Cerebrum

01 March, 2019

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InSCIgnis 2019

Tezpur University

General Rules

1. Use of electronic devices (except electronic wrist watches or medical gadgets) is forbidden throughout the quiz, for participants in the various stages.
2. Failure to follow the above rule will result in immediate disqualification.
3. We assume a basic knowledge of high school science and mathematics throughout the quiz.
4. Dissent is encouraged, if it is logical and fact-based.
5. Notwithstanding the above rule, the final decisions to be taken in this quiz rests with the quiz master.
6. The above rules apply throughout the quiz (both prelims and finals).

Prelims

Rules

1. There are 30 questions in the prelims, starting with 0.
2. Each question carries 1 point, unless otherwise mentioned.
3. The prime-numbered questions are starred question; ties will be decided on the basis of these questions.
4. Six teams will qualify for the finals.
5. Prelims scores will carry over to the finals, if and only if the following inequality is satisfied

$$\mathrm{Median}(\mathrm{Prelims\ Qualifiers}) + \mathrm{Range}(\mathrm{Prelims}) > 45.$$

6. This slide will not be repeated again. **Please read the rules carefully.**

Best of Luck

Question 0

How many starred questions are there in this prelims?

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Ten: $2, 3, 5, 7, 11, 13, 17, 19, 23$ **and** 29**.**

Question 1

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Question 2

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Nobel Prizes.

Question *3*

In 2014, the **Sahitya Akademi Award for Marathi literature** was awarded for the autobiography **Chaar Nagarantale Maze Vishwa**.

Who is the author?

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Who is the author?

Jayant Vishnu Narlikar.

Question 4

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Who is the latest (since August 2018; also in the news for winning a medal)?

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Akshay Venkatesh.

Question 5

How are X-rays called in German speaking countries?

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Röntgen.

Question 6

_____ comes from the Sanskrit for *playful or one possessing play (feminine)*. It is also the name of an award given by the **International Mathematical Union**, every four years for *outstanding contribution to public outreach in mathematics*.

Which word/award?

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Which word/award?

Līlāvatī/Leelavati.

Question 7

On 27 May 1841, **X** was elected Fellow of the Royal Society, thus becoming the first from India to get this honour. The nomination, describes him as a "gentleman well versed in the theory and practice of naval architecture and devoted to scientific pursuits." It credits him with both the introduction of gas lighting to Bombay, as well as having "built a [sea-going] vessel of 60 tons to which he adapted a Steam Engine."

Who was **X**?

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Who was **X**?

Ardaseer Cursetjee Wadia.

Question 8

During the World War II, the British Government is believed to have propagated a common misconception, that is still extant. The reasons for propagating this were two fold.

First, the RAF pilots were using Airborne Interception Radar, which was both a new technology and a top secret, so the British did not wish to divulge their successful air combat techniques. And they wanted something to attribute the successful combats to.

Second, due to rationing of many food items, it was easy to find something home-grown and as such the misconception encouraged people to eat something for their health benefits.

What is the misconception?

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What is the misconception?

Eating carrots improves night vision.

Question 9

Which elementary particle's name comes from the Italian for "**the little neutral one**", coined as a joke by *Edoardo Amaldi* in contrast to another neutral particle, which was heavier?

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Neutrino.

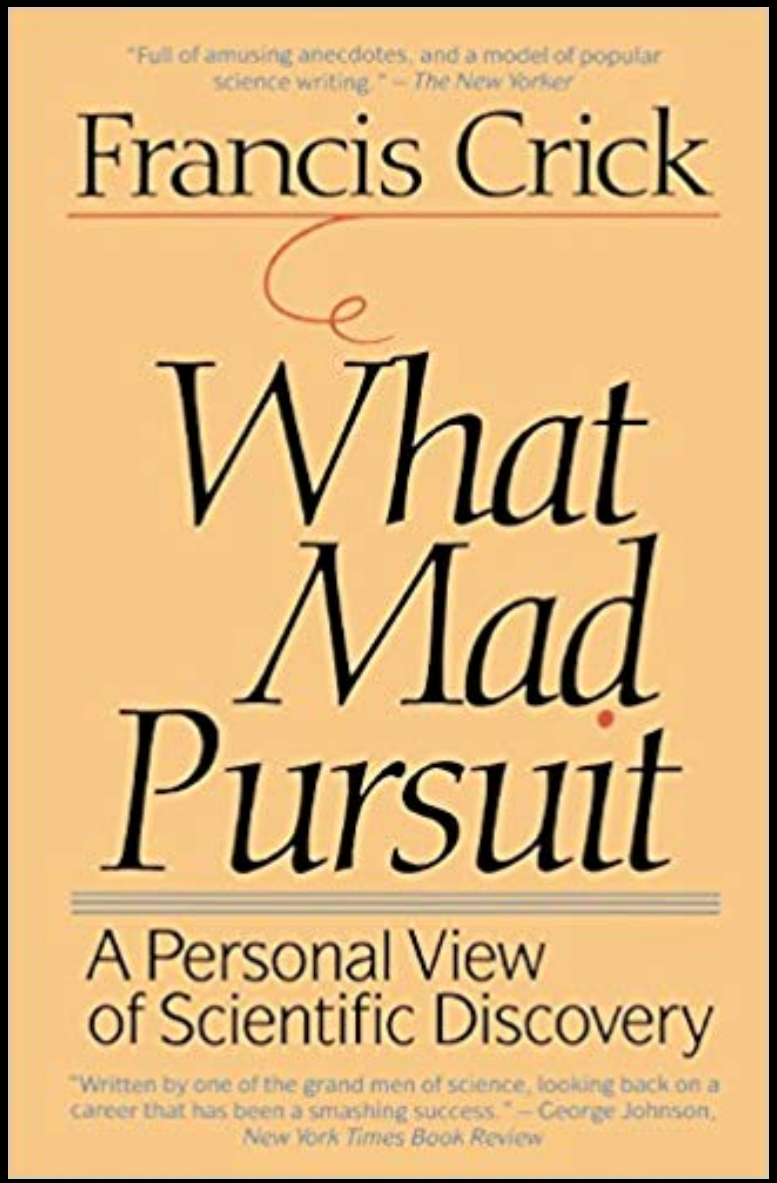
Question 10

The first stanza of Keats' **Ode to a Grecian Urn** reads

Thou still unravish'd bride of quietness,
Thou foster-child of silence and slow time,
Sylvan historian, who canst thus express
A flowery tale more sweetly than our rhyme:
What leaf-fring'd legend haunts about thy shape
Of deities or mortals, or of both,
In Tempe or the dales of Arcady?
What men or gods are these? What maidens loth?
_____ _____ _____? What struggle to escape?
What pipes and timbrels? What wild ecstasy?

The blanked out lines is a bestselling personal memoir, describing one of the greatest discoveries of 20th century science. Fill in the blanks.

What Mad Pursuit?



Question 11

James Gosling, Mike Sheridan, and Patrick Naughton initiated the project to develop this language in 1991. Initially it was called *Oak*, after an oak tree outside Gosling's office, but later they had to change the name to **X**.

The name is also an American slang for a beverage (even though many other people refer to it in the same way) and this is reflected in it's logo. What is **X**?

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Question 12

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Who is the first? Or, what is his claim to fame?

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Glenn T. Seaborg: People after whom chemical elements have been named when they were alive.

Question 13

Hermes is the Greek god of trade, heraldry, merchants, commerce, roads, sports, travelers, and athletes and carries the **X** as his staff. **X** is also associated with the Roman god **Mercury**, and hence the astrological symbol of the planet Mercury is an amalgamation of Mercury's helmet and **X**.

