

OOT 2019: A Pope for Every Packet

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**THIS IS A FINALS PACKET.**

THE ANSWER TO THE LAST TOSS-UP SHOULD HAVE BEEN: **The Lady with the Lapdog**

Packet 12 - Finals I

**Toss-ups:**

1. One piece by this composer is characterised by the recurring motif of a rising fourth followed by a stepwise descent. This composer's first publication was modelled on that of Cristóbal de Morale, while *Missa Tu es Petrus* is one of this composer's many parody masses. Appointed by Julius III to direct the Cappella Giulia, this composer said 'I blush and grieve' over their four collections of secular madrigals. The position that dissonance should normally fall on weak beats is derived from this composer's works in Johann Fux's *Gradus ad Parnassum*. For 10 points, name this Italian composer of polyphonic works including the *Mass for Pope Marcellus*.

ANSWER: Giovanni Pierluigi da **Palestrina** <AP>

2. Delauney variables are action-angle coordinates for these systems which are usually specified by a set of elements including the Euler angles and the mean anomaly. The best known example of these systems possesses an SO(4) symmetry which ensures the conservation of the Runge-Lenz vector. In a Schwarzschild metric any of these systems smaller than three halves of the Schwarzschild radius will ultimately decay into the singularity. The period of one of these systems is proportional to the semi-major axis to the three halves power according to Kepler's third law whilst Kepler's first law states that these trajectories take on the shapes of conic sections. For ten points, name these hyperbolic, parabolic or elliptical trajectories on which planets move around the Sun.

ANSWER: **orbits** <JR>

3. It's not Angela Carter, but Jeffrey Roessner wrote about a novel by this author being an example of female historiography in 'Writing a History of Difference.' In that novel by this author, a smallpox-scarred woman launches an elephant into the sky at a circus. Beside that novel heavily featuring pineapples and bananas, this writer wrote a semi-autobiographical work divided into chapters named after the Old Testament. In that work, the adopted daughter of two evangelists is subjected to exorcisms after falling in love with her convert, Melanie. For 10 points, name this British writer of fiction often with LGBT themes, the author of *Sexing the Cherry* and *Oranges are Not the Only Fruit*.

ANSWER: Jeanette **Winterson** <DC>

4. The creation of this polity relied on Henry Shelton Sanford's persuading Chester A. Arthur to lend his support, and this polity occupied the Lado Enclave after winning the Battle of Rejaf. Part of this polity was threatened from the south by the 'Principle of Effective Occupation', and a railroad built in it linked its capital to Matadi. George Washington Williams wrote a letter criticizing the ruler of this polity, and Richard Mohun assumed one post here after another publication by the British consul in Boma. In this colony, the Casement Report detailed atrocities carried out by the Force Publique when enforcing quotas of rubber production for the Abir Company. For 10 points, name this African colony ruled as the personal property of Leopold II.

ANSWER: **Congo Free State** [prompt on Belgian Congo] <CJ>

5. As well as some pseudonymous sonnets, this novel's author wrote, but did not ultimately include, an ode for the protagonist's fiftieth birthday. Just before his death from a stroke, that protagonist calculates that in 73 years, he has lived, at most, for three of them. Earlier, that character had contemplated his death while looking at a painting of *The Death of a Just Man* during a ball. A priest in this novel is manipulated into giving away his share of the family almond-grove for a relative's dowry, while, much later, a different priest finds that only five out of 74 relics are genuine. The Red-Shirt-supporting Tancredi marries Angelica instead of Concetta, in for 10 points, which novel about the Salina family's declining fortunes by Giuseppe Tomasi di Lampedusa?

ANSWER: *The Leopard* [or *Il Gattopardo*] <AP>

6. Sophocles Papas taught several performers of this instrument. A soloist on this instrument plays the track 'Four on Six' in the album *Smokin' at the Half Note*. An early pioneer of this solo instrument stated that he wanted this instrument to sound like a tenor saxophone, and his solos were often described as "horn-like". A famous performer of this instrument overcame the disabilities caused by a fire to perform tracks such as 'Belleville' and 'Minor Swing'. Noted performers of this instrument include Charlie Christian and Wes Montgomery. For 10 points, name this instrument played by Django Reinhardt, a fretted instrument with six strings.

