

OOT 2020: [The Search for a Middle Clue]

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THE ANSWER TO THE LAST TOSS-UP SHOULD HAVE BEEN: mountains

### Packet 11

#### Toss-ups:

1. Pierre Bourdieu sets out to explain the wide acceptance of this concept's symbolic naturalisation in a book titled for this trait's 'domination'. The 'tribade', along with performers like Mo B. Dick and Elvis Herselvis, are among the figures discussed by Jack Halberstam as representing female embodiments of this trait. Harvey Mansfield argued in a work titled for this concept that it is 'good and bad' and was possessed by women like Margaret Thatcher. The 'hegemonic' variety of this trait is associated with bread-winning according to a Raewyn Connell work. Members of the mythopoetic movement referred to harmful cultural norms of this trait as 'toxic'. For 10 points, name this concept in gender studies presented as being opposed to femininity.

ANSWER: **masculinity** [accept **masculine**, **masculinities**, **manliness**, and any other obvious equivalents] <NC>

2. Lord Clarendon described this politician as one of the 'few foreigners I know who is like a practical well-educated English gentleman'. This politician negotiated one agreement in a carriage slowly travelling around its namesake town. Outraged over a treaty signed by that erstwhile ally of this politician, they resigned, declaring to their monarch 'I am the real king'. That resignation followed the Peace of Villafranca, which abrogated the Plombières agreement made between Napoleon III and this politician. This politician provided no official support to an expedition that ultimately relied on a thousand volunteers wearing red shirts to seize Sicily. For 10 points, name this politician, the first Prime Minister of Italy and a key architect in its unification.

ANSWER: Camillo Paolo Filippo Giulio Benso, Count of **Cavour** <OSC>

3. Cram's rule was an attempt to explain how different values for this quantity arise for two stereoisomeric products from an asymmetric starting material, and it was later improved upon by the Felkin-Anh model. Work by Hudlicky and coworkers has identified a trend of inflation in reported values for this quantity in recent decades. For a batch or continuous chemical process, this quantity is the conversion multiplied by the selectivity of the reaction. This quantity is described using words including 'good', 'excellent', and 'quantitative' in increasing order, and it is always lowered during purification steps. Expressible in absolute or percentage terms, for 10 points, name this quantity, the amount of product obtained in a chemical reaction.

ANSWER: **yield** <AG>

4. This area's Thurstaston Common contains Thor's Stone, supposed to have been a site of religious ceremonies for early Viking settlers. A four-and-a-half-foot carving of a sun goddess, believed to be Norse, is close to Bidston Observatory in this area. The world's first publicly-funded civic park, which was designed by Joseph Paxton and was a model for Central Park, is located in this place. A model village in this area was built to house the workers of a local soap factory. The Tower Ballroom in this area's town of New Brighton was

the location of 27 early performances by The Beatles. Home to the towns of Wallasey and Birkenhead, for 10 points, name this peninsula situated between the Rivers Mersey and Dee, between Liverpool and Wales.

ANSWER: The Metropolitan Borough of **Wirral** [prompt on Merseyside or Cheshire] <SR>

5. A biography of this author by Imani Perry looks at their 'radical life'. A play about this author begins with the claim that 'I have been possessed of the desire to put down the stuff of my life'. In a play by this author, a newspaper owner does not endorse Wally O'Hara because they are abstaining from 'any kind of politics'. A play about this author was constructed from their writings by Robert Nemiroff and is entitled *To Be Young, Gifted and Black*. A real-life court case barring African Americans from buying housing in Chicago's Woodlawn neighborhood inspired a plotline in a play by this author in which the Younger family are unable to purchase property in Clybourne Park. For 10 points, name this author of *A Raisin in the Sun*.