X is also a recognized symbol of commerce and negotiation, included in the Unicode standard. However, in many countries (*India included*), **X** is used incorrectly in a different sense, where it is mistaken for another famous staff.

What is **X** or the incorrect use?

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What is **X** or the incorrect use?

Caduceus: Used as a symbol for medical health professionals.

Question 14

Identify this German-born British scientist whose discoveries include the **citric acid cycle**.

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Hans Adolf Krebs.

Question 15

Joseph Priestly lived near a brewery in Leeds and became curious about its operation, especially the gas that floated over the fermenting liquors. He learned how to prepare this gas (he called it *air*) in his home laboratory and decided to experiment with it. He found that if mixed with water the resultant produced a quite *peculiar satisfaction*.

Priestly's discovery caught the attention of a young German watchmaker in Geneva, called **Johann Jacob** _____ , and thus began the commercial production of a very popular drink.

What did Priestly discover? And, what is the blanked out name?

(Half points for each.)

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Carbonated/Soda Water; Schweppes.

Question 16

Donald Knuth, is best known for his *The Art of Computer Programming*; considered almost universally to be the bible of computer science. When the 1st volume of this series was published in 1968, it was typeset using hot metal typesetting set by a *Monotype machine*.

When the 2nd edition of the 2nd volume was published, in 1976, the whole book had to be typeset again because the Monotype technology had been replaced, and the original fonts were no longer available. When Knuth received the galley proofs of the new book in 1977, he found them inferior.

This made him interested in digital typography and motivated him to design his own typesetting system.

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What was the result?

TeX.

Question 17

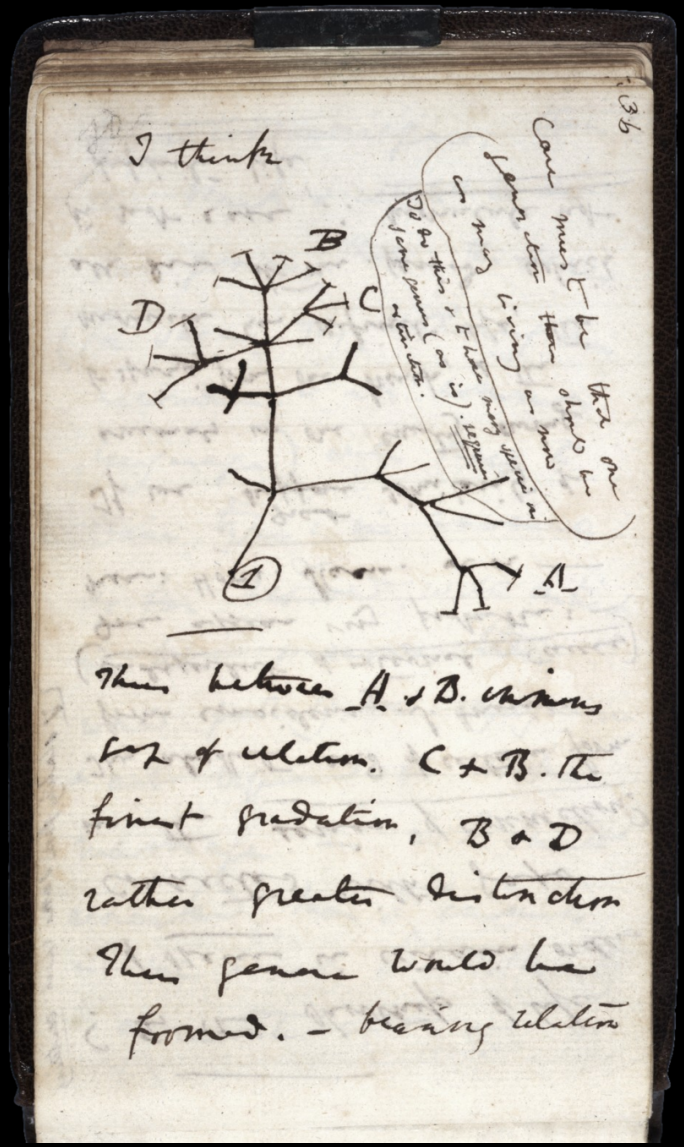
Almost everyone in this room has probably seen an iconic photo of **Susan M. Frontczak**, clicked in 2001 by Paul Schroder. The photo is used extensively on the Internet and also appears in postage stamps issued by Mali, the Republic of Togo, Zambia, and the Republic of Guinea.

Unfortunately, the person attributed to in the photo is usually not Frontczak, but **X**, whom she was impersonating to promote her one-woman drama **Manya: The Living History of X**.

Who is **X**?

Marie Curie

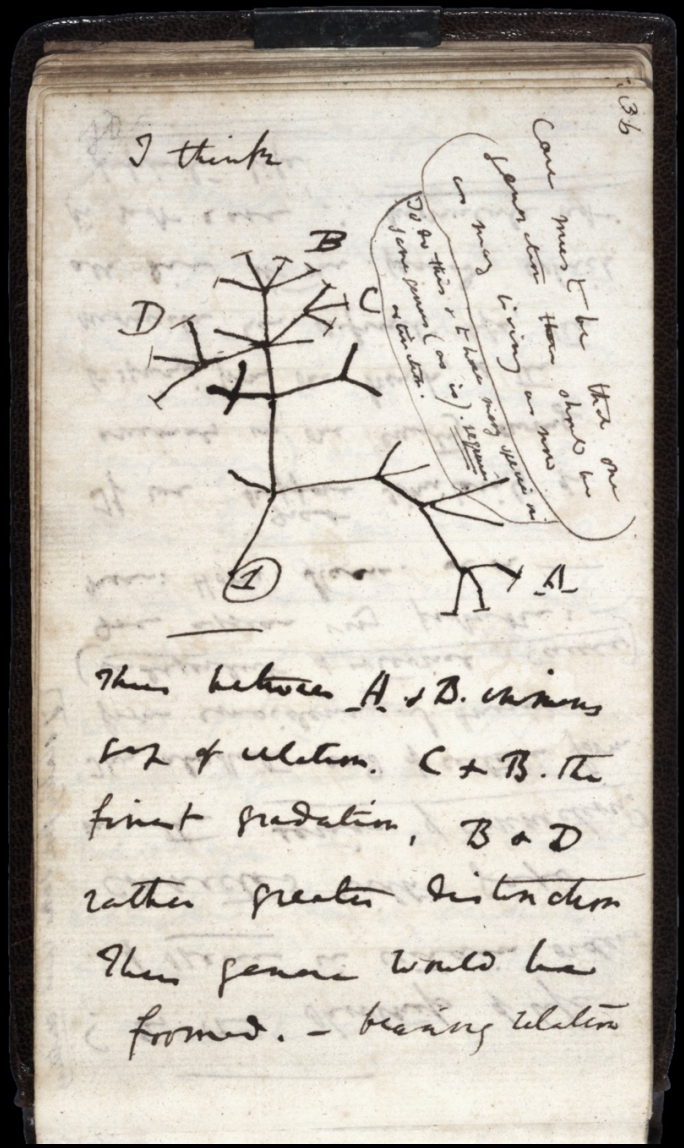
Question 18



Which important biological concept is presented here? And who *thought* this?

(Half points for both.)

Question 18



Which important biological concept is presented here? And who *thought* this?

(Half points for both.)

Tree of Life; Charles Darwin.

Question 19

Sometime in 1974, near the village of Hadar in the Awash Valley of the Afar Triangle in Ethiopia, Donald Johanson and his team found something quite unusual. They decided to name what they found, after the Beatles song _____ **in the Sky with Diamonds**, because the song was played repeatedly during their work.

What did they find?

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What did they find?

Lucy, one of the oldest hominin skeletons ever discovered.

