and lambasted the moral lapses of the Jesuits. After a carriage accident and a subsequent religious vision, he published his *Memorial*, which led to him taking up the cause of the Jansenists. He is the namesake of an idea that suggests that the belief in God represents the possibility of infinite gain while only imposing a finite loss. For 10 points, name this author of the *Provincial Letters* and *Pensées*, a French philosopher who is the namesake of a "wager" and a mathematical triangle.

ANSWER: Blaise **Pascal**

6. This woman writes an ode in memoriam of her fountain pen after it is accidentally melted in a stove, remarking that it was burned just as she someday hopes to be. In one passage, this woman compares herself to a songbird with broken wings, hurling herself over and over against the bars of her cage. In her final appearance, she laments that she cannot be the person she wants to be, remarking "if only there were no other people in the world." This woman is critical of Albert Dussel, a dentist, after Dussel refuses to share food given to him by his wife. She conflates an old crush named Peter with a boy of the same name with whom she shares her first kiss, though her father warns her that she should not start a relationship before the end of the war. For 10 points, name this sister of Margot whose time in a Dutch annex is recounted in her namesake diary.

ANSWER: **Anne** **Frank** [accept either name]

7. An underlying mechanism for one type of this process is modeled by the Bateson-Dobzhansky-Muller model. The most important model organism for this process is the three-spined stickleback. That mechanism is increased by "reinforcement", or the Wallace effect. Ernst Mayr proposed another type of this process after mapping the ranges of birds in New Guinea. Gould and Eldredge built on Mayr's theory when proposing that this process occurred during short periods in punctuated equilibrium. The two most common examples of this process result from reduction in gene flow or geographic isolation and are sympatric and allopatric. For 10 points, identify this process by which new species arise.

ANSWER: **speciation** [or obvious equivalents, such as the creation of **new species**, until "new species arise" is read; prompt on **anagenesis**; prompt on **cladogenesis**; prompt on **genetic incompatibility**; prompt on **reproductive isolation**; prompt on **hybridization**; prompt on **gene flow**; prompt on **natural selection**; prompt on **evolution**]

8. In one novel set in this state, Kiwi trains as a pilot only to discover that his sister has run away with the ghost of Louis Thanksgiving, while Ava is raped by a character known as the Bird Man. That novel is named after a theme park here that rivals The World of Darkness and was written by Karen Russell. In another novel set in this state, Penny is bitten by a snake while looking for some pigs, and Jody Baxter bestows the name Flag upon a fawn that he adopts. This setting of Marjorie Rawlings's novel *The Yearling* is also the setting of a book in which Tea Cake contracts rabies after a devastating hurricane. That novel features this state's real life city

of Eatonville and centers on Janie Crawford. For 10 points, name this state, the setting of *Swamplandia!* and Zora Neale Hurston's novels *Their Eyes Were Watching God* and *Seraph on the Suwanee*.
ANSWER: **Florida**

9. Ruy Gonzalez de Clavijo was sent on an embassy to this man's court by Henry III of Castile. He attacked the Ismailis in the village of Anjudan, possibly for religious reasons. This man's tomb was opened by a Soviet archaeologist two days before Hitler launched Operation Barbarossa, leading some people to believe he had laid a curse. He achieved major victories at the Battle of the Kondurcha River and the Battle of the Terek River against his enemy Tokhtamysh. This man's mausoleum, the Gur-e Amir, is located in the same city as an observatory built by his grandson Ulugh Beg. This ruler, who established his capital at Samarkand, built towers of heads after violently putting down a tax revolt in Isfahan. For 10 points, name this crippled Mongol conqueror.
ANSWER: **Tamerlane** [or **Timur** the Lame]

10. This man said "in our youth our hearts were touched with fire" in a speech about Memorial Day. He mentioned a blind man playing a flute in the beginning of his "The Soldier's Faith" speech. In a case involving two leaflets, one written in Yiddish, this man protested the misapplication of a principle he had formulated earlier, and in one opinion, he stated, "three generations of imbeciles is enough." Those cases were *Abrams v. United States* and *Buck v. Bell*. This man formulated the "clear and present danger test" and claimed that the First Amendment does not protect a person who falsely shouts fire in a theater in a case concerning a man who spoke out against the draft. For 10 points, name this Supreme Court justice known as "The Great Dissenter" who wrote the majority opinion in *Schenck v. United States*.
ANSWER: Oliver Wendell **Holmes**, Jr.

