

NOTE: Do not use these questions unless it is ABSOLUTELY necessary!

After killing a lion that roamed on top of the emperor's palace, Yorimasa received a wife named Ayame and one of these items called Shishi-O. A nomad named Benkei planned to build a temple once he acquired 1,000 of these objects, but he only acquired 999 before Yorisune beat him. Two divers go under the sea and find a jeweled passage to a land with a city of gold in a medieval legend that explains how one was lost during the (\*) Gempei War. One of these objects was found in the fourth tail of an 8-headed creature. Amaterasu spat out a mist after she ate the three pieces of one that belonged to Susanowo. Along with beads and a mirror, one is an imperial regalia of Japan. For 10 points, name these objects which include the *Kusanagi*, and which are used by samurai to chop off heads.

ANSWER: swords [accept katanas]

While hidden, this character exclaims "Poor worm, thou art infected! This visitation shows it." Towards the end of the work in which he appears, he promises that "Deeper than did ever plummet sound / I'll drown my book." This character warns his future son-in-law that disaster will come upon him if he has sex before the actual wedding. This character entreats the (\*) audience "As you from crimes would pardon'd be, Let your indulgence set me free" in an epilogue which is widely interpreted as his creator's 'farewell to the stage.' This character was the Duke of Milan until he was overthrown by his brother Antonio. For 10 points, name this scheming sorcerer who is served by the spirit Ariel, the protagonist of Shakespeare's *The Tempest*.

ANSWER: Prospero

46 stages of this organism's development are posited by the Hamburger-Hamilton model, which helped popularize its use as a model organism. Experiments on these organisms led to the discovery of the first oncovirus. The *src* ["sarc"] oncogene was discovered in these organisms after Peyton Rous infected them with a sarcoma virus. Bateson and Punnett showed that traits can be controlled by multiple genes while doing experiments with the Brahma and Wyandotte types of these organisms. A disease (\*) informally named for these organisms is caused by the varicella zoster virus and may manifest as shingles in adult life. For 10 points, name these creatures of genus *Gallus* that can flap their wings and run around after decapitation.

ANSWER: chickens [or Gallus gallus before mention]

This religious idea was first introduced in John of Sacrobosco's *On the Sphere of the World*, and Samuel Clark argued against this theory in a much-publicized debate with Leibniz. Edward Dolnick recently wrote a book on this religious analogy, which William Paley used to explain the purpose of animal wings, antennae and other features. A book titled after this religious idea uses the example of a biomorph which is analogous to a form of human life. Isaac Newton argued that this (\*) metaphor was not supported by his theory of universal gravitation. A variant of this analogy titles a book on evolution by Richard Dawkins. For 10 points, name this analogy promulgated by Deists, which compares our world to a mechanistic device set in motion by the creator.

ANSWER: clock universe theory [accept anything that indicates the universe or world is like a machine. Accept anything that mentions God is a watchmaker.]

This ingredient is stir fried with onion, peppers, and various spices to make rathnam poriyal. A Finnish pancake which notably has this ingredient mixed in is known as veriohukainen. Mixing it with noodles and barley is the most common way to make the Korean sundae [soon-day], and cubes made out of it are served in China as a namesake type of tofu. A legend states that after a man tasted a (\*) Spartan soup containing pork, vinegar, and salt, mixed with it, he exclaimed "Now I know why the Spartans do not fear death." That soup was known as a black soup, which has a similar name to black pudding, a sausage made using this product. For 10 points identify this substance which is a good source of iron due to it containing hemoglobin, which is the typical sustenance of vampires.

ANSWER: blood

**In the context of robot motion planning, the Pfaffian ones of *these* are linearly independent values that uniquely model rolling without slipping. The Rosen method of gradient projection is a method of solving for *these* using a steepest descent method. Parallel parking is one example of a system characterized by the differential types of these values, which are dependent upon the path taken, ones that don't are said to be holonomic. While using the (\*) simplex method, inequalities that represent *these* are used to define the feasible region. These statements define the boundaries of the candidate solution. Lagrange multipliers are introduced to find *extrema* of functions subject to *these*. For 10 points, name these values that must be satisfied to solve an optimization problem.**

ANSWER: **constraints**

Name these courtiers who served Queen Elizabeth I, for 10 points each:

[10] As Elizabeth's principal secretary and spymaster, this man uncovered the Babington plot to replace Elizabeth with Mary, Queen of Scots, leading to the latter's execution.

ANSWER: Sir Francis **Walsingham**

[10] After leading a failed attempt to establish a colony in Roanoke, North Carolina, this statesman became captain of the Queen's Guard, but was thrown in the Tower of London when his secret marriage to Elizabeth Throckmorton was discovered.

