

2014 Brookwood Invitational Scholars Bowl

Round 12

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1. In a song in this musical, a character completes the line “In Hartford, Hereford and Hampshire...” with “hurricanes hardly happen.” The female lead lists positives like “lots of chocolate for me to eat” in one song. It ends with the spoken line “Where the devil are my slippers?” The transformation in this musical happens during the song (\*) “The Rain in Spain.” This musical with the songs “I’ve Grown Accustomed to Her Face” and “Wouldn’t It Be Lovely?” was adapted from GB Shaw’s *Pygmalion*. For 10 points, name this musical written by Lerner and Loewe, in which Professor Henry Higgins turns Eliza Doolittle into the title, proper character.

ANSWER: My Fair Lady

2. This man lost his manuscript for his “play for voices” three separate times. This author wrote that, “Dead men naked they shall be one” in a poem where all three of the nine-line stanzas begin and end, “And death shall have no dominion.” This poet mentioned that, “Blind eyes could blaze like meteors and be gay” in a poem whose speaker implores, (\*) “Old age should burn and rage at close of day.” This author of the drama *Under Milk Wood* composed a villanelle willing his dying father to “Rage, rage against the dying of the light!” For 10 points, name this Welsh poet of “Do not go gentle into that good night.”

ANSWER: Dylan Marlais Thomas

3. The Oirats attempted to breach this city’s walls during the Tumu Crisis. In the nineteenth century, foreign embassies dominated this city’s Legation Quarter. On May 4, 1919, thousands of students gathered in a central square of this city to protest the Treaty of Versailles. Lord Elgin ordered this city’s Summer Palace be burned to the ground in 1860. A summer residence called Xanadu was built north of this city by (\*) Kublai Khan, who established his capital here. This city, once known as Peking, was where a lone man stood in front of a tank in an iconic 1989 photo. For 10 points, name this city, the home of Tiananmen Square and the Forbidden City.

ANSWER: Beijing [or Peking before it is read]

4. The time required for these objects to evaporate is proportional to their mass cubed, and has a constant factor of  $5120 \pi$  over  $h$ -bar times  $c$  to the fourth. These objects have radii less than  $2.6 \times 10^6$  meters. These objects form when the mass of neutron-degenerate matter is greater than the Tolman-Oppenheimer limit. Supermassive examples of these objects may be found in the center of active galactic nuclei. They emit Hawking radiation and have spherical event horizons. For 10 points, name these stars which collapsed under gravity, and don’t allow light to escape.

ANSWER: black holes

5. This man purported that behavior both affects and is determined by the environment in his idea of “reciprocal determinism.” Social persuasion and master experiences are two of the four sources he identified for maximizing one’s feeling of “self-efficacy”. Attention, retention, reproduction, and motivation were the four factors required for this psychologist’s theory of (\*) social learning. He tested that theory by having children watch a video of adults of the same gender displaying aggressive behavior towards a toy. For 10 points, name this American psychologist who carried out the Bobo-doll experiment.

ANSWER: Albert Bandura

6. A character in this novel describes one of his actions as “like knocking four quick times on the door of unhappiness” and wishes to be “greet[ed] with cries of hate” at the end of this book. While visiting Masson’s beach house, the protagonist of this novella is lent a gun by “warehouse guard” Raymond, and later fires it because of the (\*) heat of the sun. That character indifferently agrees to marry Marie and does not cry at his mother’s funeral, causing him to be sentenced to death while on trial for shooting an Arab. For 10 points, name this existential novella about the emotionally detached Meursault, a work by Albert Camus.

ANSWER: *The* Stranger [or *L’Étranger*, or *The Outsider*]

7. Cells from this organ from the Chinese hamster are commonly used as hosts for recombinant protein expression. CA-125 is a biomarker for cancers of this structure. The cumulus forms in this organ from granulosa cells, which are themselves surrounded by theca cells. Regnier de Graaf lends his name to a structure that develops in this organ, but eventually collapses into the (\*) corpus luteum. A surge in LH prompts this organ's follicles to rupture. The fallopian tubes receive oocytes from this structure. For 10 points, name this gonad organ in which egg cells are produced in females.

