Tossups:

1. One character on this TV show reveals that she used to have an eating disorder during the seventh episode. That character's mother visits her the day before a more famous incident at a club. That incident was not aired, and in its place, MTV showed a 2-minute slot to promote awareness of domestic violence. In that same episode, a character who stresses the importance of proper hair maintenance, two-hours of gymtime a day, and tanning salons takes "a grenade" for fellow house-mate Mike Sorrentino. After arguing over the ownership of a round of shots at a club, Snookie is punched in FTP, what TV show featuring guidos and guidettes like Pauly D, J-woww, and The Situation, set at the beach of a titular Northeastern state.

ANSWER: MTV's Jersey Shore

2. Molecules with this functional group include testosterone and dopamine, and one of these can suppress the action of antidiuretic hormone. Grignard reagents react with carbonyls to produce these, and they can be produced from alkenes through hydroboration and oxymercuration. When attached to an alkyl chain, these usually have a p K_a of 16 to 19 and thus are slightly more acidic than water. One of these, which is sometimes used for fuel, is produced by *Saccharomyces cervisiae* from sugar. FTP, name this functional group defined by an oxygen bonded to a hydrogen that is found in chemicals such as ethanol.

ANSWER: alcohols

3. In his <u>A Key into the Language of America</u>, this thinker showed that he was one of the first Europeans to undertake a scholarly study of various Native American tribal languages. Later he wrote his most important tract, *The Bloody Tenant*. Earlier in his life, he chafed at Archbishop William Laud's strict control of Anglican Church doctrine, escaping with his wife Mary to Boston. Due to his prior religious training, he was immediately invited to become a pastor, but refused the job and was eventually exiled, for he believed that civic authorities should exercise no power over one's own religious convictions. For ten points, name this notable advocate of religious tolerance and founder of the colony of Rhode Island.

ANSWER: Roger Williams

4. The narrator of this work declares that he was inspired by a spirit who "Dove-like satst brooding on the vast abyss / And mad'st it pregnant: and that it will pursue "Things unattempted yet in prose or Rhyme". In Book II of this work, Moloch declares that he is in favor of open war, while Mammon believes the wiser plan is to build a kingdom to rival that of God's. Eventually they agree to investigate the new race of beings known as Man, and send a character who had earlier declared that it was "better to reign in hell than serve in heaven". FTP name this English epic by John Milton.

ANSWER: Paradise Lost

5. In General American, there are five of the "checked" type of these linguistic elements. The contention that Korean is an Altaic language is supported by the traces in Korean of the phenomenon known as their harmony, which dictates which of them can be found near each other. Two of them are separated in hiatus, and they are characterized by height, backness, and roundedness. Non-syllabic ones are known as glides. Most languages only contain voiced ones, and French and Portuguese feature nasal ones. One that changes quality over the course of its pronunciation is a diphthong. For 10 points, identify these sounds that in English sometimes include y and contrast with consonants.

ANSWER: vowels

6. Its inverse variety results in photons gaining energy and the Sunyaev-Zel'dovich effect due to distortions of the cosmic microwave background radiation. This effect is observed when a high-energy photon collides with a target that contains loosely-bound electrons on its outer shell. The x-rays scattered from these electrons have a longer wavelength than that of the incident photon, and this shift in wavelength increases with the scattering angle. FTP, name this effect that lent further support to the idea of wave-particle duality.

ANSWER: Compton effect

7. In 1963 a this man's painting Eight Elvises was sold for \$100 million. Later, this man created a portrait of Mao Zedong. His studio was known as "the Factory," where he produced works in the same style as the artist of The Three Flags. He painted over a 100 variations of the Last Supper in a namesake cycle, and

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associated with artists like Robert Rauschenberg. One of his most famous works depicts a famous actress less than a week after a death and is composed of 50 photographs of her, 25 in color, 25 in black in white, The Marilyn Diptych. FTP, identify this pop artist of such works as 100 dollar bill and 100 Campbell Soup cans.