ANSWER: jazz guitar [accept acoustic guitar or electric guitar] <AH>

7. The 16th-century tract *Bencao Gangmu* described the practice of soaking this foodstuff in honey for a century to produce medicine, though that process of 'mellification' may conflate two separate practices. Demand was created for a powdered form of this foodstuff due to mistranslations of a term for 'mineral pitch', though Ambroise Paré criticised eating this foodstuff as ineffectual and 'wicked'. Tremors and uncontrollable laughter are symptoms of a condition which was spread through eating a specific part of this foodstuff. That disease, kuru, was endemic to the Foré people of New Guinea, who ate this foodstuff as a funeral rite. For 10 points, name this edible biped hominid, classified as *Homo sapiens*.

ANSWER: human [accept anything which references humans, mummies, or any specific parts of a human such as human brain or muscle, though prompt if they do not include the word 'human' (ask 'of what?'); accept people or other clear equivalents for 'human'; prompt on meat; prompt on flesh or bodies (ask 'of what?')]. <DC>

8. Among this man's paintings is a portrait of Dr. Johannes Cuspinian, a lecturer at the University of Vienna, which was originally intended to be placed next to one of his wife Anna as part of a diptych. During the latter period of his career, this artist used a signature depicting a winged snake carrying a ruby ring in its mouth. After attracting the attention of Frederick the Wise of Saxony, this man became attached to his court in 1504. Among this artist's most famous works are his print *The Stag-hunt*, as well as a portrait of the nun Katharina von Bora. For 10 points, name this German Renaissance painter, most famous for creating multiple portraits of his friend Martin Luther.

ANSWER: Lucas Cranach the Elder <FL>

9. This author wrote a story in which a woman regrets having only daughters because 'boys couldn't possibly know so much about you'. This author wrote a story about a teacher in a tuberculosis ward whose fiancé abandons her, and another about Grant, whose wife develops Alzheimer's and falls in love with another man. A collection by this author of 'Amundsen' and 'The Bear Came Over the Mountain' centres on the coming-of-age of Del Jordan. In one of this author's stories, the protagonist mulls over her strained relationship with her daughter Nichola, and tells her dying father about a planetarium show. For 10 points, name this Canadian author of *Lives of Girls and Women* and 'Moons of Jupiter', the winner of the 2013 Nobel Prize in Literature.

ANSWER: Alice Munro <DC>

10. The demolished Red Chapel at this site has been reconstructed using blocks recovered from later building projects, and an obelisk erected by the same ruler was blocked from view by later building, possibly deliberately. A barque shrine was built at this site by Philip, brother of Alexander the Great, replacing an earlier one constructed by Tuthmosis III. The Opet festival saw the statues of two gods from this temple complex, known as 'The Most

Selected of Places', taken down the Avenue of Sphinxes to Luxor. Bas reliefs of Seti I, and incised reliefs of Ramesses II decorate the Great Hypostyle Hall at this complex. For 10 points, name this enormous temple complex, primarily dedicated to the cult of Amun, located to the north of Thebes.

ANSWER: **Karnak** Temple Complex [accept **Ipet-isut**] <OSC>

11. Description acceptable.

AW Low concluded that there was no dominant explanation for this event and argued that an interpretation of SEC Rule 15c3-1 employed by some books on it was incorrect. Steve Keen claimed that a Minsky model he developed before this event displayed qualitative characteristics of it. A paper by Benmelech and Dlugosz found that the 'ratings shopping' explanation of this event was weakened by the fact that only 7% of structure-finance securities were re-rated. A dominant explanation for this event is that banks systemically underestimated the risk associated with the high-risk tranches in CDOs. For 10 points, name this event, which is often said to have begun with the collapse of Lehman Brothers.