ANSWER: ovaries [or ovary]

8. An actor with this last name chose the fake name "Djangus Roundstone" while exploring Tinder with Conan O'Brien. That actor with this surname played Julie's boyfriend Perry in the 2013 film *Warm Bodies*, and Eric Molson in *21 Jump Street*. Another actor with this last name got his break playing Daniel Desario on (\*) *Freaks and Geeks*. Frat member Pete Regazolli is played by a man with this last name in *Neighbors*. An actor with this last name starred in an adaptation of the real-life story of Aron Ralston, *127 Hours*, in addition to playing the title character of *Oz the Great and Powerful*. For 10 points, give this last name of brothers Dave and James.

ANSWER: Franco [or Dave Franco; or James Franco]

9. This religion's solar calendar was designed by a Canadian computer engineer in the 60s. This religion's three duties are often translated as "Pray, Work, Give." Five men in this religion volunteered to be beheaded by a double-edged sword and became known as the "beloved ones", after drinking a sugar-water mixture stirred by the bloody sword. Members of this faith worship in a (\*) gurdwara after they're baptized into the order of Khalsa. This monotheistic religion was founded by a guru who proclaimed "There is no Hindu, no Muslim." Many members of this religion take the last name Singh. For 10 points, name this religion popular in the Punjab.

ANSWER: Sikhism

10. Lyrboton Kome was a center for the production of this commodity. Thales of Miletus became rich by monopolizing manufacture of this commodity. The winner of the Pantathenaic Games won a large amount of this good. This substance was often stored in *pithoi*. This substance and (\*) dust were applied by athletes in Greek gymnasiums. Its supply was almost completely exhausted by Seleucids under Antiochus IV, but the Maccabees found enough of it to light the Menorah for eight days. For 10 points, name this ancient Greek commodity derived from a namesake tree in the Mediterranean Basin, used for cooking.

ANSWER: olive oil [prompt on oil; prompt on olives]

11. This writer critiqued a book by John Adolphus Etzler in his essay "Paradise (to be) Regained." This author proposed a "Realometer" and analogized traveling to "count[ing] the cats in Zanzibar", in a book which includes a lengthy section about "The Battle of the Ants". This author wrote that, (\*) "I wished to live deliberately" and insisted, "Simplify, simplify" in a chapter titled, "Where I Lived, and What I Lived For." He wrote, "That government is best which governs least", and consequently was imprisoned for his opposition to the Mexican-American War. For 10 points, name this Transcendentalist who wrote *Civil Disobedience* and *Walden*.

ANSWER: Henry David Thoreau

12. This painting inspired a series of 27 drawings of the same scene in Arcadia by Pablo Picasso. The inspiration for this painting came from Titian's *Pastoral Concert*. The artist's brother-in-law Ferdinand Leenhoff appears in the foreground of this painting, next to a woman based on Victorine Meurent. It was displayed at the Salon des (\*) Refuses. A woman takes a bath in the background of this painting, but its foreground shows a picnic basket atop a blue cloth. It was rejected by the 1863 Paris Salon for depicting a nude woman in an everyday scene. For 10 points, name this Realist painting of an outdoors meal by Edouard Manet.

ANSWER: Luncheon on the Grass [or Le Déjeuner sur l'herbe]

13. Though it did not take place in Australia, Aborigine William Cooper issued a petition against this event. This event prompted Harold Ickes' Slaterry Report, which proposed mass settlement of Alaska. Reinhard Heydrich sent the telegram organizing this event. This event, coupled with a one-million-mark fine, was prompted by the murder by deranged teenager Herschel Grynzspan of Ernst vom Rath. A (\*) department store owned by Nathan Israel was destroyed during this event, which gets its name from the amount of broken glass caused by the SA during it. For 10 points, name this November 9, 1938 pogrom in Nazi Germany.