Question 20

Dr. Ian Malcolm is a mathematician at the University of Texas at Austin who specializes in chaos theory. He makes predictions based on chaos theory about the consequences and ultimate failure of attempting to control nature, which often turn out to be correct.

His initial foray into these predictions happened at **Isla Nublar**, based on which he was asked by wealthy adventurer Richard Levine to join an expedition to **Isla Sorna**.

What 'famous' events happened in those islands?

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What 'famous' events happened in those islands?

Jurrasic Park.

Question 21

Louis Pasteur is known for his remarkable career in biology; however, early in his scientific career as a chemist he was the first to demonstrate molecular chirality, and also gave the first explanation of isomerism in chemistry.

This discovery was fortuitous because Pasteur used a very specific salt of racemic acid to test this phenomenon, which was the only such salt that would have made it possible to manually test his observations. Secondly, his keeping the salt residue overnight in the cold Parisian air was fortunate to attain the ambient temperature for the reaction to take place.

Later on in his life, Pasteur summed up these incidents with which famous line?

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Later on in his life, Pasteur summed up these incidents with which famous line?

Dans les champs de l'observation le hasard ne favorise que les esprits prpars.
In the fields of observation chance favours only the prepared mind.

Question 22

The original model started by assuming that the number of **X** that can still be **scored** (Z), for a given number of **U remaining** (u) and **W lost** (w), takes the following relationship:

$$Z(u, w) = Z_0(w) \left(1 - e^{-b(w)u}\right),$$

where Z_0 is a constant.
The model tried to estimate the probability of the value of Z for a particular combination of u and w. This was used until 2004, when a newer model replaced the old one; and finally in 2015, the latest model still in use was introduced.

Which model? Or, give me **X**, **U** and **W**.

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Duckworth-Lewis; X=runs, U=overs, W=wickets.

Question 23

The famous metaphor of Newton Standing on the shoulders of Giants appears in a letter that he wrote to his *rival*:

> *What Des-Cartes [sic] did was a good step. You have added much several ways, & especially in taking* **the colours of thin plates** *into philosophical consideration. If I have seen further it is by standing on the sholders [sic] of Giants.*

This has been recently interpreted as a sarcastic remark by Newton, because the receiver was of a short stature. Who did Newton write the letter to?

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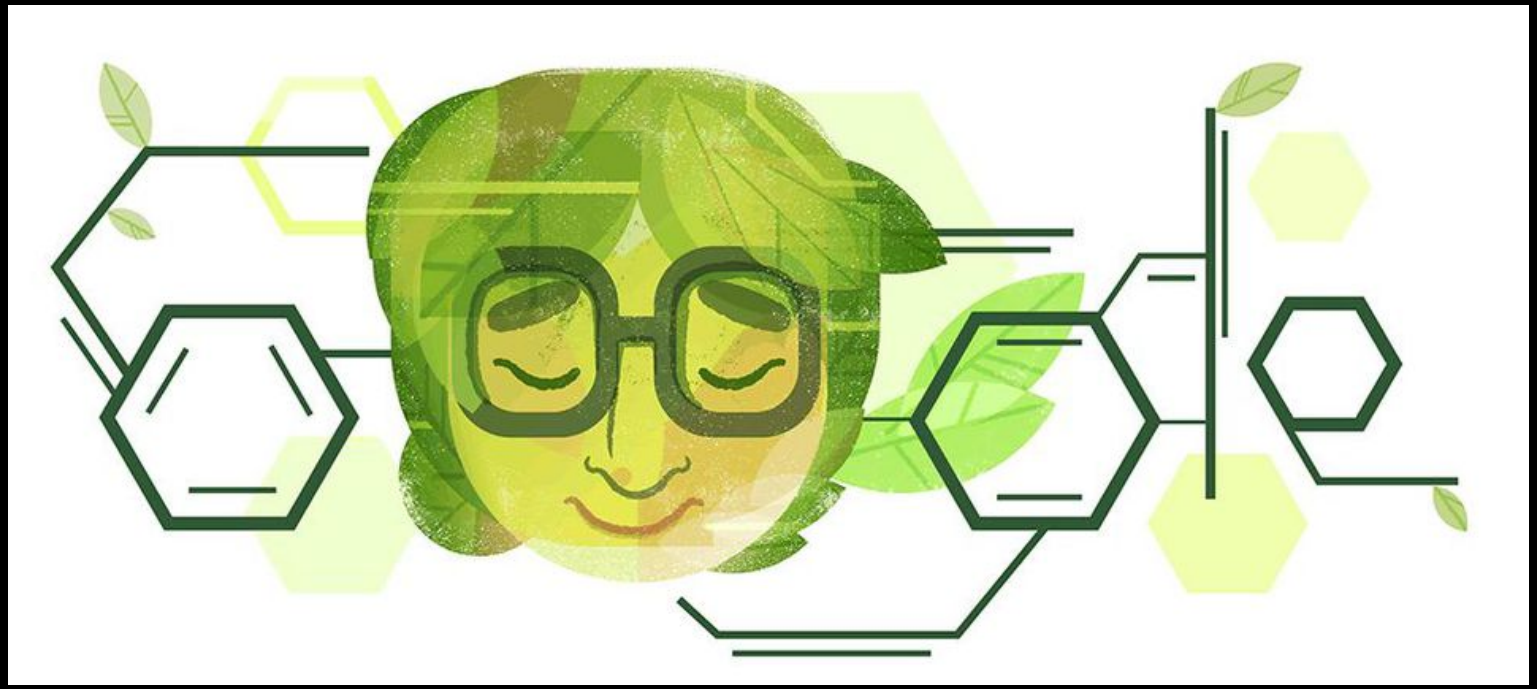
Robert Hooke.

Question 24

Which Indian chemist was honoured with this Google doodle on 23rd September, 2017? Or, what was her claim to fame?



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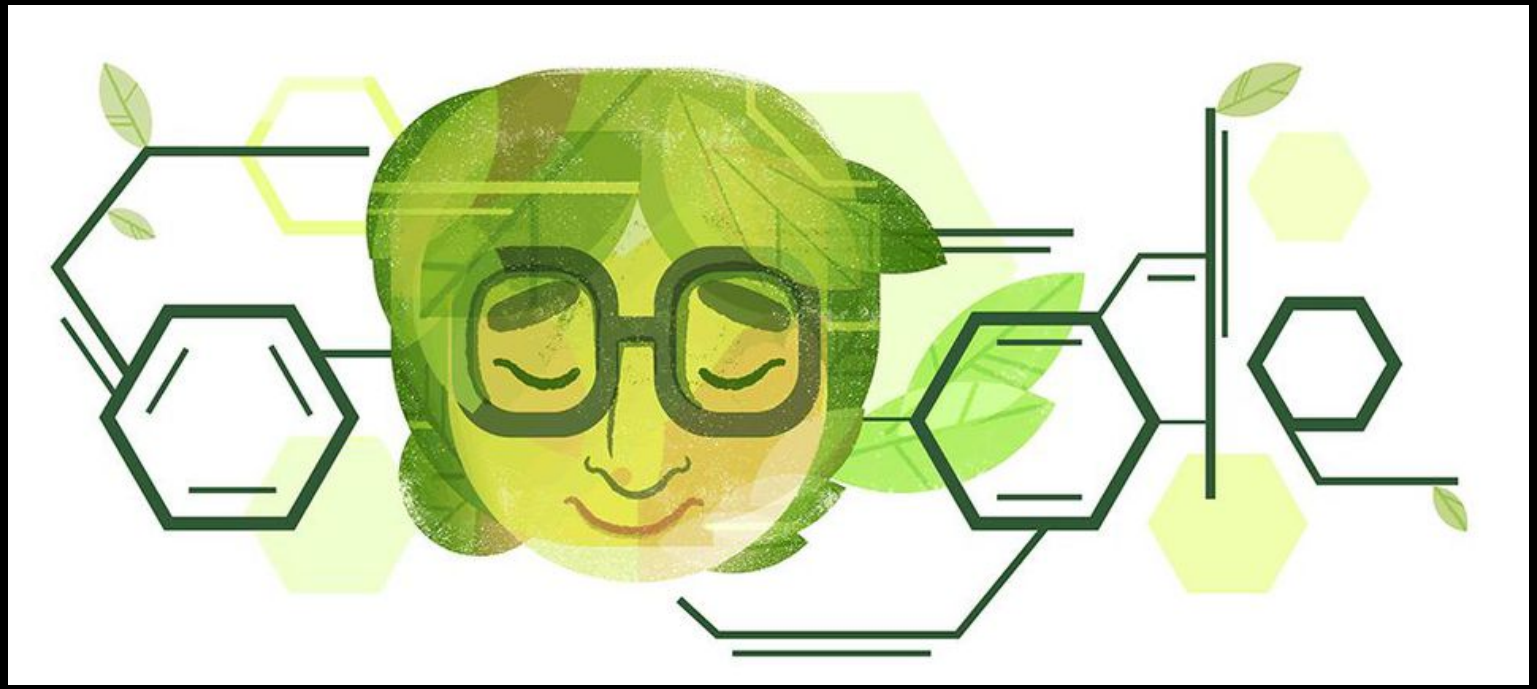