ANSWER: financial **crisis of 2007-8** [accept anything that mentions a **recession** in **2007-8**, **credit crunch** and **Great Recession**. Prompt on **financial crises** and anti-prompt on the collapse of specific banks. Do NOT accept 'Great Depression'.] <GDC>

12. The oxidation of a tertiary amine by m.C.P.B.A. leads to a syn example of these reactions involving a five membered cyclic transition state. One type of this reaction has a staggered conformation transition state and must have two groups involved be anti-periplanar. Another mechanism for these reactions begins with the deprotonation of the beta carbon and the formation of a carbanion intermediate before producing an alkene. It's not a rearrangement but the Hoffmann reaction of this type disobeys Zaitsev's rule that predicts the major product of these reactions. For 10 points, what class of reactions in which two substituents leave a larger molecule?

ANSWER: **elimination** [accept **E2** or **E1cB** at any point; anti-prompt on **condensation** reaction] <JR>

13. One person of this name referenced Paul in their last words, advising others to 'live as dying daily', while another switched from the Augustinian canons to the Franciscan Order upon learning of the martyrdom of Berard of Carbio. One person of this name left a sheepskin cloak to St Serapion, his disciple, and his staff to St Macarius. This name was shared by a Portuguese saint known as the 'Hammer of Heretics', who converted the town of Rimini after he went to a river and preached to the fish, as well as the subject of a biography by Athanasius and whose relics were believed to be effective against ergotism. For 10 points, give this name shared by the patron saint of lost things buried in Padua and a 'Great' Egyptian, the first ascetic monk.

ANSWER: St **Anthony** [accept St Anthony the Great and St Anthony of Padua] <CP>

14. A playwright from this country wrote a sequel to Chekhov's *Three Sisters* in the first of their three play cycle entitled *The Russian Trilogy*. A member of the Sixty-ers from this country wrote a novel that features the execution of Joseph Malan. That novelist of *Looking on Darkness* from this country wrote about the investigation of the murders of Jonathan and Gordon Ngubene by Ben du Toit [doo twah] in *A Dry White Season*. An author from this country, home to Reza da Wet, wrote a novel in which the title character's mother dies in a wheelbarrow, which leads him to travel to Prince Albert. For 10 points, name this African country, home to the author of *The Life and Times of Michael K*, JM Coetzee [kurt-ZEE-uh].

ANSWER: **South Africa** <GDC>

15. Some members of this ethnicity date their calendar era from the accession of Shoshenq I, so that 2019 is year 2969. An abjad of these people, which also has a 'Neo' alphabetic script adopted by one monarch in 2003, is called Tifinagh. One people of this ethnicity have been named the 'Blue People' for their indigo-dyed veils and are exceptionally matrilineal and matrilocal. This ethnicity had a namesake 'Spring' in 1980 in the Kabylie region of Algeria. This group's endonym is Amazigh. For 10 points, name this ethnic group who live in lands they call Tamazgha, ranging from Morocco to Egypt, and south across the Sahara.

ANSWER: **Berbers** [accept **Amazighs** before it is said, anti-prompt on **Tuareg**, **Riffians**, **Kabyles** (these are I think the most likely groups to be mentioned – there are many)] <OSC>

16. This thinker argued for papal infallibility in their *Eight Questions on the Power of the Pope*, arguing that it was impossible for John XXII to revoke the earlier bull *Exiit qui seminat*. This thinker rejected Aquinas's position that people only sin out of ignorance, arguing instead that people choose whether or not to pursue good. This thinker also opposed the formal distinction advanced by Duns Scotus, one of this thinker's attempts to reduce the number of real ontological categories from ten down to just substance and quality, and argued that universals exist only in the mind in their *Summa Logica*. Often characterised as a nominalist, for 10 points name this English friar who wielded a namesake methodological 'razor'.

ANSWER: William of **Ockham** <AP>

17. George Simpson argued that this theory is just a relabelling of a theory he developed called a quantum theory of the phenomenon that it attempts to model. Peter Williamson argued that Lake Turkana contained evidence of this theory. The Bak-Sneppen model was developed to explain the distribution of extinction events and this phenomenon. Richard Dawkins claimed that this theory was a 'minor gloss on the Neo-Darwinian synthesis'. This theory, which is often contrasted with phyletic gradualism, was partly developed as a response to the evidence of stasis in the fossil record by Niles Eldredge and Stephen Jay Gould. For 10 points, name this theory that states that evolution happens in periodic bursts.