ANSWER: Kristallnacht [or the Night of Broken Glass before it is read; prompt on the Holocaust]

14. **The three by five initiative combats this issue. This issue was the subject of Randy Shilts' book *And the Band Played On*. A series of programs to counter this problem in the US are named for Ryan White, and internationally, it is addressed by George W. Bush's PEPFAR initiative. Thabo Mbeki infamously (\*) denied that this issue was a problem. The destruction of flight MH17 killed delegates travelling to a conference about this issue held in Australia. Public awareness of this problem was raised by Rock Hudson and Freddie Mercury. About 70% of the people who die from this cause live in sub-Saharan Africa. For 10 points, name this pandemic STD.**

ANSWER: AIDS [or acquired immunodeficiency syndrome; or HIV; or human immunodeficiency virus; or equivalents like the spread of AIDS, or the AIDS epidemic]

15. **Monosodium and disodium salts of this ion are used for a common pH 7 buffer. This ion is often subscripted with an "i" in solution to label it as inorganic. This anion, which is isoelectronic to arsenate, is the conjugate base of a triprotic acid with three distinct acid-base equilibria. This ion and nitrate cause eutrophication. One of these ions is linked to the 3 prime and 5 prime carbons of pentose sugars in (\*) nucleic acids. Triesters of this anion have a very exergonic hydrolysis; as such, a bond between two of these ions is broken to turn ATP into ADP. For 10 points, name this polyatomic ion with formula PO<sub>4</sub><sup>3-</sup>.**

ANSWER: phosphate [or PO<sub>4</sub><sup>3-</sup> before it is read]

16. **After he was stabbed in his sleep by a brother-in-law, this character threw his sword into the doorway, splitting the brother's back wide open. A witch gave this mythical character a forgetfulness potion so that he'd marry her daughter. This man repaired his father's sword, which broke in battle against the gods. After passing through a ring of fire, this hero lay his sword between himself and the entrapped woman, preserving her (\*) virginity. He gained wisdom from drinking dragon blood. In the *Volsunga Saga*, he kills Regin and marries Gudrun. For 10 points, name this Norse hero who saves Brynhild and gets the Ring of the Nibelungs.**

ANSWER: Sigurdr [or Siegfried]

17. **This composer used a csardas as the basis for an F-sharp minor dance, the fifth in a collection of twenty-one. For the *Maestoso* finale of one piece, this composer borrowed the melody from "Gaudeamus igitur." This man's *Double Concerto* and *Violin Concerto in D Major* were premiered by his friend Joseph Joachim. This composer's first symphony took him two decades to write and is often mocked as (\*) "Beethoven's tenth". In the summer of 1880, this composer wrote both the *Tragic Overture* and its counterpart, the *Academic Festival Overture*. For 10 points, name this German composer of a famous Lullaby.**

ANSWER: Johannes Brahms

18. **This man helped form the League of Gileadites in Springfield, Massachusetts to oppose the Compromise of 1850. This man's actions led to the mutilation of Dangerfield Newby as well as his sons Oliver and Watson. This man's body lies "a-mouldering in the grave" according to a popular marching song which was amended by Julia Ward Howe into "The (\*) Battle Hymn of the Republic." This man, who led the Pottawatomie Massacre during "Bleeding Kansas," surrendered to Robert E. Lee after his final militant engagement. For 10 points, name this white abolitionist who led a failed raid on an armory in Harpers Ferry, West Virginia.**

ANSWER: John Brown

19. **This literary character writes a letter to his cousin Sympson complaining about lies told about him in the novel. Don Pedro de Mendez rescues this man. Skyresh Bolgolam attempts to get this character's eyes ripped out in retaliation for public urination. Glumdalclitch watches over this character. This character admits to being repulsed by (\*) humans, preferring the company of horses, at the novel's end. This man settles a dispute over egg-cracking by wading the ocean between Blefuscu and Lilliput. For 10 points, name this character who goes on four great travels in a novel by Jonathan Swift.**