11. This work's sixth movement is a fugue whose subject incorporates all twelve notes of the chromatic scale, and is followed by a movement whose C-major climax is followed by silence. This work ends with some of the instruments playing a B major chord and the other instruments playing a C, leaving unresolved the contrast between B major and C major, which represent humanity and the universe, respectively. Its movements include "The Convalescent," "Of Science," and "The Song of the Night Wanderer." This work's first movement introduces the C-G-C motif and climaxes with a C major chord after a brass fanfare. That movement, titled "Dawn" or "Sunrise," was used in Kubrick's *2001: A Space Odyssey*. For 10 points, name this tone poem by Richard Strauss based on a book by Friedrich Nietzsche.
ANSWER: *Also Sprach Zarathustra* [accept *Thus Spoke Zarathustra* or similar translations]

12. In this country, a two-year strike took place in the 70s at the Grunwick photo processing plant. The most notable voyage of the *Windrush* brought immigrants to this country, in the first of a series of waves that came to this country in the wake of World War Two. A newspaper headline in this country proclaimed "Crisis? What Crisis?" in response to a series of strikes by groups including gravediggers and garbage collectors in this country called the Winter of Discontent. This country's healthcare system was established after the Beveridge Report and today survives as the NHS. Its 20th-century leaders included Edward Heath and Anthony Eden. This country retained possession of the Falkland Islands in a conflict with Argentina. For 10 points, name this country led by the so-called Iron Lady, Margaret Thatcher.
ANSWER: **U**nited **K**ingdom [or Great **Britain**; prompt on "England"]

13. The addition of an organometallic reagent to an example of these compounds, with a methoxy moiety, results in a stable tetrahedral intermediate because that example of these compounds chelates the metal, so an aqueous workup is required before a ketone is formed; that example is named for Weinreb. A four-component condensation reaction used to create two of this functional group bonded together is named for Ivar Ugi. A class of antimicrobials named for this functional group is structurally similar to PABA, contains

aniline, and is called sulfa. A carbonyl moiety is removed from this functional group in the Hofmann rearrangement. Nylon is made of repeating units linked by the bond named for this functional group, which is alternately called a peptide bond. For 10 points, name this functional group with a nitrogen bound to the carbon of a carbonyl, a moiety that a related functional group, amines, lack.
ANSWER: **amide**s [do not accept "amines"]

14. **Joaquin Sorolla's painting *Sad Inheritance* shows crippled children in front of this type of scene. The Russian painter Ivan Aivazovsky is best known for his paintings of these scenes. An exultant man holds the hand of a woman in the midst of one of these scenes in Ilya Repin's *What Freedom!* One of these scenes is the backdrop of Caspar Friedrich's *The Stages of Life*, and Friedrich depicted a** monk in front of one of these scenes in another work. Rembrandt only painted one of these scenes, which was stolen from the Gardner Museum in 1990. Winslow Homer's many paintings of these scenes include *Eight Bells* and *Breezing Up*. An ukiyo-e print of one of these scenes by Hokusai takes place near Kanagawa. For 10 points, name these paintings which, like *The Gulf Stream* and *The Great Wave off Kanagawa*, depict the ocean.
ANSWER: **seascape**s [accept descriptions indicating they're paintings of water]

15. **Joseph ibn Naghrela was killed during a bout of violence in this modern day country. Wilfred the Hairy ruled as count of a region in this country, and another region in this country laid out the laws of the Seven Part Code. Along with its western neighbor, this country was ruled by a number of independent states called taifas. The Visigothic ruler Reccared located his capital in this country. A city in this country was home to the author of the *Etymologiae*,** Isidore, and another city here was ruled by the Nasrid Dynasty. Abd-ar-Rahman III founded an offshoot of the Umayyad Caliphate in this country. The Battle of Las Navas de Tolosa was fought in this country, which attempted to expel Muslim rulers in the Reconquista. For 10 points, Leon and Castile were two medieval kingdoms in which modern day country also home to an infamous inquisition?
ANSWER: **Spain**