ANSWER: Lorraine **Hansberry** <GDC>

6. When discussing this effect, the beta plane approximation improves upon the f plane approximation for the positional dependence while still not adding nonlinear terms. The Taylor-Proudman theorem requires that this effect be dominant over advection. Geostrophic flows occur when this effect balances pressure gradients, while Ekman layers are regions where this force balances pressure as well as drag. The ratio of inertial forces to forces described by this effect is known as the Rossby number, and Rossby waves are driven by this effect, which creates a fictitious force acting perpendicular to the velocity of an observer in a rotating frame of reference. For 10 points, name this effect that causes hurricanes in the Northern hemisphere to rotate counter-clockwise.

ANSWER: **Coriolis** effect <JR>

7. It's not Sweden, but a composer from this modern-day country wrote the so-called 'Uppsala Magnificat', while a setting of Psalm 119 published alongside two other works was known as their 'Swan Song'. Another composer who worked in this country wrote an organ passacaglia with a four-bar seven-note ostinato, as well as a keyboard aria called 'La Capricciosa'. Works like those inspired another composer from this modern-day country to walk 200 miles to see their composer play. Another piece from this country has three violins entering in sequence above an eight-note basso continuo that continually returns to its key of D major. For 10 points, name this country whose Baroque organists included Dietrich Buxtehude and Johann Pachelbel.

ANSWER: **Germany** [accept **Deutschland**] <CJ>

8. *Description acceptable*. One member of this group was praised by Hugh Weston when they helped examine John Harpsfield's doctorate, and had earlier illegally married Andreas Osiander's niece. One member of this group debated John Hooper during the vestments controversy and was advised by another to 'play the man', and that they would 'light such a candle [...] as I trust shall never be put out.' The last surviving member of this group wanted their right hand to burn first for signing a recantation and had written the *Book of Common Prayer*. For 10 points, give the collective name of Hugh Latimer, Nicholas Ridley, and Thomas Cranmer, burnt at the stake in Broad Street in the city in which this tournament was written.

ANSWER: **Oxford Martyrs** [accept all three of **Latimer, Ridley, and Cranmer** together before mention; prompt on partial answers, Protestants, Reformers, or martyrs] <AP>

9. In an essay titled for this concept, Monique Wittig calls for women to 'break' from this construct insofar as it is heterosexual. A 'fraternal' version of this concept replaces the 'law of the father' and yet effectively excludes women from civil society, according to Carole Pateman. Kohlberg's fifth stage of moral

development involves understanding morality in terms of this concept. A work named for this concept argues that it results in freedom because it imposes the same duties upon everyone; that work is often contrasted with another work in which Hobbes claims that this concept is created by submitting to an authority of a sovereign. For 10 points, name this agreement that titles a book by Rousseau beginning 'Man is born free, yet everywhere is in chains.'

ANSWER: the **Social Contract** <NC>

10. This person gives the magical horse Bayard to Renaud in the story *The Four Sons of Aymon*. That story is part of the cycle focused on this person in which they are opposed by the descendants of twelve sons of Doon de Mayence. At the end of another story, this person has four horses pull apart the treacherous Ganelon, and this person is supported by twelve paladins in the *chansons de geste* which make up the Matter of France. This person is summoned by the Oliphant after the deaths of Turpin and Oliver by a hero who 'bursts his temples' blowing it at the Battle of Roncesvalles [RON-seh-VAL]. For 10 points, name this Frankish ruler, whose rearguard is defeated in *The Song of Roland*.

ANSWER: **Charlemagne** [accept **Karl**; accept **Charles** the **Great**; accept **Carolus Magnus**; prompt on **Charles**] <AP>

11. One candidate in this election was discredited by the publishing of the 'Canuck letter' and cried while defending their wife Jane from personal attacks. For this election, one party adopted the recommendations of a commission partly led by Donald Fraser. A candidate won this election's Michigan and Maryland primaries the day after being shot by Arthur Bremer. A vice-presidential candidate in this election was replaced for having undergone electric shock therapy and was recorded describing their running mate as 'for amnesty, abortion, and legalization of pot'. Only Massachusetts and the District of Columbia voted for George McGovern in this election. For 10 points, name this year in which a break-in at the Watergate hotel may have helped re-elect Richard Nixon.