ANSWER: Lemuel Gulliver [or Gulliver's Travels]

20. The pressure drop through a pipe in laminar flow is proportional to the length, times the volumetric flow rate, over radius raised to this power. Carbon dioxide has this many vibrational modes. Radiative loss in the Stefan-Boltzmann law is proportional to this power of the temperature. Vectors in Minkowski spaces have this many elements. In AMUs, this is the mass of an (\*) alpha particle. An electron in an atom can be completely described by this many quantum numbers. This is the number of Maxwell equations and the number of fundamental forces. For 10 points, give this number of dimensions specified in space-time.

ANSWER: four

TB: A brigand nicknamed Donatelli and really named Carmine Crocco fought under this leader. This man won the Battle of Bezzecca, beating back the Prussians during a sideshow of the Austro-Prussian War. He was the “sword” of the “brain, heart, and sword.” This man dictated the Hunters of the Alps. He supported the Colorado Party, earning the nickname (\*) “Hero of Two Worlds” because he fought in the Uruguayan Civil War. This general crossed the Strait of Messina during the Expedition of the Thousand in the Risorgimento. For 10 points, name this rival of Cavour, the leader of the Redshirts during Italian independence.

ANSWER: Giuseppe Garibaldi

1. A setting of this poem originally titled “Promenade Sentimentale” is the third movement of the work *Suite bergamasque*. For 10 points each:

[10] Name this Paul Verlaine poem, the name of which translates to English as “moonlight.”

ANSWER: “Clair de lune” [accept no answers]

[10] The most famous setting of Verlaine’s “Clair de Lune” was done by this French composer of *La mer* and the “Prelude to the Afternoon of a Faun.”

ANSWER: Claude Debussy

[10] This Frenchman was also inspired by Verlaine’s poem with his 1887 piece for piano and voice “Clair de Lune.” This composer is better-known for his *Pavane* and the “Pie Jesu” from his *Requiem*.

ANSWER: Gabriel Faure

2. Answer the following about Homeric epithets, for 10 points each:

[10] This god is frequently referred to as Phoebus, especially in Latin literature. Artemis is his twin sister.

ANSWER: Apollo

[10] This character is often introduced as “thoughtful” or “poised” as he sails around Greece trying to figure out what happened to his father Odysseus.

ANSWER: Telemachus

[10] Nearly every new morning in the *Odyssey* is welcomed in by describing Eos, or Dawn, with this specific physical attribute.

ANSWER: rosy-fingered [or rose-fingered; or same-knowledge equivalents that imply that she has fingers like roses; prompt on partial answers like red-fingered or rosy]

3. Richard Lenski’s ongoing evolution experiment is using this organism. For 10 points each:

[10] Name this Gram-negative bacterium, a model organism that can cause food poisoning.

ANSWER: Escherichia coli [or E. coli]

[10] *E. coli* are also critical to this group of microorganisms which live in the digestive tract. These beneficial microorganisms, mostly bacteria, synthesize biotin and convert vitamin K to a usable form.

ANSWER: gut flora [or gut microbiota]

[10] One danger of using the “broad-spectrum” class of these drugs is that they can kill gut flora, too. These drugs often have a beta-lactam ring and may prevent bacteria from synthesizing the cell wall.

ANSWER: antibiotics [or broad-spectrum antibiotics; or penicillins]

4. In *Native Son*, Bigger uses one of these objects to kind-of-accidentally murder Mary Dalton. For 10 points each:

[10] Name these objects, one of which is used by Othello to kill his wife Desdemona.

ANSWER: pillows

[10] Sei Shonagon’s *The Pillow Book* is set in the Heian period of this nation’s history. The world’s “first novel”, *The Tale of Genji*, was written here.