16. **A treatise on this concept which begins with the question "What would you do if you were *this*?" was written by Anthony de Jasay. The title of a book by Albert Jay Nock describes it as "our enemy." Ludwig von Mises popularized a word referring to the worship of this concept in a book about the rise of total war and the total form of this concept. Early translations of Hegel's *Philosophy of Right* controversially called this concept "the** march of God through the world." It is paired with "revolution" in the title of a book by Lenin, and Marx and Engels predicted that a classless form of pure communism would arise when this entity had withered away. Weber's "Politics as a Vocation" defines it as an entity which has a monopoly on the legitimate use of force. For 10 points, name this type of political entity which may be sovereign.
ANSWER: the **state**

17. **This man is the primary subject of Joan Bondurant's most famous book, *Conquest of Violence*, and his "political ethics" title a book by John Galtung. He borrowed the concept of Nai Talim to describe his approach to education. This man coined the word "Sarvodaya" to title his translation of John Ruskin's essay "Unto This Last." He titled his autobiography *The Story of My Experiments with Truth*, and he coined a term** which can be translated as "holding on to truth." This man's leadership in a textile strike was a turning point in his psychological development, according to a book by Erik Erikson. Trained as a lawyer, he was photographed by Margaret Bourke-White next to a spinning wheel. For 10 points, name this developer of satyagraha, a non-violent supporter of Indian independence.
ANSWER: Mohandas **Gandhi** [or Mahatma **Gandhi**]

18. **A woman nicknamed "Z" travels to this city and falls in love with an older man in a novel by Xiaolu Guo. Martha Quest arrives in this city from Africa at the start of Doris Lessing's *The Four-Gated City*. Maurice**

Bendrix's apartment building in this city is destroyed by a bomb while he is with his lover, Sarah Miles, in Graham Greene's *The End of the Affair*. In a different novel, Tellson's Bank is located in this city, and it is the home of Jerry Cruncher, who digs up bodies and sells them to science. In that book, this city is the site of the marriage of Lucie Manette to Charles Darnay and is referred to by the line "It was the best of times." The speaker sees "Marks of weakness" and "marks of woe" in the faces of the people of this city in a poem titled after it by William Blake. For 10 points, name this city paired with Paris in Charles Dickens's *A Tale of Two Cities*.
ANSWER: **London**

19. A theory of this phenomenon uses the Green's function for a unit-amplitude spherical wave expanding about a point and the Helmholtz equation to derive the complex amplitude of the disturbance. The intensity patterns due to this phenomenon are minimally resolvable when their angular separation is 1.22 times lambda over capital D, which is the Rayleigh criterion. Problems dealing with this phenomenon in the far-field and near-field limit can be solved by assuming that every point on a wave-front is a source of secondary spherical wavelets, which is part of the Huygens-Fresnel principle. Interference and this phenomenon cause minima and maxima to appear in Young's double slit experiment. For 10 points, name this optical phenomenon in which light bends around an object.
ANSWER: **diffraction** [prompt on **interference**]

20. In Nepal, this god is depicted as a five-headed figure riding a lion and is called Heramba. At this god's temples, one can whisper wishes into his mount's ear to relay to him. This god injured the moon by throwing a body part at it after it laughed at him for tying his stomach together with a snake to keep candy from coming out. This god is said to have agreed to transcribe the *Mahabharata* for Vyasa only if he would recite it without interruption. To win a fruit, this Lord of Beginnings was told to race with his brother around the world, after which he rode a mouse around his parents because he said a little boy's parents were his world. Earlier, this god had hurt a cat, not realizing that the cat was his mother Parvati in disguise. This god was born beautiful, but lost his head after his father Shiva cut it off. For 10 points, name this elephant-headed "remover of obstacles" from Hindu myth.
ANSWER: **Ganesh**a