ANSWER: U.S. presidential election of **1972** <CJ>

12. According to tradition, a rock split open to reveal one of these animals that was killed by the people of Thamud, who then died three days later. Aside from the miraculous one of these animals sent to aid the prophet Saleh, Muhammad owned one of these animals called Al-Qaswa' that starved herself to death after he died, and in a hadith he directed three sick tribes to drink the urine of this animal. A few scholars claim that the best-known reference to one of these animals in the gospels should actually translate as 'rope' or 'cable', while the Quran uses these animals as a metaphor to explain why nonbelievers, rather than the rich, will not enter Paradise. For 10 points, name this animal that is notoriously difficult to make pass through the eye of a needle.

ANSWER: **camel** <CJ>

13. A poem in this language declares 'reason serves no end but pleasure' and describes its home country as the 'lesser wheel within the big'. Part of another poem in this language translates as 'We two have run about the hills, / and picked the daisies fine'. A narrator who uses this language explains the philosophy of Kierkegaard to a magistrate, switching to English to do so, while other sections of that novel using this language include 'London Crawling' and five 'Junk Dilemmas' describing heroin use. The language of a poem hoping for 'a cup of kindness yet', for 10 points, name this language used in *A Drunk Man Looks at the Thistle*, *Trainspotting*, and 'Auld Lang Syne'.

ANSWER: **Scots** [do not accept 'Gaelic'; accept **Scots** English, but do not accept or prompt on 'English'] <AP>

14. *Two answers required.* In a film featuring this actor playing this role, they were shot on 35mm film while the film's other protagonist was shot on 16mm; while preparing for this role, this actor cried because, 'I can't play anyone who'd wear these clothes'. Another work featuring this actor in this role included an opening narration setting the scene at 6:30 pm on a Tuesday, and this actor interrupted one performance of this role to shout at a group of drummers in a street parade to be quiet. The second instance of this actor in this role was followed by a revival starring Kristin Scott Thomas that removed scenes featuring James Callaghan. Peter Morgan provided the scripts for, for 10 points, what actor in what role, which won an Oscar for a 2006 film and was reprised in the play *The Audience*?

ANSWER: Helen **Mirren** as The **Queen** [prompt on partial answers with 'which actor/role?'] <CJ>

15. While related cells of the same class at these cells have a single ribbon, the axon terminals of these cells contain multiple ribbons for fast and sustained synaptic release of glutamate, which these cells use to signal to horizontal cells and bipolar cells. Following a population bottleneck, 5-10% of people in Pingelap are now homozygous for a missense mutation in the C.N.G.B.3 gene, and therefore lack functional cells of this type. The S-type of these cells appears to be the default fate of mammalian photoreceptor precursors. These cells are densely packed in the fovea centralis and most concentrated towards the macula. For 10 points, name these cells that are responsible for colour vision.

ANSWER: **cone** cells <ML>

16. A ruler of this kingdom was described by Polybius as 'the greatest and happiest sovereign of our epoch'. That ruler of this kingdom was probably the first monarch to involve Rome in their will, and, according to Livy, fathered 44 sons, including the longest surviving of the triumvirate that succeeded them, Micipsa. The Carthaginian noblewoman Sophonisba was married first to Syphax, ruler of the Maesyli in the east of this country, and then to his conqueror, the ruler of the Massyli, the first king of this country. One ruler of this kingdom was betrayed by their father-in-law Bocchus to Sulla and displayed in Marius' triumph over this country. For 10 points, name this north African kingdom, ruled by kings such as Massinisa and Jugurtha.

ANSWER: **Numidia** <OSC>

17. The Puerto Rican influence of a player of this instrument is explored in a work by Basilio Serrano. Charles Mingus was removed from the Duke Ellington Orchestra after he attacked a player of this instrument. A jazz standard composed by a player of this instrument and Duke Ellington is named 'Caravan'. A band named for a player of this instrument recorded a song in which Tex Beneke and Al Klink trade two-measure tenor saxophone exchanges and also achieved 38 US top-ten hits, including the standard 'In The Mood'. A player of this instrument, which was also played by Juan Tizol, disappeared while flying over the English Channel in 1944. For 10 points, name this primary instrument of the bandleader Glenn Miller.