ANSWER: Japan [or Nippon]

[10] The end of this 1930 short story describes a strand of gray hair lying on a pillow, which has a clear indentation of a head in it. Homer Barron, dead and decomposed, lies on the bed, too.

ANSWER: “A Rose for Emily”

5. This author wrote a novel in which Ramona, the descendant of Scottish and Native American parents, winds up marrying her foster brother Felipe Moreno. For 10 points each:

[10] Name this American who indicted the US government’s treatment of Native Americans in her book *A Century of Dishonor*.

ANSWER: Helen Hunt Jackson

[10] Dee Brown channeled Helen Hunt Jackson in his 1970 book titled *Bury My Heart at <this place>*. 300 Native Americans were killed by American troops near this creek in 1890.

ANSWER: Wounded Knee [or Bury My Heart at Wounded Knee]

[10] The Native Americans killed at Wounded Knee were Lakota, a member of this larger group of Plains people. Members of this tribe destroyed Custer at Little Bighorn.

ANSWER: the Sioux

6. For a given component, this quantity is equal to the product of liquid mole fraction and the vapor pressure according to Raoult's Law. For 10 points each:

[10] Name this quantity, which equals the product of a component's vapor-phase mole fraction and the overall pressure. According to Dalton's Law, it's additive between multiple species.

ANSWER: partial pressures [prompt on pressure]

[10] If you know the gas-phase mole fractions and the external pressure, then you can calculate this temperature, the point at which the first drop of condensation appears as a gas is cooled.

ANSWER: dew point

[10] Past the dew point, the vapor and liquid phases are in this situation, where the rate of condensation equals the rate of vaporization. It's often drawn with double arrows.

ANSWER: equilibrium [or vapor-liquid equilibrium]

7. In the final line, this story's narrator wonders at her husband John fainting and complains that she has to "creep" around him. For 10 points each:

[10] Name this 1892 short story by Charlotte Perkins Gilman whose unnamed protagonist goes crazy after she is isolated from her husband and child in an old nursery as part of a "rest-cure".

ANSWER: "The Yellow Wallpaper"

[10] Another mentally-unstable woman narrates "The Jilting of Granny Weatherall", a short story by this American author of "Flowering Judas" and *Ship of Fools*.

ANSWER: Katherine Anne Porter

[10] This American author wrote about Esther Greenwood's attempts to commit suicide in her semi-autobiographical novel *The Bell Jar*.

ANSWER: Sylvia Plath

8. This term was coined by Alfred Crosby. For 10 points each:

[10] Name this term which refers to the trade of animals, plants, and diseases between the New World and the Old World following the year 1492.

ANSWER: Columbian Exchange [prompt on partial answer]

[10] This animal, brought from the New World to the Old World, was the only one domesticated before Europeans arrived. The Incas used this animal as a beast of burden.

ANSWER: llamas

[10] European colonizers extracted this other good in great quantities from South America, since it was the main commodity used as money in China's Ming Dynasty. The British traded opium for this commodity.

ANSWER: silver

9. For 10 points each, name these things about Abstract Expressionism:

[10] This Abstract Expressionist painter known as "Jack the Dripper" is most famous for his "action paintings" like *Lavender Mist* and *The She-Wolf*.

ANSWER: Jackson Pollock

[10] This artist's *No. 14* consists of two blocks of orange and blue, characteristic of his color-field painting technique.

ANSWER: Mark Rothko [or Marcus Rothkowitz]

[10] Robert Motherwell, another abstract expressionist, painted a series of black tiles, titled after an elegy to this country. A Surrealist from this country drew a canine looking at a black sky in *Dog Barking at the Moon*.

ANSWER: Spain [or Espana; or the Spanish Republic]

10. Fiji and the Solomon Islands belong to this group of islands. For 10 points each:

[10] Name this Pacific island group which gets its name from either the black skin of the native inhabitants, or the black fertile soil of the volcanic islands.