21. A self-limiting disease associated with one of this protein's genes leads to irritability, swelling and abnormal bone changes in infants; that hyperostosis is sometimes known as Caffey disease. This protein is partially synthesized via reactions that are catalyzed by prolyl-4 and lysyl hydroxylases. The degradation of this protein into amino acids is partially regulated by cortisol. Blood in urine is one common symptom of a nephritis caused by mutations in this protein's genes, known as Alport syndrome. This protein's fibrillar variety is characterized by its D-periods. Defects in this protein's namesake peptidases that prevent them from creating this protein's tropo- precursor is known as Ehlers-Danlos syndrome. This protein is produced by fibroblasts, and the "Madras" model predicts it has a triple helix. For 10 points, what is this protein, the most abundant in mammals?
ANSWER: **collagen**

Bonuses

1. This belief system promotes five virtues, including *ren* and *li*. For 10 points each:
[10] Name this belief system, many of whose ideas are collected in the *Analects*.
ANSWER: **Confucianism** [accept word forms]
[10] Confucius' grandson Zisi supposedly taught this man, the most famous interpreter of Confucius' ideas. His namesake book is one of the Four Books of Confucianism.
ANSWER: **Mencius** [or **Meng Zi**]
[10] In the so-called Chinese Rites controversy, members of this Christian order argued that Confucianism was not actually a religion. Leaders of this order included Claudio Acquaviva and Peter Faber.
ANSWER: **Jesuit**s [or **Society of Jesus**]

2. This character sings the aria "One Beautiful Day," in which she foretells the coming of a ship, and she later asks another character about her beloved's behavior with the analogy of a nesting robin. For 10 points each:
[10] Name this character who begins a love duet with the words "Love me, please" and cannot be persuaded by the marriage broker Goro to give up her first love.
ANSWER: Madame **Butterfly** [or **Ciocio**-san]
[10] This Italian composer wrote the music for *Madame Butterfly*, along with *Tosca* and *La Boheme*.
ANSWER: Giacomo **Puccini**
[10] In *Madame Butterfly*, this is the character whom Butterfly asks about robins' nesting behaviors in America. He is an American consul who accompanies Pinkerton to Butterfly's house in the third act.
ANSWER: **Sharpless**

3. This character and one of her eventual lovers spend all day concealed behind the curtains of a carriage after the two become reacquainted at the opera. For 10 points each:
[10] Name this character who carries on a lengthy affair with a neighbor only for that neighbor to refuse her offer of elopement with a letter hidden at the bottom of a basket of apricots. Later, she runs up massive amounts of debt and kills herself by swallowing arsenic.
ANSWER: **Emma Bovary** [accept either name; accept *Madame **Bovary***]
[10] This author of *Madame Bovary* used the Revolution of 1848 in Paris as the backdrop for his novel *Sentimental Education*.
ANSWER: Gustave **Flaubert**
[10] Part One of Madame Bovary concludes with Emma performing this action before moving from Tostes to Yonville. It symbolizes her dissatisfaction at having married Charles and her desire to destroy a part of their marriage.
ANSWER: throwing her bridal **bouquet** into the **fire** [accept equivalents; something about **burning** and something about **flower**s are both needed]

4. For 10 points each, name these authors of short works of fiction that involve death.
[10] One of this author's narrators sees his second wife, Rowena, rise from the dead as his first wife, Ligeia. The author of "The Cask of Amontillado," death also unsurprisingly plays a role in his "The Masque of the Red Death."
ANSWER: Edgar Allan **Poe**

[10] A girl dealing with her mother's death is the protagonist of this author's story "The Voyage." In her story "The Garden Party," Laura Sheridan brings some leftover food to the family of the recently deceased Mr. Scott.
ANSWER: Katherine **Mansfield**
[10] In this writer's best known novella, a man concerns himself with "spiritual victories" such as slapping himself so that he is in control while his silver is stolen. In the end, he doesn't even care about his impending execution.
ANSWER: Lu **Xun** [or **Zhou Shuren**]