ANSWER: **punctuated equilibrium** <GDC>

18. One ruler known by this epithet supported their mistress Aurembiax's claim to the County of Urgell, while another had their campaign in Estonia authorized by Honorius III and benefitted from the prayers of Archbishop Sunesen. In addition to James I of Aragon and Valdemar II of Denmark, one ruler with this epithet was praised by Michael Critobulus and established the Fatih Mosque in one city. That ruler shared this nickname with a man who received it for his actions at a battle on Senlac Hill and was the husband of Matilda of Flanders. For 10 points, give this word, the epithet of the Ottoman sultan who captured Constantinople as well as the first Norman king of England.

ANSWER: 'the **Conqueror**' <CJ>

19. The 1970s have been described as this party's 'paradoxical decade', and the shock winner of a 1973 by-election for this party would in the 2000s condemn 'forces of darkness' for leaking their Parkinson's diagnosis to the press. Factionalism within this party led to the proscription of the 79 Group. One member of that group would become leader of this party in 1990, though a poor result in 1992 led to one member of this party who lost their seat to decry '90-minute patriots'. The 79 Group took their name from the year this party collapsed to just two seats in parliament, following a failed referendum on devolution. Led by William Wolfe through the 1970s, for 10 points, name this political party, whose recent leaders include Gordon Wilson and Alex Salmond.

ANSWER: The **Scottish National Party** [accept **SNP**] <OSC>

20. One system in this field involves computing exponentiated elements in cyclic groups and is named for ElGamal whilst another uses elliptic curves to produce more efficient groups for this task. Those systems for this task rely upon an assumption known as the decisional Diffie-Hellman assumption. Many algorithms in this field rely in some form on the hardness of the discrete logarithm problem. One of the first asymmetric systems in this field relies on the fact that prime factorisation is harder than multiplication and is named RSA. A completely secure method in this field is the one-time pad whilst the Caesar cipher is a simple tool in the field. For 10 points what field studies techniques for securely transmitting messages?

ANSWER: **cryptography** [accept answers like **cryptosystems**; accept **encryption**] <JR>

## Bonuses:

1. These functions are two point correlation functions, and in general are equal to the Green's function for the classical field equations. For 10 points each:

[10] Name these functions, the vacuum expectation value of a time ordered product of operators evaluated at two different spatial points. For a massive scalar particle this function has value 'one over p squared plus m squared' when evaluated in momentum space.

ANSWER: **Propagator** [accept anything with this word in]

[10] Propagators represent the value of lines joining the vertices in these diagrams named for a Caltech physicist who won the 1965 Nobel Prize along with Tomonaga and Schwinger. These diagrams help with calculations in Q.E.D. and depict fermions as lines with arrows on and photons as wavy lines.

ANSWER: **Feynman Diagrams**

[10] Fermions lines with the arrows pointing backwards in time can be thought of as these particles travelling forwards in time. Dirac originally suggested that these particles could be thought of as holes in a sea of already filled negative energy states.

ANSWER: **Antiparticles** <JR>

2. At the start of this novella, one of its protagonists is described as a character 'you can never recall [...] without an inner trembling'. For 10 points each:

[10] Name this novella, in which Katerina betrays her husband Zinovy for Sergei. At the end, Katerina sees the faces of her murder victims in the river before she drowns.

ANSWER: **Lady Macbeth of the Mtsensk District** [accept **Lady Macbeth of Mtsensk**]

[10] *Lady Macbeth of the Mtsensk District* is a novella by this author, who also wrote about the priest Savely Tuberozov in *The Cathedral Clergy*. Some of this author's early journalism and literary work was published under the pseudonym M. Stebnitsky.

ANSWER: Nikolai Semyonovich **Leskov**

[10] A different work inspired by *Macbeth*, containing a lemonade seller and a butterfly catcher, was written by this playwright. Other works by this Romanian-French playwright include *The Bald Soprano* and *Rhinoceros*.

