OOT 2019: A Pope for Every Packet
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THE ANSWER TO THE LAST TOSS-UP SHOULD HAVE BEEN: **Chile**

Packet 2

Toss-ups:

1. The poet Alcaeus' brother, Antimenidas, probably served this ruler during their campaign around Ashkelon. One building project of this ruler has an inscription which states 'With bright-blue bricks on which bulls and mušḫuššu [Mush-HUSH-shu] were depicted I had [that project] skilfully built '.Evidence for the Biblical actions of this ruler include a ration list found near the Ishtar Gate which mentions a captive king named Jehoiachin. That ruler's submission did not save one city from being sacked by this man, who destroyed it after the rebellion of Zedekiah and initiated a hundred-year period of exile ended by Cyrus the Great. The son of Nabopolassar, for 10 points, name this greatest of the Neo-Babylonian rulers, who destroyed the First Temple in Jerusalem and appears prominently in the Book of Daniel.
ANSWER: **Nebuchadnezzar II** [accept **Nebuchadrezzar** and **Nabû-kudurri-usur**] <OSC>

2. In one of this author's novels, a major murders a human rights activist and later flees to the United States claiming that he was the victim of the torture he had subjected others to. Musa meets his wife in a stationary shop where there is a grenade explosion in a novel by this author. In another novel by this author, a woman starts an affair 'by night' with a man whom her children 'love by day'. In that novel by this author a woman is sexually assaulted in a cinema by the Orangedrink Lemondrink Man and Ammu has an affair with Velutha, who is a member of the dalit caste. For 10 points, the incestous twins Esta and Rachel are the main characters of *The God of Small Things* by which Indian author?
ANSWER: Arundhati **Roy** <GDC>

3. One of these objects owned by Henry Coxwell was the subject of a namesake 1864 riot in Leicester by a crowd who believed they were being conned. Carl Maria von Weber's opera *Silvana* was upstaged on its opening night by one of these objects and Sophie Blanchard. Blanchard was later the first woman to be killed by one of these objects when she tried to set off some fireworks from one. Two paper-manufacturing brothers designed one of these objects, whose public demonstration at the Bois de Boulogne in 1783 lasted 25 minutes before it began to catch fire. First successfully constructed by the Montgolfier brothers, for 10 points, name this type of air transport, the first to carry humans.
ANSWER: hot-air **balloon** <AP>

4. The Varshini relation states that the bandgap in some materials depends on this quantity squared divided by this quantity plus a constant. The Gibbs distribution defines this quantity as the reciprocal of the Boltzmann constant multiplied by the Lagrange multiplier that enforces the average energy. The zeroth law of thermodynamics can be used to define this quantity as an equivalence relation. In kinetic theory, the Boltzmann constant multiplied by this quantity is the kinetic energy of particles with the most probable velocity. According to the ideal gas law, for one mole of gas, this quantity is equal to pressure times volume divided by the ideal gas constant. For 10 points, name this quantity which can be measured with a thermometer.
ANSWER: **temperature** <LW>

5. A man killed by the soldiers of one holder of this position was found with his corpse standing upright, while another holder of this office was assassinated by his nephew after being nominated as Minister of the Right. A species of crab is said to resemble the faces of those defeated by the brother of one of these people at a naval battle in which a sword was thrown into the sea. Two successive dynasties in this position supported the illegitimate Northern Court. One of those families feuded with the Taira clan, while the other came to power as a result of the abortive Kenmu Restoration. For 10 points, give this name for the head of the *bakufu*, a Japanese military leader who ruled during the Kamakura and Ashikaga periods.
ANSWER: **shogun** <CJ>