5. For 10 points each, name the following about unusual duels.
[10] Monsieur Granpree and Monsieur le Pique decided to settle their mutual attraction to the same woman by shooting at each other while in these vehicles, one type of which was designed by the Montgolfier brothers.
ANSWER: **hot air balloon**s
[10] When this German chancellor challenged biologist Rudolf Virchow to a duel, Virchow allegedly proposed that they each eat a sausage, one of which would be infected by deadly bacteria. This champion of kulturkampf declined.
ANSWER: Otto von **Bismarck**
[10] It wasn't really unusual, but this dude challenged George Canning to a duel after they got into a debate about the Walcheren Expedition. He represented British interests at the Congress of Vienna.
ANSWER: Robert **Stewart**, Lord **Castlereagh** [accept either underlined name]

6. This term refers to the psychological ability to make intuitive, often correct, decisions based on a small amount of available information. For 10 points each:
[10] Name this effect showcased in the experiments of Nalini Ambady and Robert Rosenthal as well as in John Gottman's ability to tell if married couples will get a divorce from watching them interact for a few minutes.
ANSWER: **thin-slicing**
[10] Thin-slicing is discussed in the book *Blink*, which was written by this pop psychologist who also penned *Outliers* and *The Tipping Point*.
ANSWER: Malcolm **Gladwell**
[10] One study by Nalini Ambady linked sadness to a decreased ability to thin-slice. Sadness is one of these constructs, that, psychologically, are the subject of the James-Lange, Cannon-Bard, and two factor theories.
ANSWER: **emotion**s

7. Blek le Rat was a pioneer of this art form in France. For 10 points each:
[10] Name this art form, more famously employed by Shepard Fairey and Jean-Michel Basquiat.
ANSWER: **graffiti** art [prompt on **street** art]
[10] Shepard Fairey might be best known for an iconic red, white and blue poster of this man with the word "HOPE" at the bottom.
ANSWER: Barack **Obama**
[10] Fairey also created stickers with the word "OBEY" below a stylized depiction of this man's head.
ANSWER: **André the Giant** [or André René **Roussimoff**]

8. This figure first appeared on a radiant white horse and she was punished by having to offer people who approached a certain castle a ride on her back. For 10 points each:
[10] Name this woman, who was accused by her maids of eating her son. In reality, her maids smeared the blood of a puppy on her after they couldn't find him. She was the wife of Pwyll.
ANSWER: **Rhiannon**
[10] This figure, the son of Rhiannon, was raised by Teyrnon and later married Cigfa. This figure's death came when he was killed by Gwydion in single combat.
ANSWER: **Pryderi**
[10] Rhiannon and Pryderi both appear in the *Mabinogion*, a collection of tales from this mythological system.

ANSWER: **Welsh** mythology [prompt on **Celtic** mythology or **British** mythology]

9. World War One had a major impact on many American authors. For 10 points each:
[10] F. Scott Fitzgerald and John Dos Passos are among those included in this group of authors that were active after World War One. Generally, they were Americans living in Europe, and their name was coined by Gertrude Stein.
ANSWER: The **Lost Generation**
[10] This author of *A Moveable Feast*, a prominent member of the Lost Generation, used World War One as the setting of his novel about Frederic Henry and Catherine Barkley, *A Farewell to Arms*.
ANSWER: Ernest **Hemingway**
[10] This man wrote a novel narrated by a bedridden man who has lost his limbs in World War One, *Johnny Got his Gun*. He went on to write the screenplays for *Exodus*, *Spartacus*, and *Roman Holiday* despite being blacklisted as a member of the Hollywood Ten.
ANSWER: Dalton **Trumbo**

10. Lubeck was known as the "Queen of" this organization, and its easternmost outpost was found at Novgorod. For 10 points each:
[10] Name this organization that was antagonized by the Victual Brothers and fought a namesake war against the Dutch during the mid-15th Century in which they lost absolute control over the Baltic Sea.
ANSWER: **Hanseatic League** [prompt on partial answer]
[10] The Hanseatic League was an alliance of these groups. Divided into merchant and craft types, they usually dominated trade in a specific commodity in a given city or region during medieval times.
ANSWER: **guild**s
[10] Found on the north bank of the Thames, this was the name given to the Hanseatic League's base in London. It was closed by Elizabeth I when she thought that it posed a threat to English merchants.
ANSWER: The **Steelyard**