ANSWER: Melanesia

[10] The largest island in Melanesia is this one north of Australia, which is traditionally the second-largest island on the planet after Greenland. The Indonesian province of Papua is on this island.

ANSWER: New Guinea

[10] This 19th century thinker wrote *The Malay Archipelago* about his time in New Guinea. This founder of biogeography gives his name to a line separating Asiatic animal species from Australian species.

ANSWER: Alfred Russell **Wallace**

11. The whole subplot of finding Sir Henry Curtis' brother in this novel takes second gear when the protagonist and his accomplices get into trouble with King Twala in Loo. For 10 points each:

[10] Name this 1885 novel which enthralled Victorian audiences. The protagonist, Allan Quatermain, also appeared in several sequels.

ANSWER: **King Solomon's Mines**

[10] H. Rider Haggard was influenced to write *King Solomon's Mines* by the success of this Robert Louis Stevenson novel in which Jim Hawkins wins a boatload of gold.

ANSWER: **Treasure Island**

[10] This American writer got in on the fun of the "Lost World" motif in his *The Land That Time Forgot*. This author is best known for creating characters like John Carter and Tarzan.

ANSWER: Edgar Rice **Burroughs**

12. This paradox is resolved by the fact that one person must have accelerated along the journey. For 10 points each:

[10] Name this apparent conflict in special relativity, where each person believes that the other is moving at relativistic speeds and, therefore, should age more slowly.

ANSWER: **twin** paradox

[10] Rahel and Esthappen are twins in this author's 1997 debut, Booker Prize-winning novel *The God of Small Things*.

ANSWER: Arundhati **Roy**

[10] In Greek myth, the twins Castor and Pollux were transformed into this constellation, which represents the Twins.

ANSWER: **Gemini**

13. This case's plaintiff unsuccessfully attempted to get its decision reversed at the district court level in the 2000s. For 10 points each:

[10] Name this 1973 US Supreme Court case which controversially ruled that the right to privacy afforded in the due process clause of the 14th Amendment does give a woman the right to have an abortion.

ANSWER: **Roe** v. **Wade** [or **Wade** v. **Roe**]

[10] *Roe v. Wade* was a landmark decision made by the Supreme Court under this Chief Justice. This Justice established an eponymous test on religion in his majority opinion for the case *Lemon v. Kurtzman*.

ANSWER: Warren **Burger**

[10] The Burger Court also created a namesake "test" in the case *Miller v. California*, which addressed this First Amendment issue. Potter Stewart declared "I know it when I see it" about this issue, also ruled on in *Roth v. US*.

ANSWER: **obscenity** [or **pornography**; accept word forms for both]

14. According to fideism, this quality is independent of reason. For 10 points each:

[10] Name this quality, the belief in a religion or deity without rational evidence.

ANSWER: **faith**

[10] This book by Soren Kierkegaard contrasts the "knight of faith", exemplified by Abraham's willingness to sacrifice his son Isaac, with the "knight of infinite resignation."

ANSWER: **Fear and Trembling** [or **Frygt og Bæven**]

[10] This Christian apologetic explained a rational basis for faith in his books *Miracles* and *Mere Christianity*. He's the namesake of a trilemma asking if Jesus was "mad, bad, or God."

ANSWER: CS **Lewis** [or Clive Staples **Lewis**]

15. In this paradigm, two lines which are mutually perpendicular to a third line may not run parallel to each other. For 10 points each:

[10] Name this field of geometry which encompasses all the situations in which the parallel postulate does *not* hold.

ANSWER: **non-Euclidean** geometry

[10] Non-Euclidean geometry was partly spurred on by this mathematician's famous 1854 "Habilitationvortrag" lecture and his creation of elliptical geometry. Distances can be measured on his namesake manifolds.

ANSWER: Bernhard **Riemann**

[10] Lobachevsky, on the other hand, introduced a geometry named for this figure, the graph of  $y$  equals one over  $x$ . Along with a circle, ellipse, and parabola, it's a classic conic section.