ANSWER: Andy Warhol

8. The first movement of one of his pieces includes a middle section marked "Im Legendenton" and ends with an allusion to the last song from Beethoven's *An die ferne Geliebte*; that piece is his *Fantasy in C*. Another collection of piano pieces features three "Sphinxes" between the eighth and ninth movements, each of which consists of just three or four notes relating to the letters A-S-C-H. Those three motifs appear throughout the piece in movements such as "Eusebius" and "Florestan." Another collection opens with "Of Foreign Lands and Peoples" and contains "Träumerei," or "Dreaming." For 10 points, identify this composer of *Carnaval* and *Scenes from Childhood*, who also wrote the Rhenish Symphony.

ANSWER: Robert Schumann

9. In topology, for a transformation of this type, uniform continuity is equivalent to continuity. Inhomogenous ordinary differential equations of this type can be solved with the method of variation of parameters. Eigenvectors return a scalar multiple of themselves when a transformation with this property is applied to them. Cramer's rule is used to solve systems of equations with this property, and this word also describes vector spaces because they're closed under addition and scalar multiplication. FTP, name this property that is also used to describe polynomial equations of the first order, which generate lines.

ANSWER: linear

10. One play by this author tells the story of an escaped convict named Brutus who becomes ruler of a Carribean island, while another tells of Eben's adulterous affair with his young stepmother, Abbie Putnam. In addition to writing *The Emperor Jones* and *Desire Under the Elms*, he also wrote a play in which Hickey disrupts the pipe dreams of the denizens of Harry Hope's Saloon, and one in which the consumptive Edmund and opium-addicted Mary are members of the declining Tyrone family. FTP, this is what American playwright of *The Iceman Cometh* and *Long Day's Journey Into Night?*

ANSWER: Eugene O'Neill

11. This man benefited from a decision to enlist demobilized English soldiers from the Napoleonic Wars and by a revolt against Ferdinand VII. He was originally opposed to the abolition of slavery but supported emancipation to grow his armies and draw supplies from Haiti. After the war, he established Gran Columbia out of Ecuador, Colombia, and Venezuela. FTP, name this leader who overthrew Spanish rule in South America.

ANSWER: Simon Bolivar are the people with buzzers who answer questions

12. This law will not be followed if the intermolecular bonding between two components of a solution is greater than the intermolecular bonding between the other combinations of components. For instance, a solution of benzene and ethyl alcohol will not obey this law because benzene and ethyl alcohol are immiscible. If a solution does not show preferential intermolecular bonding and thus obeys this law, it is considered an ideal solution. Those that deviate from it have an activity coefficient not equal to one. FTP, name this law which states that the vapor pressure of a solution is dependent on the vapor pressure of the components and their mole fraction.

ANSWER: Raoult's law

13. One novel by this author was published in four parts over sixteen years and is an epic based on the Genesis story, which draws similarities between Judaism and Atenism, the religious philosophy of the Egyptian Pharaoh Akhenaton. Besides *Joseph and his Brothers*, other notable works chronicle the rise and fall of a wealthy Lubeck mercantile family, Count Aeschenbach's unhealthy obsession with the adolescent Tadzio, and Hans Castorp's extended stay in a Swiss Alps moratorium. For ten points, name this German Nobel Laureate author of *Buddenbrooks*, *Death in Venice*, and *The Magic Mountain*.

ANSWER: Thomas Mann

14. He is mentioned in the Rig Veda as drinking Soma and helping Indra, though he would later take on a central role in Vaishnavism. His arms hold a conch, a chakram, a mace, and a lotus, and in one incarnation, he teaches Arjuna the practice of dharma before a battle. In another incarnation, he rescues his wife Sita from the demon-king Ravana before claiming the throne of Ayodhya. His mount is the eagle Garuda, though he is usually shown reclining on the serpent Shesha Naga together with his consort Lakshmi. For ten points, name this preserver god in Hinduism, whose avatars include Rama and Krishna, and who forms the Trimurti with Brahma and Shiva.

ANSWER: Vishnu

15. A traditional fiddle tune, "The 8th of January," narrates this battle as seen through the eyes of a cheerful American volunteer soldier. 8,000 British troops under the command of General Edward Pakenham launched their initial attack on December 23, believing the American forces to be ramshackle and poorly armed; American forces, however, repulsed the British and easily prevented their attempt to retake the lands the United States had gained under the Louisiana Purchase. For ten points, name this strategically insignificant yet patriotically inspiring battle won by American general Andrew Jackson and the French privateer Jean Lafitte, the last major conflict of the War of 1812.