11. A vacuum can be thought of as an infinite number of these particles. For 10 points each:
[10] Name these particles that are represented by internal lines on Feynman diagrams and can exist due to the time-energy uncertainty principle.
ANSWER: **virtual** particles [or **virtual** photons]
[10] Virtual particles appear in this type of radiation believed to be emitted by black holes, which is named after a paraplegic British physicist.
ANSWER: **Hawking** radiation
[10] Virtual particle fluctuations can describe this effect, which arises from the forces that occur between two uncharged objects placed close together in a vacuum.
ANSWER: **Casimir** effect

12. This man is said to have thrown himself into Mount Etna so people would think he was immortal, but afterwards the volcano threw one of his sandals back to reveal his lie. For 10 points each:
[10] Who is this pre-Socratic philosopher whose teachings still survive in *Purifications* and *On Nature*?
ANSWER: **Empedocles**
[10] Empedocles believed that the world was composed of four elements, which were eternally held together and separated by Love and this opposing divine power.
ANSWER: **Strife**
[10] Perhaps the first to document Empedocles' humorous demise was a man named Laertius with this first name. A man with this name from Sinope cynically searched the streets for an honest man, carrying a lantern.
ANSWER: **Diogenes**

13. This genus of apicomplexans can reproduce by schizogony, or multiple fission. For 10 points each:
[10] Name this genus that includes the species *draconis*, *falciparum* and *vivax*.
ANSWER: **_Plasmodium_**
[10] *Plasmodium* carried by the *Anopheles* mosquitoes can cause this disease, to which people heterozygous for sickle cell anemia are more resistant.
ANSWER: **malaria**
[10] Nowadays, people use this drug and its derivatives to combat malaria. This mythologically-inspired sesquiterpene lactone contains a rare peroxide bridge inside one of its three rings.
ANSWER: **artemisinin** [or **qinghaosu**]

14. This ship was taken over by its Mende slaves and steered to Connecticut. For 10 points each:
[10] Name this ship whose inhabitants became a subject of interest of the abolitionist cause and were eventually declared free in a namesake Supreme Court Case. It takes its name from the Spanish word for "friendship."
ANSWER: La **_Amistad_**
[10] Along with Roger Baldwin, this man argued for the slaves before the U.S. Supreme Court. At the time, he was also serving as a representative from the state of Massachusetts.
ANSWER: John **Q**uincy **Adams** [prompt on "Adams;" do not accept "John Adams"]
[10] In 1848, a group of nearly eighty slaves commandeered this ship and tried to sail from Washington D.C. to New Jersey. The incident named after this ship influenced the banning of the slave trade in the District of Columbia.
ANSWER: **Pearl** [or **Pearl** Incident]

15. Although they were invented by Robert Tarjan, Fibonacci heaps are mostly often used by this man's search algorithm. For 10 points each:
[10] Name this Dutch computer scientist who developed a greedy algorithm to find the shortest path for a graph with non-negative edge costs.
ANSWER: Edsger **Dijkstra**
[10] Dijkstra devised this problem to illustrate the problems, and solutions to such, with concurrent algorithms. This problem involves five academics and a fork between each one; they must alternately eat spaghetti and think, and can only eat when they have two forks.
ANSWER: **dining philosophers** problem
[10] One solution to the dining philosophers problem is to use a waiter, who functions as one of these things that Dijkstra also originated. These things are used to control process access to shared resources and only has two defined operations: wait, which decreases it by one and blocks a process if negative, and signal, which increments it by one.
ANSWER: **semaphore**s

16. The British army won many victories, but it also suffered many crushing defeats. For 10 points each:
[10] Trouble with ammunition may have contributed to the decisive British defeat at Isandlwana, which was the opening engagement in a war fought against these peoples.
ANSWER: **Zulu**s
[10] Winston Churchill claimed that the worst disaster for the British military came when Arthur Percival surrendered this city to the Japanese in 1942. This island city had been the seat of British power in Southeast Asia.
ANSWER: **Singapore**
[10] 100 years before the fall of Singapore, an entire column of British and colonial troops under William Elphinstone were harassed into oblivion while retreating to Jalalabad from this city. William Brydon was the only survivor.
ANSWER: **Kabul**