6. D. L. Black argues that this thinker showed an understanding of both 'primitive and reflective self awareness'. This thinker argued that divine knowledge flows to humans through a process translated as 'divine effluence'. Peter Adamson claims that a thought experiment developed by this thinker fails in that it is possible to be 'aware of one's self without realising that self is a body'. That thought experiment developed by this thinker involves a being with no sensory perception being still aware of itself and is called the 'floating man'. It's not Aristotle, but this thinker was the primary focus of the critique in *The Incoherence of the Philosophers* by al-Ghazali. For 10 points, name this Islamic author of *The Book of Healing* and *Canon of Medicine*.
ANSWER: **Avicenna** [**Ibn Sina**] <GDC>

7. The Schläfli symbol {p,q} for these objects satisfies "pF equals qV equals twice E". Hamiltonian cycles were first studied on the graph of one of these objects, all of which are Hamiltonian. In four dimensions a sixth of these exists that is self dual that is called the 24-cell. This set of polytopes is closed under exchanging faces and vertices. The complete categorisation of all five of these objects is contained in book thirteen of The Elements. The object of this type with the most faces is the icosahedron. For 10 points, name these most symmetrical 3D polyhedra, each of whose face is an identical regular polygon.
ANSWER: **Platonic solids** [anti-prompt on tetrahedron, cube, octahedron, dodecahedron or icosahedron making it clear that you are anti-prompting] <JR>

8. In the nineteenth century, Samuel Holdheim advocated changing when this event occurs, and one theory about its origins argues that it derives from 'evil days' in the Assyrian calendar. Part of this event involves eating the 'third meal', and this day ends with the recitation of the *havdalah*. Since 1994, most of the island of Manhattan has been circled by a 15-foot-high wire within which the laws forbidding *melakhah* on this day do not apply. Activities like cooking, transporting objects, and, under the strictest interpretations, turning on a light switch are prohibited on, for 10 points, what day of rest that lasts from sunset to sunset on Saturday?
ANSWER: **Shabbat** [accept Jewish **Sabbath**] <CJ>

9. Canada withdrew from the UNCCD, the agreement to combat this process, in 2013 because of worries about money not being spent on programs that oppose it. A project designed to slow this process in one country established in 1978 has been criticised for relying on one-off planting and for lowering water tables. French colonial-era forestry practices which contributed to this process have since been replaced in one country with a policy of allowing trees to grow among crops such as millet and sorghum in Niger. For 10 points, name this process, which is being fought with 'Green Walls' in both China and the Sahel.
ANSWER: **Desertification** <OSC>

10. In one work by this author, Lalie dies after being beaten by her father, despite trying to look after her little brother and sister. In that work, a woman falls in love with her former neighbour, a bolter, who had earlier lent her money to set up her own laundry. In another work by this author, a girl commits suicide in a tunnel by throwing herself in front of a train, having failed to kill a man and his lover. In that novel, that man uses the knife earlier used to kill the president Grandmorin to murder his lover. In another work by this author, the rabbit Pologne [pol-ON-yuh] provides comfort to Souvarine [soo-var-EEN], who destroys Le Voreux [vor-UH] at the end of that work. For

10 points, name this author who wrote about a miners' strike in *Germinal*.
ANSWER: Emile **Zola** <LW>

11. The background of one painting by this artist features wide diagonal stripes of blue, red, purple, and orange, over which are painted large multi-coloured swirls and small checked squares. That work is part of a series of ten, three of which survive only in photographs by Gabriele Münter before they were taken for the Exhibition of Degenerate Art. This artist seceded from their own group, the NKVM, to form another which took its name from a non-abstract work by this artist featuring a tree-lined hill with a galloping white horse in the foreground. The author of *Point and Line to a Plane*, for 10 points, name this Russian artist of ten abstract *Compositions* and *Der Blaue Reiter*.
ANSWER: Wassily **Kandinsky** <AP>