ANSWER: Eugène **Ionesco** [or Eugen **Ionescu**] <AH>

3. The Crucible Curse means that no first-time winner of the World Snooker Championship has retained the title the following year since the tournament moved to the Crucible in 1977. For 10 points each:

[10] Name this player who has won the World Snooker Championship more than any other currently active player, but was denied a second consecutive title by Stephen Hendry at the semi-final stage in 2002. This 'Rocket' made the fastest recorded maximum break at five minutes, twenty seconds.

ANSWER: Ronnie **O'Sullivan**

[10] This player put out the defending champion Neil Robertson in the first round in 2011, but went on to lose his only World Championship final to John Higgins the same year. This 'Ace' from Bristol is known for his aggressive brand of 'naughty snooker'.

ANSWER: Judd **Trump**

[10] Steve Davis became a notable victim of the Crucible Curse after he unexpectedly lost to this player in the first round of the 1982 World Championship. This player would make the semi-finals of the Worlds three times but never reached the final.

ANSWER: Tony **Knowles** <IB>

4. A New Yorker article is titled 'watching the Obamas watch [this play]'. For 10 points each:

[10] Walter tells his sister in this play that she should be a nurse if she wants to 'mess around with sick people' rather than a doctor. That character in this play must choose between her boyfriend George and Joseph Asagai, who

tells her to stop straightening her hair.

ANSWER: *A **Raisin in the Sun***

[10] *A Raisin in the Sun* is a play by Lorraine Hansberry, who took its title from a poem by Langston Hughes, a poet who was part of a black literary movement based in this area of Manhattan.

ANSWER: **Harlem**

[10] This playwright wrote *Clybourne Park*, a spin off of *A Raisin in the Sun* which goes between 1959 and 2009 and examines the effects of white flight and gentrification on the title neighbourhood.

ANSWER: Bruce **Norris** <GDC>

5. This economist coined the word 'monopsony' in their work 'The Economics of Imperfect Competition'. For 10 points each:

[10] Name this economist, who wrote positively of both North Korean and Chinese socialism in their later works, which included *Economic Management in China*. In this economist's magnum opus they expand on an eponymous growth model.

ANSWER: Joan **Robinson**

[10] Joan Robinson wrote a work titled for the accumulation of this thing. This thing titles a work that argues that when  $r$  is greater than  $g$  in the long run the result is the concentration of wealth and increased inequality.

ANSWER: **capital**

[10] *The Accumulation of Capital* attempted to expand the work of this British economist to the long run. This economist is perhaps most famous for their work the *General Theory*.

ANSWER: John Maynard **Keynes** <GDC>

6. A song by this author known as the *Reichston* begins with the narrator describing themselves sat on a stone with their legs crossed and their chin resting on their hand. For 10 points each:

[10] Name this most celebrated thirteenth-century *Minnesinger* [MIN-uh-zinger], whose geographical definition of Germany in the *Preislied* is echoed in the German national anthem.

ANSWER: Walther von der **Vogelweide**

[10] The *Minnesinger* was the German-speaking equivalent of this type of itinerant poet and musician which originated in Provence, and was distinguished from the jongleur.

ANSWER: **troubadour**

[10] The troubadour Arnaut Daniel appears in this poem, speaking entirely in Provençal among the other lustful. In this poem, Daniel is pointed out to its narrator by Guido Guinicelli as a 'miglior fabbro' or a 'better craftsman'.

ANSWER: **The Divine Comedy** [or **La Divina Commedia**] [anti-prompt on **Purgatorio**] <AP>

7. In the seventeenth century, control of this region was largely delegated to Cossack *vovodas*, who were charged with exacting the *yasak* fur tax from its indigenous people. For 10 points each:

[10] Name this region, whose settlement of Yakutsk northeast of Lake Baikal grew during the period from an *ostrog* fort into a flourishing commercial hub.

ANSWER: **Siberia**

[10] Cossack explorers clashed with the Qing dynasty when they ranged south from the Siberian heartland into the Amur River region, a long-running conflict ended by this 1689 treaty, which is noted for being one of the first times the Chinese empire acknowledged a foreign power as its diplomatic equal.