ANSWER: Battle of New Orleans

16. Literature written during this dynasty included the play the *Peony Pavilion* and *Travel Diaries* by Xu Xiake. This dynasty pretended to restore the Tran dynasty but occupied Vietnam instead. It ended when Li Zicheng mutinied and Nurhaci led an invasion force. It began when Zhu Yuanzhang, the White Lotus, and the Red Turbans captured Dadu, Nanjing, and defeated the Yuan Dynasty. FTP, name this dynasty, known for its pottery.

ANSWER: Ming Dynasty

17. Her sisters included Galatea, who was loved by the Cyclops Polyphemus, and Amphitrite, who was the wife of Poseidon. Her father was a shape-shifter and seer named Nereus, and she herself took the shape of a lioness and a serpent before finally agreeing to marry the mortal who tried to capture her. This deity cared for Hephaestus on Lemnos after he was cast out from Olympus, a debt that the god would repay twice to her son. A prophecy predicting that her son would be stronger than his father prevented Zeus from sleeping with her, but he was still indebted to her for her aid in preventing an uprising by the other gods by summoning the monster Briareus. For ten points, name this silver-footed Nereid, the wife of Peleus and mother of Achilles.

ANSWER: Thetis

18. First outlined by Ernst Mayr, this concept can account for the unusually large deaf population on Martha's Vineyard and the smaller size of seeds in certain island regions of Canada. It can result if population flows are constrained, and it explains the high prevalence of Ellis-van Creveld syndrome in Amish populations. A specific example of genetic drift, FTP, name the effect that describes the decrease in genetic variation observed when a small population separates from a larger population.

ANSWER: Founder effect

19. In one poem by this author, the narrator claims to have "raised the pyramids above" the Nile and "bathed in the Euphrates when dawns were young". And in another poem by this author, the narrator is instructed by his teacher to "Go home and write / a page tonight", which becomes the poem. While this author's most quoted poem wonders if the title entity "sags / like a heavy load" or dries up "like a raisin in the sun?". FTP, "The Negro Speaks of Rivers", "Theme for English B", and "A Dream Deferred" were written by what poet of the Harlem Renaissance?

ANSWER: Langston **Hughes**

20. In one novel by this author, Noboru grows despondent and violent when his mother begins an amorous relationship with the titular character, Ryuji Tsukazaki, *The Sailor Who Fell From Grace with the Sea*. A more famous novel by this author contains the line "When you meet the Buddha, kill the Buddha" and contains characters such as Father Dosen and Mizoguchi, who burns down the titular structure, *The Temple of the Golden Pavillion*. FTP, *Spring Snow, Runaway Horses, The Temple of Dawn*, and *The Decay of the*

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Angel make up the Sea of Fertility tetralogy of what Japanese author who committed suicide after a failed coup d'état intended to restore the powers of the emperor?

ANSWER: Yukio Mishima [accept names in either order]

21. Herodotus wrote that this man once reviewed his forces and wept, because none of them would be alive in a hundred years. He built two bridges that connected Europe and Asia; the first was made of flax and papyrus, while the second was made of ships. Themistocles tricked him into a decisive naval battle after the battle of Artemisum. FTP, name this Persian leader, who defeated the Greeks at Thermopylae, the son of Darius I.

ANSWER: Xerxes I

Bonuses:

1. The protagonist, Bella Swan, moves from Phoenix, Arizona to the oddly grey-tinted town of Forks, Washington,

[10] FTP Name this vampiric teen novel, which lends its name to a book series with sequels like "New Moon" "Eclipse" and "Breaking Dawn"

ANSWER: Twilight

[5,5] F5PE, Name both of Bella's love interests, one a sparkling vampire, the other a brutish werewolf. Both First and Last names are necessary.

ANSWER: Edward Cullen and Jacob Black

[10] FTP this is the name of Bella's half-vampire/half-human child, named after both her and Edward's mothers.

ANSWER: Renesmee

2. In 1606 he killed a man in a brawl and was forced to flee from Rome to Malta, FTPE

[10] Name this artist, known for his fiery temper and the dark, grim nature of paintings like Judith Beheading

Holofernes, David and Goliath, and The Entombment

ANSWER: Caravaggio

[10] Caravaggio made extensive use of this technique, a strong contrast between light and dark. Italian for light-dark, extensive use of this

technique where darkness becomes an overwhelming feature of the painting is known as tenebrism.