Asima Chatterjee; first women to get a science doctorate in India.

Question 25

> *I propose this evening to speak to you on a new kind of radiation or light emission from atoms and molecules.*

These were the opening words of a lecture delivered to the South Indian Science Association in Bangalore on March 16, 1928 titled quite simply *A New Kind of Radiation*.

Who was the lecturer?

Question 25

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Who was the lecturer?

Sir C. V. Raman.

Question 26

In 2017, a satirical website **Laughing in Disbelief** ran a news item which said that, Finland had passed an act which *bans children under the age of* 13 *from religious indoctrination*.

According to the satire piece, the act is called **The** _____ _____ **Act**, after a famous person. Who?

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Richard Dawkins.

Question 27

Well until the 1850s, the production of **X** was very expensive, and hence it was almost twice the price of gold. In fact, Napoleon III served his most distinguished guests in cutlery made out of **X**.

In the 1880s, the Washington Monument had a 2.83 kg pyramid made of **X** atop it, which was the largest amount of **X** to be ever cast until then.

All of this changed when two German scientists discovered a process to produce **X** in industrial scale. The process is usually named after one of them and very much in use until now.

What is **X**? And, what is the process named as.

(Half points for each.)

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What is **X**? And, what is the process named as.

(Half points for each.)

Aluminium; Haber-Bosch process.

Question 28

Whose name has been blanked out from this image?

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Ada Lovelace.

Question 29

In 2015, Jessie Byrnes, Chris Spicer and Alyssa Turnquist defined a new type of prime number.

If p_n denote the n-th prime number, then such a prime is called a _____ prime if the product of the digits of p_n is n and if the reverse of it's digits, (example reverse of 1729 is 9271) is also a prime, and if listed in the sequence of primes, then it is at the position which is reverse of the digits of n.

An example is 73.

Fill in the blanks.

Sheldon Primes

Results

Finals

Format

1. The finals has three rounds with at most 42 questions in total that can be answered by the teams.
2. Rules will be explained before each round.
3. If you need a break, don't hesitate to ask!

Warm-Up Question

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In the German city of **Nürnberg** lies the *Erdapfel* (German for 'earth apple'; also one of the words for *potato* in German) produced by **Martin Behaim** from $1490 - 1492$. It is the oldest surviving thing of its kind, and is a very important historical piece because of something that happened just after it was completed in **March** 1493, which rendered it *almost useless*.

What is it? And, what happened in March 1493?

Warm-Up Question

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What is it? And, what happened in March 1493?

The oldest surviving terrestrial Globe; Columbus returned from America.

All the best!

Round 1

Rules

1. There are 12 questions in this round.
2. Questions i and $i+6$ will be direct for team i in the clockwise direction, for $i \in \{1, 2, 3, 4, 5, 6\}$.
3. Answering correctly on direct/pass will get the teams 1 point. No negatives in these cases.
4. However, after a question is asked, there will be approximately $5-10$ seconds time, during which any other team can raise their hand(s) and indicate that they wish to answer the question. We call this *pounce*.
5. Answering on the pounce correctly will also get the teams 1 point, and answering it incorrectly will get the teams -1 point.
6. If a team *pounces*, then they forego their right to answer the same question on the pass.
7. Any unanswered questions on the pass, will be forwarded to the audience.

Question 1

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In a 6 page paper posted on the arXiv on 1st April 2013, **Veselin Kostov, Daniel Allan, Nikolaus Hartman, Scott Guzewich** and **Justin Rogers** analysed the phrase _____ _____ _____ , which was also the title of the paper and came into popular consciousness in 1996.

They found that a natural explanation for this particular phenomena is the unique behavior of *a circumbinary planet*. Thus, by speculating that the planet under scrutiny is *orbiting a pair of Solar-type stars*, they utilize the power of numerical three-body dynamics to predict that, unfortunately, *it is not possible to predict either the length, or the severity of the phenomenon in question*.

What phenomenon were they studying?

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What phenomenon were they studying?

Winter is Coming!

Submitted for publication in the Oldtown Journal of Evil Omens

"Winter is coming"

Veselin Kostov[1,2], Daniel Allan[3], Nikolaus Hartman[4,5], Scott Guzewich[6,7], Justin Rogers[8,9]

ABSTRACT

Those that do not sow care little about such mundane things as equinoxes or planting seasons, or even crop rotation for that matter. Wherever and whenever the reavers reave, the mood is always foul and the nights are never warm or pleasant. For the rest of the good folks of Westeros, however, a decent grasp of the long-term weather forecast is a necessity. Many a maester have tried to play the Game of Weather Patterns and foretell when to plant those last turnip seeds, hoping for a few more years of balmy respite [1]. Tried and failed. For other than the somewhat vague (if not outright meaningless) omens of *"Winter is Coming"*, their meteorological efforts have been worse than useless. To right that appalling wrong, here we attempt to explain the apparently erratic seasonal changes in the world of G.R.R.M. A natural explanation for such phenomena is the unique behavior of a circumbinary planet. Thus, by speculating that the planet under scrutiny is orbiting a pair of Solar-type stars, we utilize the power of numerical three-body dynamics to predict that, unfortunately, it is not possible to predict either the length, or the severity of any coming winter. We conclude that, alas, the Maesters were right – one can only throw their hands in the air in frustration and, defeated by non-analytic solutions, mumble *"Coming winter? May be long and nasty ($\sim$ 850 days, $T < 268K$) or may be short and sweet ($\sim$ 600 days, $T \sim 273K$). Who knows..."*.

[1]Pyke, The Iron Islands, Westeros

[2]Visiting fellow, Moat Cailin, Westeros

[3]Sunspear, Westeros

[4]To whom correspondence should be addressed: nik.hartman@gmail.com

[5]Vale of Arryn, Westeros

[6]Storm's End, Westeros

[7]Exile, Daenerys Targaryen's Entourage, Essos

[8]King's Landing, Westeros

[9]Casterly Rock, Westeros

Question 2

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Luis Walter Alvarez was the sole winner of the 1968 Nobel Prize in Physics for his impactful work in elementary particle physics.

However, he is more widely known for a theory that he and his son, **Walter Alvarez** (along with some other collaborators) proposed in the 1980s, which has been a bone of content with several groups of people, including chemists, geologists, biologists and physicists.