ANSWER: Treaty of **Nerchinsk**

[10] Some of the most important Qing troops in the contest with the Russians over the Amur were the so-called 'Big Heads', Korean troops armed with this weapon. Dutch victims of shipwreck may have brought the volley fire technique for the use of these things to Korea after the Imjin War.

ANSWER: **muskets** [prompt on **guns**] <CJ>

8. The soprano aria 'Ah! non credea mirarti' is sung by Amina in the last act of this opera as she crosses an unsafe bridge holding some withered flowers. For 10 points each:

[10] Name this opera in which the jealous Elviro's repeated suspicions of Amina's faithfulness are encouraged by the inn-owning Lisa, who wants to marry him.

ANSWER: **La sonnambula** [*The Sleepwalker*]

[10] The first lines of that aria from *La sonnambula*, which lament the early blooming of a flower, are written on the tomb of this bel canto composer of *I puritani* and *Norma*.

ANSWER: Vincenzo **Bellini**

[10] Unlike Bellini's success at a young age, Donizetti wrote 30 operas before having success with this tragic opera, whose title character is still in love with Lord Richard Percy while her husband plots to replace her with her lady-in-waiting.

ANSWER: **Anna Bolena** <AP>

9. This philosopher used the example of a identifying a person on a train as a 'mugwump' in their theory of hypothetical inference. For 10 points each:

[10] This thinker argued against social Darwinism by claiming that evolution involves what they call its 'agapeism' [ag-ah-pay-ism] in their work *Evolutionary Love*.

ANSWER: Charles Sanders **Peirce** ['purse']

[10] Peirce wrote a work titled for a *Neglected Argument for the Existence of [this being]*. Fellow Pragmatist William James argued that this being is the deepest power in the universe and argued that experiences with this being were effective in *Varieties of Religious Experience*.

ANSWER: **God**

[10] Erin Mckenna wrote a book titled for *[these people] and William James* which analysed the extent to which these people facilitated James' life and shaped his conception of freedom. Pragmatist philosopher Jane Addams opened Hull House to improve the education of these people.

ANSWER: **women** [accept obvious equivalents] <GDC>

10. This family derived its claim to the throne from John Beaufort, the son of John of Gaunt and Katherine Swynford. For 10 points each:

[10] Name this royal house whose first ruler was crowned near the village of Stoke Golding after winning the Battle of Bosworth Field.

ANSWER: **Tudor**

[10] During the Battle of Bosworth Field, the brothers Thomas and William of this noble family held back and only intervened on Henry Tudor's side when it became clear that he had the advantage in the fight. Thomas, who was also Henry's stepfather, apocryphally found the crown in a hawthorn bush after the battle.

ANSWER: **Stanley**

[10] The Tudor line began when Owen Tudor married this dowager queen. She became the mother of Edmund and Jasper Tudor, who supported the Lancastrians in the Wars of the Roses as blood relatives of Henry VI.

ANSWER: **Catherine of Valois** <CJ>

11. These structures' namesake action allows bridges to be built out of many materials as it resolves tensile stresses into compressive stresses. For 10 points each:

[10] Name these structures, which may be circular, pointed or parabolic. The top stone in these structures is called the keystone.

ANSWER: **arches**

[10] Reinforced concrete can be used to build arched bridges because it behaves well in compression because as well as a high ultimate compressive strength, it also has a high value of this quantity. This quantity describes how resistant to compression a material is and can be defined as minus the volume multiplied by the derivative of pressure with respect to volume.

ANSWER: **bulk modulus**

[10] Fixed arches are commonly used to build reinforced concrete bridges and tunnels. However, because they are subject to additional stresses due to thermal expansion and contraction, they are described by this term. This term means that the static equilibrium equations are insufficient for determining the internal forces of the structure.

ANSWER: **statically indeterminate** [accept **hyperstatic**] <LW>

12. One member of this group was replaced by another, Charles Morazé, in his editorial position on the UNESCO History of Mankind project in 1950. For 10 points each:

[10] Name this group of French social historians including Lucien Febvre, whose members rejected Marxist readings of history and instead stressed the study of mentalities over the *longue durée*.