ANSWER: **trombone** <GDC>

18. A work-obsessed bureaucrat created by this author claims that 'the State is an exhalation of the spirit of God, incarnate on earth' to one of his two wives. A woman created by this author has a beer glass thrown in her face after being seen in a carriage and chased by her fiancé. That character created by this author changes her name to Titu to please English punters and refuses to marry the barber Abbas. This author of *Respected Sir* also wrote a novel in which the title characters represent the three Abrahamic religions. In one novel by this

author, the law student Fahmy agitates against British occupation, and al-Sayyid Ahmad cheats on his wife Amina. *Midaq Alley* and the *Cairo Trilogy* are by, for 10 points, which Egyptian author?

ANSWER: Naguib **Mahfouz** <GDC>

19. Optically thin examples of these systems can be described using the coronal equilibrium approximation. A 'rotation measure' for light travelling through these systems can be used to determine the magnetic field within them. Electromagnetic pulses that have travelled through this medium arrive as a 'chirp', from which the distance to pulsars can be estimated, since light waves in this medium have a dispersion relation given by 'frequency squared is equal to namesake frequency squared plus c squared times wavenumber squared'. The Saha equation determines the degree of dissociation in this state. The Debye length is the scale over which charges within this state of matter are screened. For 10 points, name this ionised fourth state of matter.

ANSWER: **plasmas** [prompt on interstellar medium with 'which is an example of what type of substance?'] <LW>

20. Angels with a viol and a harp accompany a figure playing the organ in this work above an inscription from Psalm 150. The large frontal eyes of one figure in this artwork have been compared with similar examples from Roman mosaics. Grisaille [gree-ZAY] depictions of Cain and Abel are placed above images of Adam and Eve in this work, where Adam's foot appears to reach beyond his architectural niche. The recent restoration of part of this work has revealed that the central figure of one panel has a more humanoid face that was overpainted in the 16<sup>th</sup> century. That panel shows *The Adoration of the Mystic Lamb*, part of, for 10 points, which polyptych created by Hubert and Jan van Eyck?

ANSWER: **Ghent Altarpiece** [accept **Het Lam Gods** or **Adoration of the Mystic Lamb** until mention] <OSC>

## Bonuses:

1. A work by Fatima Bhutto examines this television genre in terms of its ability to project soft power across much of the non-English-speaking world. For 10 points each:

[10] Name this genre that is sometimes erroneously referred to as the ‘Turkish soap opera’. Most TV shows in this genre have episodes that are around two hours long.

ANSWER: **dizi**

[10] Along with dizi, Bhutto’s book *New Kings* examines the influence of pop music from this country. Music from this country has become increasingly popular in recent years due to the rise of Youtube and its government’s Hallyu 2.0 policy.

ANSWER: **South Korea** [prompt on Korea]

[10] *New Kings* also looks at the popularity of the film industry of this country in the USSR. The film industry of this country is often referred to as Bollywood.

ANSWER: **India** <GDC>

2. When a piece of music by this composer ends, Mick Kelly feels her ‘heart beating like a rabbit and this terrible hurt’. For 10 points each:

[10] Name this composer. In one novel, a character responds to a ‘spirit’ in the music of this composer with the phrase ‘panic and emptiness’. In another novel, Mr. Beebe meets the protagonist after she plays a piece by this composer at a talent show in Tunbridge Wells.

ANSWER: Ludwig van **Beethoven**

[10] Helen Schlegel attends a performance of Beethoven’s Fifth Symphony in this author’s novel *Howard’s End*. This author wrote about Lucy and Charlotte’s visit to Florence in *A Room With a View*.

ANSWER: E. M. **Forster**

[10] Beethoven’s exclamation ‘es muss sein’, written on the manuscript of his String Quartet No. 16, is a recurring motif in this novel. A professor’s tomb is marked ‘a return after long wanderings’ in this novel.