ANSWER: **hyperbola** [or **hyperbolic** geometry]

16. This character first appeared in Tirso de Molina's *The Trickster of Seville and the Stone Guest*. For 10 points each:

[10] Name this character from Spanish literature, a legendary womanizer who was reimagined as Don Giovanni by the Italians.

ANSWER: **Don Juan**

[10] Tirso de Molina wrote during this period of Spanish literature, which also included playwrights Lope de Vega and Calderón de la Barca. This era represented the pinnacle of Spanish culture in the 16th century.

ANSWER: Spanish **Golden Age** [or El **Siglo de Oro**]

[10] This much later Spanish author ushered in the so-called "second Golden Age" with his poetry like *Gypsy Ballads* and his dramatic *Rural Trilogy*. He was executed during the Spanish Civil War.

ANSWER: Federico **García Lorca**

17. Living in Victorian England--not all it's cracked up to be. For 10 points each:

[10] Infamous examples of these institutions in London include Fleet and the Clink. Debtors were sent to these places, which often had horrific living conditions, and weren't reformed until late in the century.

ANSWER: debtors' **prisons** [or **jails**; or equivalents]

[10] If you're lucky like Oliver Twist, rather than jail, you could wind up in one of these institutions where the impoverished lived and labored. They became popular after the 1834 New Poor Law.

ANSWER: **workhouses** [or **spikes**]

[10] Being an aristocrat wasn't a lot better, particularly for women, who were expected to follow this ideology: the idea that men had a public life, women ruled the private life, and the two lives did not intersect.

ANSWER: **separate spheres**

18. This politician rhetorically asked, "What rhymes with 'Mitch?'" to her opponent's claim that she had an aristocratic-sounding name. For 10 points each:

[10] Name this politician who lost the Kentucky Democratic Senate election against Mitch McConnell.

ANSWER: Alison Lundergan **Grimes**

[10] McConnell avoided an upset, such as the one which claimed this House Majority Leader in a Virginia primary. This man lost to unheralded Tea Party candidate Dave Brat.

ANSWER: Eric **Cantor**

[10] Republicans did pick up a Senate seat abandoned by Jay Rockefeller in this state. Shelley Moore Capito won the Senate race in this state.

ANSWER: **West Virginia**

19. The time constant in one of these circuits is the time required for "1 minus 1 over  $e$ " fraction of the total charge to be stored in an electric field. For 10 points each:

[10] Name these circuits which contain two types of components: one that stores charge, and one that dissipates energy. They are useful as passive filters.

ANSWER: **RC** circuits [or **resistive-capacitive** circuits; or **resistor-capacitor** circuits; accept two components in either order]

[10] A capacitor with this geometry has capacitance equal to epsilon times area over separation distance. Capacitors are always visualized in circuit diagrams in this geometrical setup.

ANSWER: **parallel plates** [or **parallel lines**; prompt on partial answer]

[10] Capacitors arranged in this setup in a circuit have a net capacitance equal to the harmonic mean of capacitances. Resistors add algebraically in this setup. Christmas lights are wired this way, so if one burns out, the rest do too.

ANSWER: **series** circuit



20. In many performances of this aria, the tenor lead breaks down into tears after finishing. For 10 points each:

[10] Name this aria during which Canio forces himself to dress up as a clown even though he knows his wife Nedda is sleeping around.

ANSWER: **“Vesti la giubba”**

[10] “Vesti la giubba” is by far the best-known aria from this Ruggiero Leoncavallo opera which is frequently performed in a double bill with Mascagni’s *Cavalleria rusticana*.

ANSWER: **Pagliacci** [or **I Pagliacci**]

[10] Arturo Toscanini premiered *Pagliacci* in this Italian city in 1892. The Scala opera house is in this Lombard city, which today is the most populous in Italy.

ANSWER: **Milano**, Italy