12. This author wrote '*Bis pueri senes* is too true' in a work inspired by Jaques' 'All the world's a stage' speech which opens 'Lo now! four other acts upon the stage' and assigns a humour to each of the title 'Four Ages of Man'. The speaker of another of this author's poems remembers hearing 'piteous shrieks of dreadful voice' and the 'fearful sound' of the title event. This author wrote 'My love is such that rivers cannot quench' and 'Thy love is such I can no way repay' in a poem beginning 'If ever two were one, then surely we' addressed to Simon. For 10 points, name this 'Tenth Muse Lately Sprung Up in America', a colonial-era author of 'Verses upon the Burning of our House' and 'To my Dear and Loving Husband'.
ANSWER: Anne **Bradstreet** <IB>

13. Caribbean-Colombian volcanism is thought by Willis and McElwain to have caused increased UV-B flux leading to whole genome duplication in many plant lineages in this period. The dominant mammal group in this period are characterised by longitudinal rows of molar cusps and palinal chewing; that group is the multituberculates. The Cenomanian-Turonian boundary event is thought to be responsible for the extinction of Ichthyosaurs in the middle of this period. This majority of the world's chalk deposits come from this period which saw the final breakup of Pangea. The end of this period is dated by an iridium layer. For 10 points, name this period that ended with the KT extinction which was caused by a meteor impact.
ANSWER: **Cretaceous** <LC>

14. A 6/8 track on this album has characteristic V7 to ♭VI-7 ['flat'-six-seven] to V7 ['five' 'seven'] turnaround and was set to words by Oscar Brown Jr. A track on this album reused an opening 4-bar vamp over Cmaj7 [C major seventh] and G9sus4 ['G Dominant 9 Suspended 4'] that was used on the track "Peace Piece". One song on this album alternates between D flat and E Dorian modes. Wynton Kelly played the piano on a twelve-bar blues track on this album, replacing another pianist who played on the other five tracks. Bill Evans claimed to have co-written one irregular 10 bar form piece on this album that was attributed solely to the band leader. This album includes the tracks "Freddie Freeloader" and "Flamenco Sketches". For 10 points, "So What?" appears on which 1959 modal jazz album by Miles Davis?
ANSWER: *Kind of Blue* <GDC>

15. A main theme by this composer begins with a stepwise unison ascending passage for strings, after which a solo woodwind instrument enters with a semiquaver figure on a G. A 2004 album in which this composer's music was performed by Yo-Yo Ma remained on the Billboard Top Classical Albums chart for 105 weeks. Tracks in that album include the main theme to *A Pure Formality* and 'Deborah's Theme' from a better-known film. This composer also wrote the score for a film in which the protagonist plays his oboe to captivate the native South Americans: that film is *The Mission*. For 10 points, name this composer of music for the films *Once Upon a Time in America* and *The Good, the Bad and the Ugly*.
ANSWER: Ennio **Morricone** <AH>

16. In a story set primarily in one of these locations, a white hat alerts the narrator to the safety of his 'second self', a 'proud [man] striking out for a new destiny'. In one of these locations, another character opens an account by

suddenly proclaiming that 'this also has been one of the dark places of the earth' before going on to describe his passion for maps. A character welcomes a naked man accused of murder named Leggatt into one of these locations and helps him escape in the story 'The Secret Sharer'. A group in one of these locations called the *Nellie* listens to Charles Marlow describe his time in Africa. For 10 points, name this type of vehicle which, in Joseph Conrad's *Heart of Darkness*, travels up the Congo River.

ANSWER: **boat** [or **ship** or **deck**; accept the **Nellie** before mentioned; prompt on sea or river before mention of "Leggatt"] <IB>

17. A match played between an international team from this country and China set a world record for a women's sporting event. A player for an international team from this country removed their shirt after scoring the winning penalty in a shoot-out held in 1999; that player was Brandi Chastain. A team from this country scored a record 16 goals on route to winning the Olympic gold medal at the 2012 Olympics, and a player representing this country scored the fastest hat trick from kick-off in World Cup history while helping their team to beat Japan to win the 2015 World Cup, a competition they have won three times. For 10 points, footballers Carli Lloyd and Hope Solo represent which country?