ANSWER: *The **Unbearable Lightness of Being*** [or ***Nesnesitelná lehkost bytí***] <GDC>

3. This longest-running sporting annual includes an Index of Unusual Occurrences, detailing stories such as ‘Fine leg arrives by parachute’ and ‘Rabbit burns down pavilion’. For 10 points each:

[10] Name this ‘Bible of Cricket’, published with a distinctive yellow cover, with scorecards of every English first-class game and a namesake ‘Cricketer of the Year’ award.

ANSWER: **Wisden** Cricketers’ Almanack

[10] In 2019, Wisden named this Australian fast-bowling all-rounder as one of their five ‘Players of the Decade’. Previously also an international footballer, she made her cricketing debut for Australia in 2007 aged just 16.

ANSWER: Elysse **Perry**

[10] This English all-rounder was one of the Wisden Cricketers of the Year in 2018. The first English cricketer to take a hat-trick in T20, this cricketer top-scored with 51 in England’s victory in the 2017 World Cup Final over India.

ANSWER: Natalie **Sciver** [sieve-uh] <NC>

4. According to an anecdote ascribed to Lord Palmerston, ‘Only three people have ever really understood’ the political question named for these two places. For 10 points each:

[10] Name these two duchies disputed by the German Confederation and the Kingdom of Denmark. The

complexity of the question around these two duchies was in part due to their use of Salic Law, unlike the Kingdom of Denmark.

ANSWER: **Schleswig-Holstein**

[10] The second war over Schleswig-Holstein was prompted by the signing of the November Constitution, merging Schleswig with the Danish crown, by this monarch, the first of the House of Glücksburg.

ANSWER: **Christian IX**

[10] This Prussian commander was first able to test his theories of warfare, characterised by breech-loaded guns, railway transport, and the General Staff, in the Second Schleswig War. Their nephew devised the Schlieffen Plan for World War I.

ANSWER: Helmuth **von Moltke** the **Elder** [prompt on von Moltke] <OSC>

5. This polymath studied composition at Julliard and included ‘The avoidance of love’, a study of King Lear, and *Pursuits of Happiness*, a study of the ‘Hollywood Comedy of Remarriage’, among their published works. For 10 points each:

[10] Name this philosopher, whose magnum opus *The Claim of Reason* addresses ‘Scepticism, Morality, and Tragedy’, among other topics.

ANSWER: Stanley **Cavell**

[10] In an early essay titled ‘The Availability of [this philosopher’s] Later Philosophy’, Cavell argues for the importance of this Austrian philosopher’s notion of a ‘form of life’, as set out in their *Philosophical Investigations*.

ANSWER: Ludwig **Wittgenstein**

[10] In *Philosophical Investigations*, Wittgenstein uses the ‘beetle in a box’ argument to refute the existence of this concept. Saul Kripke’s development of Wittgenstein’s views on this concept in *Wittgenstein on Rules and* [this concept] are often called ‘Kripkensteinian’.

ANSWER: **private language** [prompt on language] <NC>

6. An artist from this country painted a ship at the British National Maritime Museum in bright colours so that it became a ‘dazzle ship’ to mark the centenary of World War I. For 10 points each:

[10] Name this country. A kinetic artist from this country created a work titled *Cube with Ambiguous Space* as well as *Penetrable*, a work made out of hanging plastic or metal tubes that people were allowed to walk into.

ANSWER: **Venezuela**

[10] Venezuelan artists like Jesús Rafael Soto and Carlos Cruz-Diez were practitioners of this artistic style, which gained fame at William Seitz’s 1965 exhibition *The Responsive Eye*. This style makes heavy use of illusions.

ANSWER: **Op** art

[10] Bridget Riley, a British Op artist, created a *Movement in* [these shapes]. Kazimir Malevich depicted a black one of these four-sided shapes in one work, and Joseph Albers painted an *Homage to* [this shape].

ANSWER: **square** <GDC>

7. This author’s play *Elmina’s Kitchen* is set in a West Indian restaurant and centres on the appeal of gang culture to Ashley. For 10 points each:

[10] Name this contemporary British author who collaborated on *Tree*, a play based on Idris Elba’s album *Idris Elba Presents mi Mandela*.