ANSWER: Sir Walter **Raleigh**

[10] This occultist became a scientific and medical advisor to the queen, and helped plan Martin Frobisher's voyages to Canada. He also made an early English translation of Euclid's *Elements*.

ANSWER: John **Dee**

The third movement of this piece was originally titled "Promenade Sentimentale." For 10 points each:

[10] Name this piano suite whose dreamy third movement, "Claire de Lune," was inspired by a Paul Verlaine poem.

ANSWER: **Suite Bergamesque**

[10] "Claire de Lune" is probably the single most famous piano piece by this French composer, whose expansive use of chromatic harmony in *Prelude to the Afternoon of a Faun* foreshadowed 20<sup>th</sup> century music.

ANSWER: Claude **Debussy**

[10] This other suite by Debussy takes inspiration from Javanese gamelan music in "Pagodes," which also heavily incorporates pentatonic scales. It also contains "Jardins sous la pluie," or "Gardens in the Rain."

ANSWER: **Estampes** [or **Stamps** or **Prints**]

Answer some more academically-oriented things about Mormonism, for 10 points each:

[10] According to Mormon doctrine, the Holy of Holies is located in the LDS Temple in this Utah city, where the church is headquartered.

ANSWER: **Salt Lake City**

[10] The Mormon lay ministry is divided into two groups, one named for Melchizedek, the other named for this biblical figure who turned the Nile to blood and acted as spokesman for his stuttering brother.

ANSWER: **Aaron**

[10] In Mormon cosmology, only the extremely sinful "sons of perdition" will be denied the glory of God at the last judgement, and will instead be sent to this version of hell. The Gospel of Matthew says that here, there will be "weeping and gnashing of teeth."

ANSWER: **outer darkness**

This author wrote about a Russian professor at an American university who gets on the wrong train to deliver a lecture. For 10 points each:

[10] Name this Russian-born American author of *Pnin* who wrote about Humbert Humbert's attraction to Dolores Haze in *Lolita*.

ANSWER: Vladimir **Nabokov**

[10] Nabokov also wrote *Pale Fire*, which mostly consists of commentary on a 999-line poem by this fictional author.

ANSWER: John **Shade**

[10] This Nabokov novel, originally written in Russian, chronicles the musings of Cinccinatus C. as he awaits his unfair execution. Despite the novel's resemblance to Kafka's *The Trial*, Nabokov claimed he was unfamiliar with Kafka at the time.

ANSWER: **Invitation to a Beheading**

Answer some questions about things that might be involved in a hip replacement for 10 points each.

[10] In a hip replacement surgery, the top half of this bone is replaced a metal prosthesis. This bone is the longest and heaviest bone in the human body.

ANSWER: **femur**

[10] The metal prosthesis that replaces part of the femur is stuffed down this cavity of the femur. Bone marrow in the diaphysis of bones is usually found in this location.

ANSWER: **medullary cavity** [Accept **medullary canal**]

[10] A polyethylene or metal cup is placed in this part of the pelvis, which serves as a socket for the head of the femur.

ANSWER: **acetabulum**

The most famous of these structures is located at Itsukushima Shrine and is partly submerged by the surrounding bay, which makes it look like it is floating. For 10 points each:

[10] Name these large gates which demarcate the entrance to Japanese shinto shrines.

ANSWER: **torii**

[10] The most revered of all shinto shrines is Ise, dedicated to this sun-goddess of the Shinto pantheon. The *Kojiki* claims she is the ancestor of the Imperial family.

ANSWER: **Amaterasu**

[10] Most shinto ceremonies open with this purification ritual. In addition to physical purification by water, a *haraigushi* wand is often waved over the object or person to be purified.

ANSWER: **harae** [or o-**harae**]

Answer the following about the decline of the “sick man of Europe,” a.k.a. the Ottoman Empire, for 10 points each:

[10] The beginning of the Ottomans' downfall is often traced to this 1699 treaty, which transferred Hungary and Transylvania to Austria's control.

ANSWER: Treaty of **Karlowitz**

[10] During the early 19th century, the Ottoman empire underwent a brief resurgence during the Tanzimat reforms, beginning under this Sultan, who disbanded the Janissary Corps in the ‘Auspicious Incident.’

ANSWER: **Mahmud II**

[10] The Ottoman Empire reneged on its promises decades later in this event during and following World War I, in which at least a million people of a certain ethnic group were killed.

ANSWER: **Armenian genocide** [or equivalents]