ANSWER: **U**nited **S**tates of **A**merica <GDC>

18. Toxoplasma infection can be treated by administering ciprofloxacin, which targets the apicoplast, a homologue of this structure. In many gymnosperms, this structure is paternally inherited, and in *Rafflesia* [raff-LEES-ee-ah] its principal function is in fatty acid synthesis. *Elysia* sea slugs sequester these structures in gut diveracular, where they remain functional. Typically, the genome of this organelle encodes the large subunits, and the nuclear genome encodes the small subunits of the Rubisco enzyme. For 10 points, name this organelle whose inner thylakoid membrane surrounds the stroma and which is the site of photosynthesis.

ANSWER: **chloroplast** <LC>

19. In a text named for these places, the essay 'Some Notes on the Vicissitudes of the Tinkering Trades' links these places' procedural model to the way 19th-century tradesmen repaired clocks. A text named for these places discusses the 'reconstruction' their inhabitants undergo as part of their 'moral career'. That text describes how these places can be, in practice, 'storage dumps' for people, and describes them as 'total institutions'. An experiment examining the validity of these places is sometimes known as the 'Thud' experiment and was conducted by David Rosenhan. In that experiment, participants claimed to hear voices in order to be admitted to one of these institutions. For 10 points, name these institutions which seek to treat the mentally ill.

ANSWER: **psychiatric hospitals** [or **psychiatric institutions**, or **asylums**, or **mental hospitals**, or **mental institutions**; prompt on hospitals.] <DC>

20. One law introduced in a speech by this politician was referred to as implementing the 'morality of mathematics' by one member of their own party. William Braithwaite was sent to Germany to write a work that would aid in the implementation of that law championed in a speech by this politician. This politician claimed that a 'duke costs as much to keep up as two dreadnoughts' in their Limehouse Speech and later lead their party to victory at the coupon election.This politician introduced the Old Age Pensions Act and National Insurance Act in their People's Budget. For 10 points, name this Welsh-speaking British Prime Minister from 1916 to 1922.

ANSWER: David Lloyd **George** <GDC>

Bonuses:

1. This politician recently had surgery to remove a colostomy bag following a knife attack during the 2018 presidential election. For 10 points each:
[10] Name this current President of Brazil, whose has praised Brazil's military dictatorship, defended the death penalty, and since entering office has transferred land reform duties from the National Indigenous Foundation to the Ministry of Agriculture.
ANSWER: Jair **Bolsonaro**
[10] This Italian politician thanked Bolsonaro for the 'changed political climate' leading to the extradition of former communist militant Cesare Battisti. This Interior Minister closed his country's ports to the MSF and SOS ship *Aquarius,* which was later allowed to disembark those it had rescued in Spain.
ANSWER: Matteo **Salvini**
[10] This Spanish populist party has risen in popularity in recent months, with a strong showing in Andalusian regional elections. This party, which advocates ending autonomous regions within Spain, has also made reclaiming Gibraltar part of its platform.
ANSWER: **Vox** <OSC>

2. This traveller left Morocco for Mecca in 1325 and would not return until 1349, having apparently visited such disparate locations as Zanzibar, Astrakhan, Sumatra, and Beijing. For 10 points each:
[10] Name this author of *The Travels* who was co-opted into serving as a judge for the Sultan of Delhi as well as in the Maldives, and who was unable to find anyone in China who'd seen the Great Wall.
ANSWER: **Ibn Battuta**
[10] Battuta's most southerly destination was this city in modern Tanzania, where he described its Great Mosque made from coral. This city's namesake sultanate dominated the Swahili coast in the fifteenth century.
ANSWER: **Kilwa**
[10] Supported by its gold revenues from Sofala, Kilwa was able to challenge the trading empire of the Ajuran Sultanate based in this city, which is the present capital of Somalia.
ANSWER: **Mogadishu** <AP>