ANSWER: Kwame **Kwei-Armah**

[10] *Elmina’s Kitchen* depicts life in Hackney’s Murder Mile and thus, like much of Kwei-Armah’s work, takes place in this UK city.

ANSWER: **London**

[10] Another play set in the East End of London is *Skylight*, a work by this playwright. This author's *Plenty* depicts drab post-war London life through the eyes of Susan Traherne, a former SOE courier.

ANSWER: David **Hare** <GDC>

8. The signals in an absorption or emission spectrum are never perfectly sharp, but are instead spread out into a Voigt [voyt] profile due to this phenomenon. For 10 points each:

[10] Name this phenomenon, by which effects such as thermal motion and collisions serve to limit the resolution of a spectrum.

ANSWER: **line broadening** [prompt on **broadening**]

[10] 'Natural' line broadening occurs because the energy of an excited state with a finite lifetime cannot be determined to arbitrary precision thanks to this relation. A more famous version of this relation exists between position and momentum.

ANSWER: Heisenberg **uncertainty** principle

[10] This technique can be used to reduce line broadening. This technique all but eliminates effects due to relative velocities of particles by expelling them at high pressure as a thin collimated jet.

ANSWER: **molecular beam** <AG>

9. Around the start of the 20<sup>th</sup> century, new instruments such as the Heckelphone were constantly being invented to satisfy the stringent, and often unnecessary, demands of composers. For 10 points each:

[10] Name this instrument, whose 'bass' version makes one of its few appearances in Gustav Holst's *The Planets*. The most common form of this double reed instrument plays the 'Swan Theme' in *Swan Lake*.

ANSWER: **oboe**

[10] The oboe has had many variants over the years, including the oboe d'amore and this 'hunting oboe', most commonly heard in the works of J. S. Bach.

ANSWER: oboe **da caccia** [CAH-chee-ah] [accept oboe **da silva**]

[10] The oboe da caccia was replaced in popularity in the 18<sup>th</sup> century by this other instrument. Many composers have since written orchestral solos for this instrument, such as the opening melody of the Largo of Dvořák's *New World Symphony*.

ANSWER: **cor anglais** <AG>

10. 'The work of giants is decaying'. For 10 points each, answer the following on the afterlife of Roman Britain.

[10] That quote is from the Old English poem known as 'The Ruin', which is usually said to be set in this Roman city. The poem describes how in a complex of structures in this city 'There stood courts of stone, where a stream gushed in hot rippling floods'.

ANSWER: **Bath** [accept **Aquae Sulis**]

[10] Other Anglo-Saxon references to Roman ruins as the 'work of giants' are often used of places with this Anglo-Saxon place name suffix, which, although it derives from the Latin *castrum*, could refer to any Roman masonry structure. You can give the modern English derivatives.

ANSWER: '-**chester**' [accept **-caster**, **-cester**, or **-ceaster**]

[10] Likely the same as the Portus Adurni recorded in the *Notitia Dignitatum*, this '-chester' was originally built as part of the defensive fortifications of the Saxon Shore. The Saxon history of this site includes a possibly monastic settlement when it was controlled by the nearby Bishop of Winchester.

ANSWER: **Portchester** <OSC>

11. Runge's phenomenon is oscillatory behaviour near the end points when polynomials are used to perform this task, which can be mitigated by using splines instead. For 10 points each:

[10] Name this process which draws a curve passing through a set of data points.

ANSWER: **interpolation** [do NOT accept 'extrapolation']

[10] For functions on the range minus one to plus one, Runge's phenomenon can be mitigated somewhat by choosing to sample the function being interpolated at points corresponding to the roots of these polynomials. The roots of these polynomials are evenly spaced when projected onto a semicircle.

ANSWER: **Chebyshev** polynomials (of the first kind) [Prompt on T<sub>n</sub> or theta n with 'who they are named for?']