ANSWER: Chiaroscuro

[10] This painting, Caravaggio's most famous, shows a ray of light striking the titular tax-collector's face and Jesus's hand reaching out from the shadows to point at the future apostle.

ANSWER: The Calling of St. Matthew

- 3. FTPE, name these things related to optics.
- [10] This gives the ratio of the speed of light in a vacuum with the speed of light in a given medium. It is 1.33 for water.

ANSWER: index of refraction

[10] At angles from the normal larger than this, total internal reflection occurs.

ANSWER: critical angle

[10] At this angle, light with a given polarization is transmitted through a surface without reflection.

ANSWER: **Brewster's** angle (also accept **polarization** angle)

- 4. The play begins as Colonel Vershinin's battery arrives at the provincial garrison town that is the play's setting, and it ends with the battery's departure, FTPE:
- [10] This is what play in which Olya, Masha, and Irina Prozorova worry that they will never see Moscow and are stuck in the their provincial life?

ANSWER: *Three Sisters*

[10] Three Sisters is by this Russian short story writer and playwright, who also wrote Uncle Vanya.

ANSWER: Anton Chekhov

[10] Chekhov's most popular play is this one, in which Lopakhin buys the titular property from Lyuba Ranevsky and has it chopped down to build cottages.

ANSWER: The Cherry Orchard

5. This empire saw ruling dynasties such as the Heraclean, Comnenan, and Paleologus, FTPE:

[10] Identify this Empire which was took its name from an ancient Greek city and which now serves as an adjective designating deceitful, treacherous politics.

ANSWER: **Byzantine** Empire

[10] This major Byzantine emperor codified Roman law with his namesake law code and sent his general Belisarius to reconquer Italy from barbarian tribes which had overrun the Roman empire

ANSWER: Justinian I or the Great

[10] The Byzantine empire probably reached its last peak after Justinian under this dynasty which included Leo III and during which the Iconoclasm controversy

ANSWER: Isaurian

6. A quotation from Job forms the text for a soprano aria late in this work, "I know that my redeemer liveth." For 10 points each:

[10] Identify this oratorio that includes the tenor aria "Ev'ry valley shall be exalted" and the famous "Hallelujah" chorus.

ANSWER: Messiah

[10] Name the composer of *Messiah*, whose best-known instrumental works include *Water Music* and *Music for the Royal Fireworks*.

ANSWER: Georg Frideric Handel

[10] Handel also wrote many keyboard suites, including one in E major that ends with an air and variations, later given this nickname. In *Great Expectations*, Herbert Pocket refers to this piece when he gives Pip the nickname Handel.

ANSWER: "The Harmonious Blacksmith"

7. FTPE, name these terms from geology:

[10] This layer of the Earth lies between the crust and the outer core.

ANSWER: mantle

[10] This "plastic" section of the mantle lies 60-150 miles below the Earth's surface and receives its name from the Greek word for "weak."

ANSWER: asthenosphere

[10] This boundary refers to the increase in seismic wave velocity found between the crust and mantle.

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ANSWER: Mohorovičić discontinuity

8. Answer some questions about that other Greek city which was not featured in the movie 300, FTPE: [10] This man divided Athenians into four classes based on wealth and their ability to perform military service, and many male citizens gained the right to vote for the first time under his reforms. He was a notable poet and he was followed by the tyrant Peisistratus

ANSWER: Solon

[10] This later reformer finally brought democracy to Athens. He turned the traditional four tribes of Athens into ten tribes, where each tribe elected a certain number of citizens to the Boule, the Athenian legislative and judicial body, in which anyone could serve.

ANSWER: Cleisthenes

[10] The chief magistrates of Athens went by this name. A system of nine of these were appointed by the Areopagus.

ANSWER: Archons

9. The War of the Quadruple alliance followed this conflict, FTPE:

[10] Name this war that was prompted by the death of Charles II of the namesake country without a heir. It was fought to insure that the French crown and this country would not be united.