3. The Levy-Liev constrained search principle can be used to prove the Hohenberg-Kohn theorems in density functional theory but they were initially proven using this principle. For ten points each:
[10] Name this principle that states that energy eigenstates are stationary points of the energy functional and more specifically that the ground state minimises the energy functional.
ANSWER: **variational principle**
[10] Practical approaches to DFT assume that this contribution to the energy is small and reasonably approximated by linear density approximations or generalised gradient approaches.
ANSWER: **Exchange-Correlation** functional [prompt on <u>XC</u>]
[10] DFT is not a good approximations in all systems and it is known that existing functionals poorly describe these weakest intermolecular forces named for a Dutch chemist.
ANSWER: **Van der Waals** forces <JR>

4. This character travels to Dlugacz's [duh-LOY-gash's] to buy a pork kidney for breakfast, and gets unsurprisingly distracted while waiting in the shop. For 10 points each:
[10] Name this character, who 'ate with relish the inner organs of beasts and fowls' and is a fan of 'thick giblet soup' and 'nutty gizzards'. This character eats various non-offal foodstuffs as well, including a gorgonzola sandwich at Davy Byrne's.
ANSWER: **Leopold** Bloom (prompt on <u>Bloom</u>)
[10] In *Eumaeus* [you-MAY-us], the 16th section of *Ulysses*, Bloom tries to get Stephen to eat a sticky bun, but Stephen will only drink a lacklustre cup of this beverage. Raymond Chandler describes this beverage as 'the lifeblood of tired men' in *The Long Goodbye.*

ANSWER: **coffee**
[10] This other work by Joyce is set at a party and, like *Ulysses*, features a good deal of meat, such as a 'fat brown goose' and a 'great ham … peppered over with crust-crumbs'. At the end of this short-ish story, snow falls over all of Dublin, including Michael Furey's grave.
ANSWER: '**The Dead**' <DC>

5.This beach can be reached via a scenic cliff walk from nearby Bronte [BRON-tay] Beach. For 10 points each:
[10] Name this popular tourist beach in Sydney, Australia. It is internationally famous for surfing, and is also the location of the Icebergs Swimming Club.
ANSWER: **Bondi** [Bon-DYE] Beach
[10] Located in the shadow of the Harbour Bridge, this historic area of Sydney was saved from demolition in the 1970s. It contains Cadman's Cottage, one of the oldest surviving buildings in Sydney, as well as the Susannah Place Museum of urban working-class social history.
ANSWER: The **Rocks**
[10] A museum named for a building of this type is located in Sydney's Hyde Park, charting the lives of convicts and early immigrants. Another building of this type in Chelsea in London was being redeveloped until the developers, Qatari Diar, withdrew in 2009.
ANSWER: **barracks** [anti-prompt on Hyde Park Barracks Museum] <AH>

6. To argue for one version of this theory, Patricia Hill Collins claims that because of their position within the intersecting social hierarchies black women as a group possess a 'unique angle of vision' on the social world. For 10 points each:
[10] A key concept in the 'feminist' version of this theory is that women are 'situated knowers', in the sense that they are epistemically privileged due to the fact they face discrimination on the grounds of gender.
ANSWER: **standpoint** theory
[10] Standpoint theory originated in the works of this philosopher, whose thoughts on standpoint theory were examined in the works of Georg Lukács [Lu-'catch'], whose reification theory was developed using this thinker's theories as a framework.
ANSWER: Karl **Marx**
[10] Nancy Hartsock claimed that standpoint theory may 'enable us to lay bare the laws of tendency which constitute the structure of [this social system].' This social system is one in which men hold power over people of other genders.
ANSWER: **patriarchy** <GDC>