What theory?

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What theory?

The theory that dinosaurs were killed by an asteroid impact.

Question 3

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Johan de Witt was a Dutch mathematician, who did some work on the geometry of conic sections. However, his more famous work is in financial mathematics, where he combined his *profession* with his mathematical knowledge. His work on annuities was even featured in the correspondence between Leibniz and Bernoulli concerning the use of probabilities.

Recently, de Witt became famous in popular culture due to the nature of his' and his brother's death. What?

Question *3*

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Recently, de Witt became famous in popular culture due to the nature of his' and his brother's death. What?

Options. Just sayin'.

Question 4

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A well known and an accurate story is about the exploits of **George de Hevesy** in doing something during the Nazi occupation of Denmark, to aid and abet a 'crime' in then Germany.

However, another story in a similar vein which is less well-known, is that of **Otto Frisch** and **George Placzek** who did something similar at Neils Bohr's institute in Copenhagen for doing some of their experiments.

What did they do?

Question 4

A well known and an accurate story is about the exploits of **George de Hevesy** in doing something during the Nazi occupation of Denmark, to aid and abet a 'crime' in then Germany.

However, another story in a similar vein which is less well-known, is that of **Otto Frisch** and **George Placzek** who did something similar at Neils Bohr's institute in Copenhagen for doing some of their experiments.

What did they do?

Melted gold Nobel prize medals.

Question 5

Question 5

In **US patent law**, the _____ doctrine, or test, was a test for *patentability* used by the United States Federal Courts for over a decade, beginning about 1941.
The doctrine was formalized in *Cuno Engineering v. Automatic Devices*, which said *The new device, however useful it may be, must reveal the _____, not merely the skill of the calling. If it fails, it has not established its right to a private grant on the public domain.*
The test was eventually rejected by Congress in its 1952 revision of the patent statute. Section 103 was amended to state the new standard of non-obviousness: *Patentability shall not be negatived by the manner in which the invention was made.*
_____ is also the name of a famous Hollywood movie, based on the life and work of **Robert Kearns**. What?

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_____ is also the name of a famous Hollywood movie, based on the life and work of **Robert Kearns**. What?

Flash of Genius.

Question 6

Question 6

J.L. Aragón, Gerardo G. Naumis, M. Bai, M. Torres and P.K. Maini published a paper titled _____ **luminance in impassioned** _____ (J Math Imaging Vis (2008) 30: $275 - -283$), which is now widely known to the general public due to it's subject matter, and several articles and videos (including a TED video) publicizing the physics and mathematics in the paper.

The specific physics and mathematics of the type discussed in the paper, was also observed long back in a 1996 *Nature* paper, in the case of *foreign exchange markets*.

What has been blanked out? (No points for only one blank.)

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What has been blanked out? (No points for only one blank.)

Turbulent, van Gogh paintings.

Question 7

Question 7

The unsuccessful self-treatment of a case of "writer's block" by *Dennis Upper* published in 1974, in the **Journal of Applied Behavior Analysis** has a unique distinction.

The entire referee report was

I have studied this manuscript very carefully with lemon juice and X-rays and have not detected a single flaw in either design or writing style. I suggest it be published without revision. Clearly it is the most _____ manuscript I have ever seen - yet it contains sufficient detail to allow other investigators to replicate Dr. Upper's failure. In comparison with the other manuscripts I get from you containing all that complicated detail, this one was a pleasure to examine. Surely we can find a place for this paper in the Journal - perhaps _____.

As of January 31, 2019, the paper has 67 citations according to Google Scholar.

What is so special about this paper?

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What is so special about this paper?

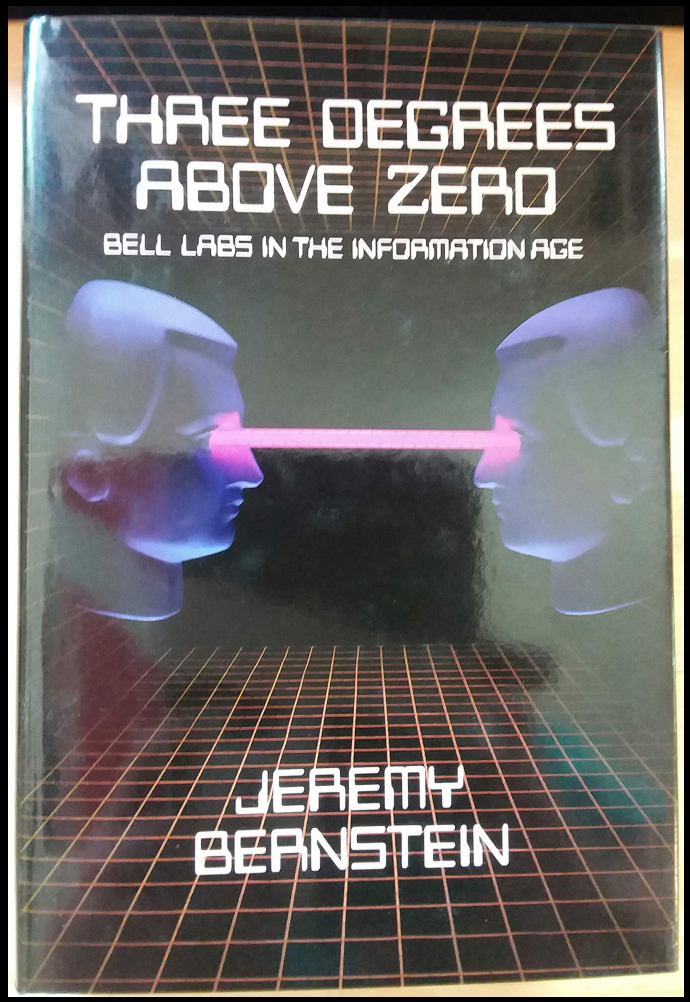
Question 7

Question 7

Shortest academic paper ever published; contains no words!

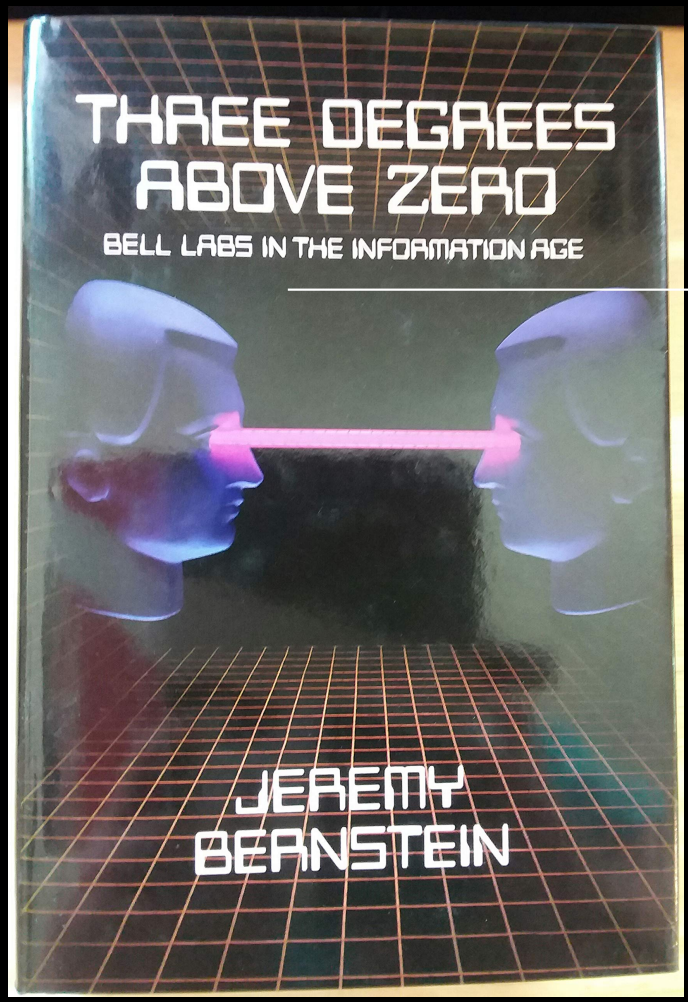
Question 8

Question 8



Which scientific discovery is the book shown in the picture, alluding to?