ANSWER: War of the **Spanish Succession**

[10] The war featured an alliance of Portugal, Great Britain, and the Holy Roman Empire, among others, who fought to keep this man, the nephew of Louis XIV of France

ANSWER: Philip V

[10] The War of the Spanish Succession was given this name in North America, after the British monarch at the time. The Treaty of Utrecht saw Britain take Newfoundland and Hudson Bay from France.

ANSWER: Queen Anne's war

10. Answer some questions about authors whose works were adapted into operas, FTPE:

[10] This author's *Le Roi s'amuse* was the basis for Verdi's *Rigoletto*, but he's more famous for creating such characters as Claude Frollo, Inspector Javert, Jean Valjean, and Quasimodo.

ANSWER: Victor **Hugo**

[10] The opera *Lucia di Lamermoor* is based on the novel *Bride of Lamermoor*, one of the Waverley novels of this author.

ANSWER: Walter Scott

[10] This author's *William Tell* was the basis of the Rossini opera of the same name. He's also famous for the play *The Robbers* and for writing the "Ode to Joy" that Beethoven set in his Ninth Symphony.

ANSWER: Friedrich Schiller

11. Answer some questions about future Olympic host cities FTPE.

[10] This capital city beat off Paris, New York, Madrid and Moscow for rights to host the 2012 Summer Olympics. The Thames River runs through it, though you might know it better for a certain bridge.

ANSWER: London

[10] Host of the 2014 Winter Olympics, this Russian city is located just north of Georgia. Its favourable location along the Black Sea meant that it housed Josef Stalin's favourite country home.

ANSWER: Sochi

[10] Chicago lost the bid to host the 2016 Summer Olympics to this city, the first South Ameircan one to have that honor. Famous tourist attractions here include the Maracana Stadium, Sugar Loaf Mountain and the statue of Christ the Redeemer.

ANSWER: Rio de Janeiro

12. Answer these questions related to photosynthesis FTPE:

[10] This set of reactions, which takes place in the stroma of chloroplasts, fixes carbon and results in the final production of glyceraldehydes-3-phosphate.

ANSWER: Calvin-Benson cycle

[10] Rubisco is the main enzyme of the Calvin cycle and responsible for carboxlating ribulose-1,5-bisphosphate with carbon dioxide. Unfortunately, it also reacts competitively with O_2 through this undesirable process.

Me CANSWER: photorespiration // DUZZE/5 M/10 CITSME/ QUESTIONS

[10] This pathway allows certain plants in arid climate to fix carbon dioxide at night in the form of malate. By releasing the carbon dioxide during the day to the stoma, high carbon dioxide concentrations are ensured and photorespiration is minimized.

ANSWER: <u>crassulacean acid metabolism</u> or <u>CAM</u> photosynthesis

13. Name some works in the genre of science fiction FTPE.

[10] Martians land on Earth in metallic cylinders and train their heat-rays on the residents of London in this novel by H.G. Wells.

ANSWER: The War of the Worlds

[10] Rick Deckard administers the Voight-Kampff test to investigate the empathy of the suspects in this novel by Phillip K. Dick. Deckard becomes confused when he meets the enigmatic Rachael Rosen.

ANSWER: Do Androids Dream of Electric Sheep?

[10] This Robert A. Heinlein novel, which takes its title from The Book of Exodus, tells the story of Valentine Michael Smith who returns to earth, after having been raised by Martians on Mars.

ANSWER: Stranger in a Strange Land

14. Stuff about the administration of Andrew Jackson, FTPE:

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[10] This act, in a misguided effort to protect New England industrialists from taking control of Western lands for speculation purposes, mandated that real estate be bought with gold and silver instead of paper money.

ANSWER: Specie Circular

[10] Jackson's most passionate efforts went to fight this governmental institution run by Nicholas Biddle, with Jackson seeing its power over American financial affairs as discriminatory to the common American citizenry and lopsidedly favoring the rich New England elite and foreign stockholders.

ANSWER: Second Bank of the United States

[10] Jackson showed his disrespect for Native Americans as well as his willingness to enforce quasi-dictatorial powers when he refused to enforce this Supreme Court decision protecting the Cherokee from complying with the directives of state governments.

ANSWER: Worcester v. Georgia

15. FTPE, name these things related to nuclear physics.

[10] Rutherford used this particle in his gold foil experiment. It consists of a helium nucleus.

ANSWER: alpha particle

[10] This type of decay occurs when a neutron is converted in a proton, resulting in the emission of the namesake particle and an antineutrino.