7. In a work by this poet, a man dreams that he sees a woman across a stream, who teaches him about sin and grace before showing him the Heavenly Jerusalem. For 10 points each:
[10] Name this author, to whom moral allegories such as *Patience* and *Cleanness* are attributed, all found in the same manuscript.
ANSWER: the **Pearl** Poet [or the **Gawain** Poet]
[10] Along with Langland's *Piers Plowman*, the Pearl Poet's works are contributors to the revival of a genre of poetry characterised by this literary device. *Beowulf* and most other works of Old English poetry use this device instead of rhyme, which can also be seen in 'Peter Piper picked a peck of pickled pepper'.
ANSWER: **alliteration**
[10] This character in *Gawain and the Green Knight* tests Gawain by pretending to seduce him. His secret acceptance of a protective belt from this character results in his slight injury at the hands of the Green Knight.
ANSWER: **Lady** **Bertilak** <AP>

8. This oral historian wrote *The Unwomanly Face of War*, a collection of monologues charting the experiences of Soviet women during World War Two. For 10 points each:
[10] Name this investigative journalist, who became the first Belarusian to win the Nobel Prize for Literature in

2015. Their other works include *Last Witnesses*, an oral history of children during World War Two.
ANSWER: Svetlana Alexandrovna **Alexievich**
[10] Another work by Alexievich compiled over 500 interviews to explore individuals' experiences of the nuclear disaster at this location. It was entitled *Voices From* this location in the US, and [this location] *Prayer* in the UK.
ANSWER: **Chernobyl** Nuclear Power Plant
[10] Another Alexievich work is an oral history of the Soviet-Afghan War partially titled for this material. Its title is inspired by the coffins made of this material in which the dead were returned home.
ANSWER: **zinc** [accept ***Zinky*** *Boys*] <AH>

9. Molecular sequencing of barcode loci such as COX·1 in animals is used to establish evolutionary relationships between organisms at higher taxonomic levels. For 10 points each:
[10] Name these diagrams which describe the evolutionary relationship between species and are characterised by nodes, terminals and whether it is rooted or unrooted.
ANSWER: **phylogeny** [accept evolutionary **tree**s or phylogenetic **tree**s, **tree** **of life, cladogram**s, **dendrogram**s, **phylogram**s, **chronogram**s]
[10] This general term refers to a monophyletic group at any phylogenetic level, which is identified on a phylogeny as a an ancestral node and all species occurring along its branches. Examples of these groups include Crustacea plus Insecta, as well as Ruminata plus Cetacea.
ANSWER: **clade**s [do not accept order/ phylum/ family/ class/ genus/ species etc.]
[10] In cladistics, this term refers to shared derived traits which characterised a clade and is presumed to be present in the last common ancestor. These traits are the basis upon which clades are described
ANSWER: **synapomorphy** accept **autapomorphy** and **homology** [prompt on apomorphy] <LC>

10. The houses at this site were built into middens and were built by a people who produced a namesake Grooved Ware. For 10 points each:
[10] Name this site, once thought to be Pictish, but actually inhabited from 3000 BCE. Stone dressers occupy a prominent position in all eight surviving houses of this settlement, which were connected by narrow stone passages.
ANSWER: **Skara Brae**
[10] Skara Brae is one of the monuments that comprise a World Heritage Site in this island group. Skara Brae sits on the western side of Mainland, the largest island, also home to the cairn and passage grave at Maeshowe.
ANSWER: **Orkney** Islands
[10] The Orkney Islands are, along with Wiltshire, home to the greatest concentrations of these Neolithic monuments. Examples on Mainland include the Stones of Stenness and the Ring of Brodgar.
ANSWER: **henge**s <OSC>

11. This album opens with a track primarily based on a I-IV ["1 to 4"] progression in B♭ [B-flat] Dorian two-chord vamp and is an early example of the use of guitar in jazz as melody-percussion. For 10 points each:
[10] Name this album that features a jazz-funk reimagining of a work that featured on its artists' debut album *Takin' Off*. This album also features the track 'Sly'.
ANSWER: ***Headhunters***
[10] *Headhunters* is an album by Herbie Hancock, who is primarily known for playing this instrument. Other players of this keyboard instrument in jazz include Oscar Peterson and Duke Ellington.
ANSWER: **piano**
[10] The second track on *Headhunters* is this sixteen-bar blues piece that achieved commercial popularity partly as a result of Mongo Santamaría's Latin-pop version of it.
ANSWER: **'Watermelon Man'** <GDC>