17. In the medieval period, this type of polyphonic composition replaced the clausula. For 10 points each:
[10] Name this type of composition, notable examples of which include Guillaume Dufay's *Nuper rosarum flores*. In the Renaissance period, they were basically the sacred equivalent of madrigals.
ANSWER: **motet**s
[10] One famous motet is *Spem in Alium*, a work by this English composer who made two settings of the *Lamentations*.
ANSWER: Thomas **Tallis**
[10] Tallis's contemporary William Byrd wrote one of these compositions, which are known in French as *berceuses*, meaning "cradle songs." The most famous one is probably Brahms' "Wiegenlied: Guten Abend, Gute Nacht."
ANSWER: **lullaby**

18. For 10 points each, name the following about the works of Percy Bysshe Shelley.
[10] One of Shelley's best known poems, this sonnet tells of a "traveler from an antique land" who describes the ruins of a statue in the desert.
ANSWER: "**Ozymandias**"
[10] This closet drama by Shelley sees the title character's love for his wife, Asia, allow him to overcome his hardships. In a parallel plot, Jupiter is overthrown by his son, Demogorgon.
ANSWER: *Prometheus Unbound*
[10] Shelley published *The Necessity of Atheism* with an author with this surname, causing them to get kicked out of Oxford. A different author with this surname wrote *The Private Memoirs and Confessions of a Justified Sinner*.
ANSWER: **Hogg** [accept Thomas Jefferson **Hogg**; accept James **Hogg**]

19. At STP, the coefficient that multiplies the logarithmic term in this equation can be simplified to 0.05916 volts over number of electrons. For 10 points each:
[10] Identify this electrochemical equation that gives the half-cell potential as the standard reduction potential minus R T over n F times the natural log of Q.
ANSWER: **Nernst** equation
[10] The Q in the Nernst equation above is this quantity, which is the ratio of the concentration of products over the product of the concentration of reactants. Comparing it to the equilibrium constant lets one determine which way a reaction will run.
ANSWER: **reaction quotient**
[10] If the reaction quotient is less than the equilibrium constant, a reaction will proceed in this direction.
ANSWER: **forward** [or to the **right**; or obvious equivalents, such as towards **creating a product** from reactants]

20. His request for asylum in Russia was a handwritten note saying "I hereby request your considering the possibility of granting to me temporary asylum in the Russian Federation." It worked. For 10 points each:
[10] Name this whistleblower of several NSA programs to collect Americans' phone records and look at Americans' emails, among other things. Getting asylum in Russia for a year meant he could move out of the Moscow airport.
ANSWER: Edward Joseph **Snowden**
[10] One of the NSA programs that Snowden revealed was this one, which, according to a leaked PowerPoint slide, collects information "directly from the servers of…Microsoft, Yahoo, Google, Facebook," and several others.
ANSWER: **PRISM** [accept **US-984XN**]
[10] At the time he leaked the NSA documents, Snowden was employed by this technology consulting firm that mostly contracts with the U.S. Department of Defense.
ANSWER: **Booz Allen** Hamilton Inc.

21. For 10 points each, give some things related to biological signal transduction.

[10] This embryonic pathway has been implicated in a number of cancers. The most extensively studied protein in this pathway has been criticized for being named after a cartoon, and it can be inhibited by robotnikinin.
ANSWER: Sonic **Hedgehog** Signaling Pathway

[10] Another embryonic pathway is this one, in which a ligand binds to a type II receptor, which eventually leads to SMAD phosphorylation. This pathway is regulated by SMURFs, Gremlins and Cerberus, among other things.
ANSWER: **t**ransforming **g**rowth **f**actor **b**eta [accept combinations of words and letters]

[10] Yet another pathway is one that depends on this second messenger, which is derived from ATP and positively regulates the lac operon in times of low glucose levels.
ANSWER: **c**yclic **a**denosine **m**ono**p**hosphate [accept **c**yclic **AMP**]