Question 8



Which scientific discovery is the book shown in the picture, alluding to?

Big Bang Radiation/Cosmic Microwave Background, found by Arno Penzias and Robert Wilson.

Question 9

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The _____ **Index**, is a measure of the discrepancy between a scientist's social media profile and publication record. Proposed in 2014 by Neil Hall in the journal *Genome Biology*, the measure compares the number of followers a research scientist has on *Twitter* to the number of citations they have for their peer-reviewed work.

For instance, as of 1 Feb, 2019, *Neil deGrasse Tyson*'s index is 8540, while that of *Stephen Wolfram* is 4.6.

Hall proposed that anybody with an index > 5 should be called **science _____s**.

Which index?

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Which index?

Kardashian.

Question 10

Question 10

Pliny the Elder (AD 23 – 79) was a Roman author, naturalist and natural philosopher, among many other things. He died in Stabiae while attempting the rescue of a friend and his family by ship from the eruption of *Mount Vesuvius*.

His life is full of intrigue and makes for interesting reading. Pliny the Elder wrote several books, but the only work that survived is **Naturalis Historia**, the last that he wrote. It comprises of 37 books. His sources while writing these were personal experience, his own prior works, and extracts from other works.

What impact did this work have on publishing?

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What impact did this work have on publishing?

Became the standard model of encyclopedias.

Question 11

Question 11

The first use in the mathematical literature of the name _____ can be traced back to a paper of **D. D. Kosambi**, published in the Proceedings of the Academy of Sciences, UP, entitled *On a generalisation of the second theorem of* _____, in which he concocted also some details of _____'s life and death. This was inspired by a story told to him by **X** about a false lecture at the Ecolé Normale in Paris.

X was for two years a professor of Indian philosophy at Aligarh Muslim University.

Who is **X** and what goes in the blank?

(Half points for each part.)

Question 11

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Who is **X** and what goes in the blank?

(Half points for each part.)

X=André Wiel; Bourbaki

Question 12

Question 12

Bruce A. Beutler, **Jules A. Hoffmann** and **Ralph M. Steinman** were awarded the **2011 Nobel Prize in Physiology or Medicine** *for their discoveries concerning the activation of innate immunity*.

The case of Steinman presented a dilemma unprecedented in the history of the award. What?

Question 12

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The case of Steinman presented a dilemma unprecedented in the history of the award. What?

Steinman died three days before the announcement, and the committee was unaware of this. Nobel prizes are not posthumous. The committee ruled that Steinman remained eligible for the award despite his death, under the rule that allows awardees to receive the award who die between being named and the awards ceremony.

Scores?

Audience Question

Audience Question

Pierre _____ was a French botanist, and the first to publish the concept of plant families as they are understood today, a natural classification of groups of plants that have features in common.

By several steps in the history of biological nomenclature, a large genus of ornamental flowering trees have come to bear _____'s name.

Which flowers? Or, what goes in the blank?

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Which flowers? Or, what goes in the blank?

Magnol; Magnolia.

Round 2

Format

1. This is a special round, where each team gets to select upto three topics on which one question each will be asked.
2. The topics are meant to be just a guideline, I assume any loose connection to the topic to be valid in setting the questions.
3. For choosing the first set of topics we start with the highest scorers in prelims and continue in descending order.
4. For choosing the second set of topics we start with the highest scorers in Round 1 and continue in descending order.
5. For choosing the third set of topics we start with the highest scorers upto that point in time and continue in descending order.

Marking Scheme

1. In the i-th set of topics, the team whose topic it is, gets $4 - i$ points if they answer the question correctly. And $-\left\lfloor \frac{4-i}{2} \right\rfloor$ points if they answer it incorrectly. No negatives for passes, which goes to the audience.
2. All the other teams will get $5 - 10$ seconds after the topic has been chosen to place a bid to answer the question.
3. The teams have to bid the number of points between 0 and $4 - i$ (both inclusive) that they wish to get for answering the question correctly. If they do so, they get the said points, say k. If they answer it incorrectly, they get $-k$ points. No passes on bids.
4. We will accept all bids!

Questions?

Topics

- Mathematical Sciences
- Mechanical Engineering
- Environmental Science
- Electrical Engineering
- Business Administration
- Computer Science and Engineering
- Mass Communication and Journalism
- English and Foreign Languages
- Molecular Biology and Biotechnology
- Food Engineering and Technology
- Electronics and Communications Engineering
- Social Work
- Commerce
- Chemical Sciences
- Energy
- Physics
- Cultural Studies
- Sociology
- Education
- Hindi
- Civil Engineering
- Law

Scores?

Audience Question

Audience Question

Julius Lothar Meyer was scooped of a very important discovery in 1869 by **X**, when he published months before Meyer something which had tremendous implications for science in general.

Both Meyer and **X** were given the **Davy Medal** of the Royal Society in 1882 for this discovery. In 1905, **X** was elected as a member of the Royal Swedish Academy of Sciences and in 1906, he was seriously considered for a Nobel prize, but didn't get it due to dissenting politics. **X** died the following year and never got the prize.

Who is **X** and what discovery?

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Who is **X** and what discovery?

Dmitri Mendeleev; periodic table of elements.

Round 3

Rules

1. There are 12 questions in this round.
2. Question 1 will start with team 1 and then pass normally.
3. The scoring pattern and pounce scheme continues from the first round.
4. Question $i+1$ will be direct question for the team $k+1$ if Question i has been answered by team k, for $i \in [[1, 11]],\ k \in \{1, 2, 3, 4, 5\}$.
5. Any unanswered questions on the pass, will be forwarded to the audience.

Question 1

Question 1

Identify both the gentlemen and the occasion.

(No half points.)

Question 1

Identify both the gentlemen and the occasion.

(No half points.)

Richard P. Feynman & Neil Armstrong; Challenger Space Shuttle Disaster Presidential Commission.

Question 2

Question 2

X's name has become a verb in common use now. But, it was not he who invented the device that gives the verb. The device was first described by **Hans Christian Ørsted** in 1820, and subsequently named after **X** by **André-Marie Amperé**. The reason being a famous experiment that **X** had done.

The experiment was a cause of major scientific dispute between **X** and **Y**, who had differing views. Ultimately, it led to major advances in chemistry and physics. Such was the importance, that an SI unit is named after **Y**.

Who are **X** and **Y**? What were the experiments?

(Half points for only **X** and **Y**. No points for just one part.)

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Who are **X** and **Y**? What were the experiments?

(Half points for only **X** and **Y**. No points for just one part.)

X=Luigi Galvani, Y=Alessandro Volta; frog leg experiments.

Question 3

Question *3*

One of **X**'s most famous work is **Y**, about a young man named *Y*, who is taught the philosophy of **Z** by his professor, *Pangloss*. Through the book, **X** ridicules religion, theologians, governments, armies, philosophies, and philosophers. In particular, **X** assualts **Z** and his philosophical views on *optimism*.

X is one of the most famous satirists of all time. While, **Z** is known chiefly for his mathematics, rather than his philosophy (at least in most social circles).

Who are **X**, **Y** and **Z**?

(No half points.)

Question *3*

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Who are **X**, **Y** and **Z**?

(No half points.)