12. An author was exiled from this country for writing a 1790 study of its social issues titled for a 'Journey' between its two largest cities. For 10 points each:

[10] Name this country. Another author satirised political corruption in this country in a play in which a civil servant poses as the title figure and flees before the Postmaster delivers a letter revealing him to be a fraud.
ANSWER: Imperial **Russia** [or **Rossiya**; the works mentioned are *Journey from Petersburg to Moscow* by Radishchev and *A Government Inspector* by Gogol]
[10] This Russian author was exiled to New Russia after calling Alexander I a 'wandering despot' with a 'plump posterior'. He was later fatally wounded in a duel, like Lensky in his verse novel *Eugene Onegin*.
ANSWER: Alexander Sergeyevich **Pushkin**
[10] Pushkin recalled seeing the coffin of this other Russian writer while travelling in the Caucasus. This author of the censored verse comedy *Woe from Wit* was lynched and torn apart by locals after being appointed Russian minister in Tehran.
ANSWER: Alexander **Griboyedov** <IB>

13. This group was led by 'Fighting Pastor' John Elder, while Governor John Penn attempted to hide sixteen Native Americans from them in the town of Lancaster. For 10 points each:
[10] Name this group of Scots-Irish frontiersmen from western Pennsylvania who marched on Philadelphia in 1764 after massacring some Susquehannock in the Conestoga Massacre.
ANSWER: **Paxton Boys**
[10] This man led a delegation to meet the Paxton Boys at Germantown and persuaded them to disperse. He later served as the first Postmaster General of the United States and published *Poor Richard's Almanack*.
ANSWER: Benjamin **Franklin**
[10] The Paxton Boys' march followed this Ottawa chief's attempt to capture Fort Detroit in 1763. During this man's namesake war, Jeffrey Amherst practiced an early form of biological warfare by giving natives blankets infected with smallpox.
ANSWER: **Pontiac** <CJ>

14. One interpretation of this notation is that this notation refers to an equivalence class of functions which grow at most as fast as a representative member. For 10 points each:
[10] Name this notation often used to describe the run-time or memory requirements of computer algorithms.
ANSWER: **Big O** [accept **asymptotic** notation or **Bachmann-Landau** notation]
[10] Whilst big O is a class of functions bounded above, this letter names equivalence classes of functions tightly bounded above and below by multiples of a common function.
ANSWER: Big **Theta**
[10] Despite this sorting algorithm's speedy sounding name, it does not share the Big Theta of n log n run time of other sorts such as merge sort. That is because this algorithm's worst case runtime is Big O of n squared.
ANSWER: **Quicksort** <JR>

15. Hyman and Pentland provided support for this experiment with a larger sample size and the creation of a single scale that incorporated belief strength. For 10 points each:
[10] Name this experiment. Another study that broadly supports the conclusions of this experiment is entitled 'A Picture is Worth A Thousand Words' and involved a doctored photograph featuring a fictitious balloon.
ANSWER: **Lost in the mall** experiment [or the experiment in '**The Formation of False Memories**']
[10] The lost in mall experimental technique was first developed by Jim Coan, who was a student of this psychologist who would go to publish findings relating to the technique.
ANSWER: Elizabeth **Loftus**
[10] The lost in the mall experiment brings into question the veracity of the recovered form of this phenomenon, which is impaired in amnesiacs.
ANSWER: **memory** <GDC>