[10] The Chebyshev polynomials are solutions to a Sturm-Liouville differential equation and so possess this property. In general, two vectors are said to have this property if their inner product with each other is zero.

ANSWER: **orthogonal** [accept word forms; accept **perpendicular**; accept **being at right angles** and other equivalents] <JR>

12. Geoffrey Blainey characterized this debate as changing the 'Three Cheers' to a 'black armband' view, and it was seen as entering public discourse in the 1990s with the Redfern Park Speech and the *Bringing Them Home* report. For 10 points each:

[10] Give this collective name for the often-heated ongoing scholarly and public debate about the colonization and post-colonial society of a certain country.

ANSWER: Australian **history wars** [prompt on culture wars]

[10] Unlike their predecessor Paul Keating, this Liberal Prime Minister took a softer approach to the history wars, declining to make a Parliamentary apology to Aboriginal Australians and resuming the tradition of traveling to Gallipoli for ANZAC Day.

ANSWER: John **Howard**

[10] Historian Keith Windschuttle angered both sides in the history wars by arguing against labeling the Black War in this Australian state a genocide or deliberate campaign of warfare by the British. This island state was at the time of the war known as 'Van Diemen's Land'.

ANSWER: **Tasmania** <CJ>

13. The Hampson-Linde cycle uses this process to liquefy gases. For 10 points each:

[10] Name this process, whose namesake coefficient is given by the derivative of temperature with respect to pressure at constant enthalpy. This process will only decrease the temperature of a gas if the gas starts below its inversion temperature.

ANSWER: **Joule-Kelvin** expansion / process [accept **Joule-Thomson** or **Kelvin-Joule**]

[10] The Joule-Kelvin process changes the temperature of gases that violate Joule's second law and so are not these systems. In these systems, the internal energy depends only on temperature, and the entropy is given by the Sackur-Tetrode equation.

ANSWER: **ideal gases** [accept **perfect gases**]

[10] Real gases can be described by the virial model, which gives the product of pressure and this quantity as a power series in the reciprocal of this quantity. The ideal gas law states that this quantity is given by the product of the ideal gas constant, the number of moles of gas, and temperature all divided by pressure.

ANSWER: **volume** <LW>

14. One of these structures built in Speyer in 1128 is located at the end of a staircase ten metres below ground level. For 10 points each:

[10] Name these Jewish ritual baths. The deepest, located in Friedberg, was built in 1260 and lies at the bottom of a 25-metre shaft with a staircase supported by elaborate arches.

ANSWER: mikveh [or mikva'ot, mikvoth, mikvot, mikves]

[10] This city also has a shaft mikveh, but is better known for its twin-spired cathedral, which contains the tenth-century oak *Gero Crucifix* and the elaborately gilded triple sarcophagus designed by Nicholas of Verdun.

ANSWER: Cologne [or Köln]

[10] Unlike its Gothic cathedral, Cologne's Jewish buildings were built in this immediately prior architectural style, characterised by very thick walls and rounded arches. In contrast to Gothic, this style uses small windows and very rarely features buttresses.

ANSWER: Romanesque <AP>

15. Inger kills her newborn child, who has inherited her cleft lip, in a novel by this author. For 10 points each:

[10] Name this author who echoed Nazi ideals of 'blood and soil' in their novel *Growth of the Soil* and wrote another novel in which the protagonist wanders the streets of Kristiania at night.

ANSWER: Knut Hamsun

[10] Hamsun believed that 'the Germans are fighting for us' during World War II and wrote an obituary for this Nazi leader, describing him as 'a preacher of the gospel of justice for all nations'.

ANSWER: Adolf Hitler

[10] Despite Hamsun's politics, this other author felt that he was 'the father of modern literature'. This author translated many of Hamsun's works and wrote short stories like 'The Spinoza of Market Street'.

ANSWER: Isaac Bashevis Singer [accept either underlined part] <AH>

16. Syncretism between Hinduism and other religions in Southeast Asia is evident in the name of one city in this country. For 10 points each:

[10] Name this country, where that city's name derives from that of the birthplace of the hero Rama. This country still maintains a Brahman temple in its capital near a disused giant red swing once used in an annual ceremony.