ANSWER: the **Annales** school

[10] The founder of the *Annales* journal along with Febvre, Marc Bloch, was a pioneer of this historical technique. Bloch's biographer described this approach as 'a compelling plea for breaking out of national barriers that circumscribed social research, for jumping out of geographical frameworks, for escaping from a world of artificiality'.

ANSWER: **comparative** history [accept **comparisons**]

[10] Another school of social history is this informal group of postcolonial scholars formed at the University of Sussex in 1979. In their book *Provincializing Europe*, one member of this group articulated its preoccupation with the particular 'colonial modernity' of the peasantry of a certain country.

ANSWER: the **Subaltern Studies** Group [or Collective] <CJ>

13. The energy required for this process is commonly used to describe the amount of energy in a chemical bond. For 10 points each:

[10] Name this specific process that produces two neutral species from a molecule and is represented by drawing fish-hook arrows.

ANSWER: **homolytic fission** [accept alternatives for fission such as **bond breaking** but require homolytic; do NOT accept 'heterolytic fission'; prompt on descriptions like **making free radicals** by asking for the name of the process]

[10] Homolytic fission produces two of these species which have an unpaired electron. They participate in reactions with an initiation, propagation and termination step.

ANSWER: **free radicals** [accept **radicals** on its own]

[10] Free radicals participate in these reactions whose subtypes include A.T.R.P. which utilises copper halide catalysts and RAFT which uses dithio compounds as chain transfer agents.

ANSWER: **Controlled Radical Polymerisation** [accept also **Reversible-deactivation radical polymerization** or **living radical polymerization**. Accept the word 'free' anywhere before 'radical'. Prompt on just **polymerisation** or **radical polymerisation** or **living polymerisation**] <JR>

14. In 2015, the Indian Supreme Court overturned a ban on a form of this practice which had been instituted in Rajasthan, accepting the argument made by its practitioners that it was not suicide. For 10 points each:

[10] Name this ascetic practice, which has a fatal form known as Sallekhana, supposedly undergone by Chandragupta Maurya, which in its Padapopagamana form requires those who undertake it to stand 'like a tree' until it is over.

ANSWER: **fasting** to death

[10] Sallekhana is a supplementary vow in this religion, whose monks practise *ahimsa* to the extent of sweeping their path so not to tread on insects, and whose followers seek to achieve complete self-discipline to become liberated from the world.

ANSWER: **Jainism**

[10] The Digambara and Svetambara sects of Jainism divided on whether women can achieve liberation without being reincarnated as male, which rests on whether this nineteenth tirthankara was male or female.

ANSWER: **Mallinath(a)** <AP>

15. At the end of this work, the narrator ‘cackled out like a chicken’ when he is furiously berated just after making huge efforts to improve a field hospital. For 10 points each:

[10] Name this memoir, the sixth book of which recounts the blowing up a series of bridges on the Yarmuk Valley Railway, while in its eighth book the narrator is forced to shoot his mortally wounded friend Farraj.

ANSWER: **Seven Pillars of Wisdom**

[10] Lowell Thomas described this author of *Seven Pillars of Wisdom* as having a genius for backing into the spotlight’. This author, who died in a motorcycle accident, also wrote about their attempt to remain anonymous in the RAF in *The Mint*.

ANSWER: Thomas Edward **Lawrence** ‘of Arabia’

[10] Like Lawrence, this person shaped British ideas of the Arab world through works like *Persian Pictures* and *Syria: The Desert and the Sown*. Unlike Lawrence, this person also accepted a post-war political role, setting up the Kingdom of Iraq.

ANSWER: Gertrude **Bell** <AP>

16. Amedeo Modigliani’s first self-portrait depicts him as this character and shows this character’s name scrawled along the lower half of the canvas. For 10 points each:

[10] Name this character. A group of figures including a donkey look up at this character from the Commedia dell’Arte in a Jean-Antoine Watteau painting titled for him.

ANSWER: **Pierrot** Lunaire [accept **Gilles**]

[10] The composer of *Pierrot Lunaire*, Arnold Schoenberg, also dabbled in painting and painted a self-portrait titled for this colour. Picasso painted *The Old Guitarist* in his ‘period’ named for this colour.