X= Voltaire, Y= Candide, Z=Leibniz.

Question 4

Question 4

In a 2008 article that appeared in **CNET**, the invention of _____ _____ was said to be due to funds received from **X**, by a convoluted argument involving the funding of **Sir Godfrey Newbold Hounsfield**.

However, in a 2012 article by Zeev V. Maizlin and Patrick M. Vos, that appeared in the **Journal of** _____ **assited** _____, this was debunked. They showed that a much more sizable contribution to the development in question was made by the **British Department of Health and Social Security**.

What goes in the blanks, and what is **X**?

(Half points for each part.)

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What goes in the blanks, and what is **X**?

(Half points for each part.)

Computer Tomography (CT) scan; The Beatles/Electric and Music Industries (EMI).

Question 5

Question 5

There were two such expeditions which were organized by **X** and the *Astronomer Royal Frank Watson Dyson* to test **Y**.

The more famous expedition was headed by **X** to **Principe** to observe something that happened on 29 May, 1919. The other expedition was to **Sobral, Brazil**, which in fact showed that **Y** was not correct.

There has been many disputes about how **X**'s validation of **Y** was on shaky grounds, but nonetheless a direct result of this was the instant stardom of **Z**, which remains unabated to this day.

Who is **X** and **Z**? What is **Y**? What did the expeditions aim to show?

(Half points for at least three parts.)

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Who is **X** and **Z**? What is **Y**? What did the expeditions aim to show?

(Half points for at least three parts.)

X=Arthur Eddington, Y=theory of general relativity, Z=Albert Einstein. The aim was to see bending of light rays due to gravitational pull, during a solar eclipse.

Question 6

Question 6

Anophthalmus _____ is a species of blind cave beetle found only in five humid caves in Slovenia. The scientific name of the beetle comes from **Oscar Scheibel**, who was sold a specimen of a then undocumented species in 1933.

Due to it's name, the beetle sells for over **1000 GBP** in the black market, which is putting it in danger of extinction.

However, it is of taxonomic tradition not to change the binomial name of an organism, with exceptions for religious names; and hence the name has stayed.

What goes in the blank?

Question 6

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What goes in the blank?

Hitleri.

Question 7

Question 7

Where would one find these (and 54 other) names? Also, *who* is missing?

(Half points for each part.)

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(Half points for each part.)

On the sides of the Eiffel tower under the first balcony; no woman is present, Sophie Germain seems to be missing, whose work on the theory of elasticity was used in the construction of the tower itself!

Question 8

Question 8

The 42 mobile tiers of this eleven-metre-tall sculpture align to form the face of _____. This 39-ton bust by artist David Černý dates from November 2014 and stands just by the Quadrio business centre in **X**.

The statue is a marvel of modern technology driven by a motor and a kilometer of cables which rotate independently of one another. The kinetic artwork undergoes various changes and metamorphosis; at times it is obvious it is a face, at others it is not.

The statue is very similar to another of David Černý situated in North Carolina, USA called **Y**.

Whose statue? What is **X**? What is **Y**?

(No half points.)

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Whose statue? What is **X**? What is **Y**?

(No half points.)

Franz Kafka, X=Prague, Y=METALmorphosis.

Question 9

Question 9

Ncholas Baker with his son **Jim Baker** made a very risky journey from England to USA, where Nicholas Baker travelled in the bomb compartment of a submarine. There he fainted due to his faulty headphones when he could not hear the captain asking him to switch on the oxygen.

Who were the Bakers? And, what was the reason for this journey? (No half points.)

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Who were the Bakers? And, what was the reason for this journey? (No half points.)

Neils and Aage Bohr; going to the USA to help with the Manhatten project.

Question 10

Question 10

Reference #228 in the **Gabinetto dei disegni e stampe** of the **Gallerie dell'Accademia**, in **Venice** is the _____. It is based on the work of an ancient Roman architect **X**.

A well known cultural symbol, it has been a part of the logo of the 37th Expedition of the **International Space Station** as well as the logo of the **Human Genome Project**.

Fill in the blank. And who is **X**?

(No half points.)

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A well known cultural symbol, it has been a part of the logo of the 37th Expedition of the **International Space Station** as well as the logo of the **Human Genome Project**.

Fill in the blank. And who is **X**?

(No half points.)

L'Uomo Vitruviano (The Vitruvian Man); **X=Vitruvius.**

Question 11

Question 11

X and **Y** were both Austrian physicists. **X** was also a philosopher who posited *phenomenalism*, thus recognizing only sensations as real. This position seemed incompatible with a very fundamental physical concept, for which there were many debates between **X** and **Y**.

This stance of **X** was criticized by several people, including Max Planck and Albert Einstein. It seemed ironic that **Y** succeeded **X** to the *Chair of Philosophy* at the *Universität Wien* (University of Vienna), after **X** resigned due to poor health.

A *frequently used ratio* is named after **X**.

Y committed suicide at **Duino**, near **Trieste**, while on a holiday.

Who are **X** and **Y**? What was the debate about?

(Half points for each part.)

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(Half points for each part.)

X=Ernst Mach, Y=Ludwig Boltzmann; existence of atoms.

Question 12

Question 12

X was the early capital of the **Hoysala Empire**, and is an important religious tourist destination now. It's name is similar to that of the mineral _____, which in turn gives it's name to a chemical element.

The name _____ is derived from a Greek word, referred to a *precious blue-green color-of-sea-water stone*; akin to a Prakrit word, hence the connection to **X**.

When the first eyeglasses were constructed in 13th century Italy, the lenses were made of _____ as glass could not be made clear enough. Consequently, the German word for glasses is derived from _____.

What is **X** and _____?

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What is **X** and _____?

X=Belur; beryl, beryllium.

Final Scores?

Audience Question

Audience Question

X was an English physician who is best known for having identified the source of a *cholera outbreak in London* in 1854 to have been transmitted via water. In part due to this reason, he is considered as the **father of modern epidemiology**.

His name might not be too familiar, but when one types it into Google, it automatically asks *did you mean:* **Y**, due to the similarity in their names. **Y** is famous for many reasons, one of which is his lack of knowledge about anything.

Who is **X**/**Y**?

Audience Question

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Who is **X**/**Y**?

John Snow/Jon Snow.

Ties?

Click here.

The End!

Mathematical Sciences

Mathematical Sciences

Gösta Mittag-Leffler was a Swedish mathematician who did pioneering work in the theory of functions (now known as complex analysis). He won several distinguished prizes and served the profession with several initiatives. He was a convinced advocate of women's rights and was instrumental in making *Sofia Kovalevskaya* a full professor of mathematics in Stockholm, the first woman anywhere in the world to hold that position.

But, to the quizzing world, he is most popularly associated with something else. What?

Mathematical Sciences

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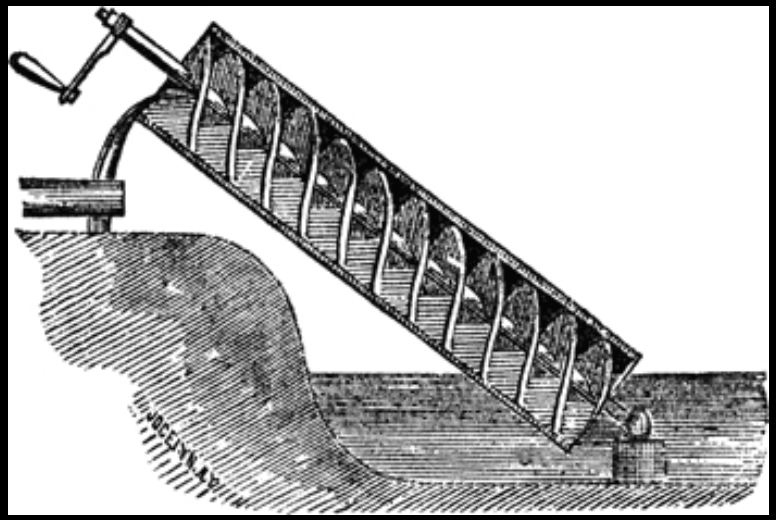
Nobel Prize for Mathematics myth.