ANSWER: beta minus decay

[10] This fundamental force is responsible for beta decay and flavor changing. It merges with the electromagnetic force above a unification energy of 100 GeV.

ANSWER: weak force

16. Identify some short stories by Nathaniel Hawthorne, FTPE:

[10] The titular character discovers that Deacon Gookin, the woman who taught him catechism, and his wife Faith are all taking part in a ritual with the devil in this story set in 17th century Salem.

ANSWER: "Young Goodman Brown"

[10] In this Hawthorne story, Aylmer becomes obsessed with his wife Georgiana's one physical imperfection and tries to create a formula that will make it go away.

ANSWER: "The Birth-Mark"

[10] Giovanni falls in love with the titular character of this Hawthorne story, who is kept in a poisonous garden by her mad scientist father, and is herself poisonous.

ANSWER: "Rappaccini's Daughter"

17. Answer these questions about a certain denomination of Islam, FTPE:

[10] The majority of the population in Iraq and Iran belongs to this denomination, which claims that only descendants of the prophet Muhammad may be rulers of the Islamic community.

ANSWER: Shia or Shi'ite or Shi'ism

[10] Shi'ites support the rule of this fourth Rashidun caliph, who was both the cousin and son-in-law of Muhammad. His son Husayn were martyred at the battle of Karbala.

ANSWER: Ali ibn Abi Talib

[10] Ali and Husayn are the first and third of these leaders of twelver Shi'ism. It is believed that the twelfth of them, known as the Mahdi, will return in order to usher in an age of peace and justice.

ANSWER: Imams

18. Squire Allworthy returns to home from London to find the protagonist, a baby, asleep in his bed, and so he raises him as his own, FTPE:

[10] This is what comic novel in which the title "foundling" loves his neighbor's daughter, Sophia Western. ANSWER: *The History of Tom Jones*, A Foundling

[10] *Tom Jones* is by this 18th century English author, who mocked his contemporary Samuel Richardson in such novels such as *Shamela* and *Joseph Andrews*.

ANSWER: Henry Fielding

[10] Another contemporary of Fielding was this author who wrote about a castaway based on Alexander Selkirk in his *Robinson Crusoe*.

ANSWER: Daniel **Defoe**

19. FTPE, name some things about the Heptarchy of Anglo-Saxon England.

[10] This cleric who lived in Monkwearmouth and Jarrow earned the title "Father of English History" for his *Ecclesiastical History of the English People*. He was not canonized until 1935, so for centuries he was known as "Venerable."

ANSWER: The Venerable St. Bede

[10] Bede lived in this northernmost English kingdom whose southern border was traditionally the Humber Estuary. Its capital was York and it was neither Wessex nor Essex nor Sussex nor Kent nor Mercia nor East Anglia.

ANSWER: Kingdom of Northumbria (or NorPanhymbra)

[10] Bede wrote that the Germanic invaders of the fifth century were Angles, Saxons, and these people. They may have come from modern Denmark and settled in Kent. This entire people or at least its aristocracy may have been exterminated by the Saxons.

ANSWER: Jutes

20. FTPE, identify a certain chart and its features.

[10] This graph is used to identify the states of matter in which a certain compound exists given a set of pressure and temperature parameters.

ANSWER: phase diagram

[10] At this point, all three standard phases of matter of a given compound can co-exist.

ANSWER: triple point

[10] For most compounds at reasonably low temperatures and pressures, there is a clearly defined transition between the liquid and gas phases. This point marks when such a line of equilibrium ends.

ANSWER: critical point

21. Name these key figures in the development of Confucian philosophy, FTPE:

[10] This philosopher believed that human nature was essentially good, and that unjust rulers could be overthrown by the populace. His namesake treatise is one of the Four Books of Neo-Confucianism.

ANSWER: Mencius or Mengzi or Meng Tzu

[10] This rival of Mencius believed human nature to be inherently evil. He was the teacher of legalist thinkers Li Si and Han Feizi.

ANSWER: Xun Zi or Hsun Tzu

[10] This Song-dynasty scholar was the founder of Neo-Confucianism who condemned Xun Zi as a heretic for his pessimistic view of human nature.

ANSWER: Zhu Xi or Chu Hsi

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