16. Theocritus wrote his *Idylls* during this period. For 10 points each:
[10] Name this period of Greek literature which followed the Classical. It is characterised by short, erudite texts, but includes epics such as Apollonius Rhodius' *Argonautica*.
ANSWER: the **Hellenistic** period [accept the **Alexandrian** period]
[10] This Cyrenian poet seemingly encapsulates Hellenistic ideals by stating that 'a big book is a big evil'. Ironically, his *Aitia* is an extremely long poetic collection of Greek legends and customs.
ANSWER: **Callimachus**
[10] This later poet translated Callimachus' *Lock of Berenice* into Latin. This poet's first poem acknowledges the Hellenistic poetic tradition with the words 'to whom shall I dedicate this new slim little book?'
ANSWER: Gaius Valerius **Catullus** <AH>

17. In the centre of one fresco by this artist, ten people are dancing in a circle, something which was against their city's laws at the time. For 10 points each:
[10] Name this artist of the frescoes of *Good* and *Bad Government* in the Sala di Nove, two walls of which depict cities in prosperity and decay, while on the third the reclining figure of Peace sits on a bench with other personified virtues.
ANSWER: Ambrogio **Lorenzetti**
[10] Those frescoes are in this Tuscan city's Palazzo Pubblico, the focus of its shell-shaped Piazza del Campo where the *Palio* horse-race is held. Its black-and-white-striped cathedral was meant to be the transept of a much larger building.
ANSWER: **Siena**
[10] Siena Cathedral was home to this huge altarpiece, with the enthroned Virgin Mary holding Jesus on its front panels. Its back panels depict forty-three scenes from the life of Mary and the life of Jesus, but it was sawn up in the eighteenth century and many of the pieces are now dispersed around the world.
ANSWER: Duccio's ***Maestà*** <AP>

18. According to Noether's [NUR-ter] theorem, this quantity is conserved if the system has continuous translation symmetry. For 10 points each:
[10] Name this quantity. The canonical form of this quantity is the derivative of the Lagrangian with respect to a generalised velocity. The linear form of this quantity is equal to mass times velocity.
ANSWER: **momentum**
[10] This function is the Legendre [le-ZHON-dr] transform of the Lagrangian. The equations of motion of a system can be derived from it as the rate of change of canonical momentum is equal to minus the partial derivative of this quantity with respective to its conjugate coordinate. Usually, this quantity is equal to the energy of the system.
ANSWER: **Hamiltonian**
[10] This theorem states that the volume in phase space occupied by trajectories starting from some initial set of states is conserved. It relies on the fact that the trajectory follows Hamilton's equations.
ANSWER: **Liouville**'s theorem <LW>

19. This thinker's magnum opus contains one of the first Christian refutations of Islam, which they called 'the heresy of the Ishmaelites'. For 10 points each:
[10] Name this thinker, who defended religious images from Leo III's iconoclasm in *Apologetic Treatises against those Decrying the Holy Images*.
ANSWER: **John of Damascus**
[10] As a result of his position on the worship of icons, John of Damascus supposedly had this body part removed and then grow back due to praying at an icon of Theotokos.
ANSWER: **hand**

[10] Theotokos is an Eastern Orthodox title for this figure, which is sometimes translated as '[she] whose offspring is God'.
ANSWER: **Mary** <GDC>

20. Name some things about works for soprano and orchestra from the 1940s. For 10 points each:
[10] This composer was commissioned by Eleanor Steber to compose *Knoxville: Summer of 1915*, which sets James Agee's [AGG-ee] prose poem of the same name. He is probably best known for his *Adagio for Strings*.
ANSWER: Samuel Osborne **Barber**
[10] These late works by Richard [REE-card] Strauss, given their collective title posthumously, set poems by Hermann Hesse and Joseph von Eichendorff. One of them quotes Strauss's earlier tone poem *Death and Transfiguration* after the soprano sings 'Is this perhaps death?'.
ANSWER: ***Four Last Songs*** [or ***Vier Letzte Lieder***]
[10] This song cycle by Benjamin Britten sets poems by Arthur Rimbaud [ram-BO]. Its nine sections include a Fanfare and an Interlude that both set just one sentence, 'I alone have the key to this savage parade'.
ANSWER: Les ***Illuminations*** <GB>