ANSWER: Thailand

[10] This Cambodian temple complex was originally dedicated to Vishnu, with its five towers representing the five peaks of Mt Meru, but it developed into a Buddhist pilgrimage site, as attested by 17th-century Japanese graffiti.

ANSWER: Angkor Wat

[10] Syncretism between Hindu and Buddhist beliefs is also apparent on this Indonesian island, where Shiva-Buddha was central to Tantric traditions. Unlike Java, where there was a later move towards Islam, this island remains majority Hindu.

ANSWER: Bali <OSC>

17. One member of this family, Eleanor, married Sigismund of Austria and was a noted translator. For 10 points each:

[10] Name this family. Its first ruling member was Robert II, while Eleanor's father was assassinated in a sewer under Blackfriars monastery by the Earl of Atholl.

ANSWER: Stewart

[10] In the unstable period that followed Robert's death, one of his 27 children, Alexander, known as the 'Wolf of Badenoch', burned this royal burgh and its cathedral when its bishop turned to Thomas Dunbar for protection instead.

ANSWER: **Elgin**

[10] The Stewarts commissioned John Barbour to inflate their own role in the wars of Scottish independence in his poem about this king, which mostly focuses on his victory at the Battle of Bannockburn.

ANSWER: **Robert I** the **Bruce** [prompt on partial answers] <AP>

18. Peter Mitchell was awarded the 1978 Nobel Prize in Chemistry for his contribution to the understanding of biological energy transfer through the formulation of this concept. For 10 points each:

[10] Name this term, the idea that most ATP synthesis in respiring cells is driven by the movement of ions across a semipermeable membrane, down their electrochemical gradient.

ANSWER: **chemiosmotic** theory [accept **chemiosmotic** hypothesis; accept **chemiosmosis**]

[10] The chemiosmotic theory explained how ATP production is coupled to the potential energy generated by this series of membrane-bound protein complexes, which use redox reactions to drive proton pumping.

ANSWER: **electron transport chain** [or **ETC**]

[10] In contrast to thylakoids, in which the pH gradient is the dominant component, in these organelles the membrane potential is the dominant component of the proton-motive force. These organelles are the main site of ATP synthesis in eukaryotes.

ANSWER: **mitochondria** [accept **mitochondrion**] <ML>

19. This state's traditional beef fry has been embraced by some of its politicians as a symbol of its traditional culture and opposition to the national government. For 10 points each:

[10] Name this Malayalam-speaking Indian state, promoted as 'God's Own Country' for its natural beauty and high level of development, including a strong record on gender equality and transgender rights.

ANSWER: **Kerala**

[10] Kerala borders this smallest Indian state by area. Residents of this state generally support using the Roman alphabet to write its Konkani language, which has been threatened by bilingualism with English and Marathi.

ANSWER: **Goa**

[10] Nearly 20% of Kerala's population is Christian, mostly the indigenous St. Thomas Christians and the members of this church, a legacy of the state's Portuguese colonization. In 2019, Pope Francis acknowledged that this church had not done enough to protect Indian nuns from sexual assault by bishops.

ANSWER: Roman **Catholic** Church <CJ>

20. In one of their works, this poet describes a narrator 'A-rock-rock-rocking / To a mother-goose rhyme!'. For 10 points each:

[10] Name this poet, who wrote 'The Ballad of the Harp-Weaver' and began another work with 'All I could see from where I stood / Was three long mountains and a wood'.

ANSWER: Edna St. Vincent **Millay**

[10] In 'The Ballad of the Harp-Weaver', the narrator's mother has woven clothes 'piled up beside her / And toppling to [this thing]'. In 'Renascence', the narrator describes this thing as 'not so very tall' and screams after touching it with their hand.

ANSWER: the **sky** [accept **skies**]

[10] Millay is more famous for writing in her poem 'First Fig' that one of these objects 'burns at both ends' and 'will not last the night'.

ANSWER: **candles** <AH>