ANSWER: **blue** [accept Período **Azul** or **Blaues Selbstportrait**]

[10] Blue dominates the canvas in a Modigliani portrait titled for a ‘little’ one of these people. An earlier artist who painted these people often showed them with spoons or peacock feathers fixed to their hats.

ANSWER: a **peasant** [accept *The Little* **Peasant** or *Le Petit* **Paysan**; the earlier artist is Bruegel] <IB>

17. In 1991, an adaptation of this work called *December Songs* was commissioned for the centennial celebration of Carnegie Hall. For 10 points each:

[10] Name this song cycle, its composer’s second setting of poems by Wilhelm Müller to music. It was composed in two sequences, the second beginning with ‘Die Post’ and switching ‘Die Nebensonnen’ and ‘Mut!’ from the order in which Müller published them.

ANSWER: **Winterreise** [accept **Winter Journey**]

[10] The first piece in *Winterreise* in which the speaker passes by his lover’s house and writes a message to her on her gate, has this word in its title. Other Schubert lieder [LEED-er] named for this word pair it with ‘violets’ and ‘dreams’.

ANSWER: **night**

[10] Another Schubert lied [leed] depicts this character from *Faust*. The soprano portraying her laments ‘My peace is gone, my heart is heavy’ while the accompaniment imitates the repetitive motion of a spinning wheel.

ANSWER: **Gretchen** <CJ>

18. In vertebrates, the innate and adaptive immune system work together to combat infection. For 10 points:

[10] This cascade is one of the first responses to infection. It is composed of classical, alternative and mannose lectin binding pathways which all converge on the formation of a C3 convertase, leading to destruction of non-self cells.

ANSWER: **complement** cascade/system/reaction

[10] These innate immune system cells are thought to destroy virus infected cells by preferentially targeting those which do not exhibit M·H·C class I molecules. These cells degranulate to release perforin and granzymes, which enter target cells and can induce apoptosis.

ANSWER: **natural killer** cells [do not accept or prompt anything that mentions ‘T cells’]

[10] Cells which carry out this process produce I·L-12 to activate natural killer cells, and small fragments of complement proteins can initiate their migration. This process is carried out by many immune cells and involves engulfing and destroying pathogens and infected cells.

ANSWER: **phagocytosis**/ being a **phagocyte** [the cells described are macrophages] <LC>

19. Sundaland was one of these places, to the east of which is the Wallace line separating biogeographic regions. For 10 points each:

[10] Name these places which often appear after sea level falls due to glaciation, which connect previously separated land masses.

ANSWER: **land bridges**

[10] This land bridge facilitated the intercontinental movement of camelids and one theory for the movement of people over this region is the standstill population hypothesis, which was covered by mammoth steppe during the last glacial maximum.

ANSWER: **Beringia** or **Bering** Land Bridge [prompt on Bering Strait]

[10] The location of this land bridge partly coincided with a similarly named Shipping Forecast area. Its final submersion is thought to have been caused by the Storegga Slide and remains of Neanderthals and lions have been retrieved from this site now beneath the North Sea.

ANSWER: **Doggerland** [prompt on Dogger alone or Dogger Bank] <LC>

20. The elimination of this person from history is a problem raised with the phantom time hypothesis, a conspiracy theory contending that almost 300 years were invented by Otto III and Sylvester II to move the year 1000 CE. For 10 points each:

[10] Name this person, the subject of a work by Henri Pirenne which argues that their actions cut off western European long-distance trade and created the essential conditions for the rule of Charlemagne.

ANSWER: **Mohammed**

[10] This even more extreme pseudohistory advanced by Anatoly Fomenko and supported by, among others, Garry Kasparov, argues that written history began in around 800 CE, and that figures from Antiquity are composite inventions drawn from medieval originals.

ANSWER: **New Chronology**

[10] Fomenko claims that this figure was based on Byzantine emperor Andronikos I Komnenos, combined with other figures like Pope Gregory VII. More popular accounts claim that he was crucified outside Jerusalem around 33 CE.

ANSWER: **Jesus** (Christ) <AP>