Go Back to Topics

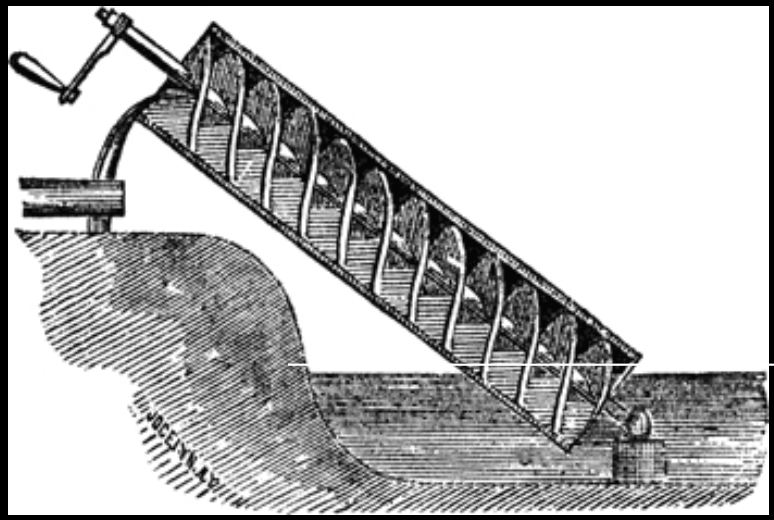
Mechanical Engineering

Mechanical Engineering



What is this machine, used for transferring water from a low-lying body of water into irrigation ditches known as?

Mechanical Engineering



What is this machine, used for transferring water from a low-lying body of water into irrigation ditches known as?

Archimedes' Screw.

Go Back to Topics

Environmental Science

Environmental Science

Geologists divide up the Earth's existence into slices of time called **epochs**, and a further subdivision called **stage/age**. We are currently in the **Holocene** epoch and the _____ Age. The _____ begins at 2250 BC, with a 200-year drought that impacted human civilizations in Egypt, Greece, Syria, Canaan, Mesopotamia, the Indus Valley and the Yangtze River Valley.

The name of this age was officially ratified by the **International Commission on Stratigraphy** in July 2018 along with the *Greenlandian* and the *Northgrippian*. Usually, the names are given after strategic points on earth called **Global Boundary Stratotype Section and Point**, from which the origin of the Age can be traced. _____ was named after a cave formation, which preserved amazing chemical changes throughout time.

Which age?

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Which age?

Environmental Science

Environmental Science

Meghalayan.

Go Back to Topics

Electrical Engineering

Electrical Engineering

X is well known for founding *digital circuit design theory* in 1937, when as a 21-year-old masters student at MIT, he wrote his thesis demonstrating that *electrical applications of Boolean algebra could construct any logical numerical relationship*.

However, that was just the beginning, **X** continued to work is several other areas of mathematics and engineering; also co-inventing a *wearable computer* (e.g., Apple Watch) and inventing a magnetic mouse, which appears to have been the first artificial learning device of its kind.

A unit, frequently used in *information theory* is named after him.

Who is **X**?

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A unit, frequently used in *information theory* is named after him.

Who is **X**?

Claude E. Shannon; One shannon is the information content of an event occurring when its probability is $\frac{1}{2}$.

Go Back to Topics

Business Administration

Business Administration

The _____ **effect** is a reaction in which individuals modify an aspect of their behavior in response to their awareness of being observed. The name comes from a now defunct **Western Electric** factory complex situated in **Cicero**, and is named after the original name of the town.

The studies were done in the 1920s, but the name came into use from 1958. There is a significant debate about the findings of the studies, which continue to this day.

Which effect?

Business Administration

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Which effect?

Hawthrone effect.

Go Back to Topics

Computer Science and Engineering

Computer Science and Engineering

Vinton Gray Cerf and **Robert Kane** are considered to be the '*fathers of* _____', for something that they developed together in 1974. In Cerf's own words, the motivation was the following:

> *This was a project that the American Defence Department sponsored and it was based on earlier results that they had gotten from the testing of packet switching within a network... they have different kinds of packet switch networks in different modalities with different speeds, different error rates, and different packet sizes. ... the motivation was essentially a funded research project from the Defense Department with an application in mind, specifically command and control.*

Fill in the blank.

Computer Science and Engineering

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Computer Science and Engineering

Computer Science and Engineering

The Internet.

Go Back to Topics

Mass Communication and Journalism

Mass Communication and Journalism

Which prize, established in 1952 with a donation from **Biju Patnaik** is given for *exceptional skill in presenting scientific ideas to lay people*?

And, who was the first winner?

(Half points for each part.)

Mass Communication and Journalism

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Kalinga Prize for the Popularization of Science; Louis de Broglie.

Go Back to Topics

English and Foreign Languages

English and Foreign Languages

Somnium is a novel written in 1608, in Latin, and eventually published in 1634. In the narrative, an Icelandic boy and his witch mother learn of an island named Levania (our Moon) from a daemon. It presents a detailed imaginative description of how the Earth might look when viewed from the Moon, and is considered the *first serious scientific treatise on lunar astronomy*. Carl Sagan and Isaac Asimov have referred to it as *one of the first works of science fiction*.

Who is the author?

English and Foreign Languages

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Who is the author?

Johannes Kepler.

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Molecular Biology and Biotechnology

Molecular Biology and Biotechnology

Who is the first author of this paper?

Gene 576 (2016) 593–602

Contents lists available at ScienceDirect

Gene

journal homepage: www.elsevier.com/locate/gene

Speciation of two gobioid species, *Pterogobius elapoides* and *Pterogobius zonoleucus* revealed by multi-locus nuclear and mitochondrial DNA analyses☆

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[a] [redacted] Tokyo 100-0001, Japan
[b] The University Museum, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
[c] Tokyo University of Agriculture, 1737 Funako, Atsugi-shi, Kanagawa 243-0034, Japan
[d] [redacted], Tokyo 100-8111, Japan
[e] Center for Information Biology, National Institute of Genetics, 1111 Yata, Mishima, Shizuoka 411-8540, Japan
[f] School of Life Sciences, Fudan University, SongHu Rd. 2005, Shanghai 200438, China
[g] The Institute of Statistical Mathematics, 10-3 Midori-cho, Tachikawa, Tokyo 190-8562, Japan
[h] The Kyoto University Museum, Kyoto University, Yoshida Honmachi, Sakyo-ku, Kyoto 606-8501, Japan
[i] Department of Molecular Life Science, Tokai University School of Medicine, 143 Shimokasuya, Isehara, Kanagawa 259-1193, Japan
[j] Computational Bioscience Research Center, Biological and Environmental Science and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal 23955-6900, Saudi Arabia

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Molecular Biology and Biotechnology

Molecular Biology and Biotechnology

Akihito, the Emperor of Japan.

Go Back to Topics

Food Engineering and Technology

Food Engineering and Technology

One of the decisive events in the history of food technology was **Y**, developed by **X**, who is now known as the *father of* **Y**.

X was a confectioner in France, and **X**'s fame and process was pushed by an award that Napoleon announced for food preservation in 1800. Although **X** didn't win it, but in 1810 **X** wrote a book describing the process. **X**'s method was so simple and workable that it quickly became widespread.

The **X** Award is given by the Chicago Section of the Institute of Food Technologists for preeminence in and contributions to the field of food technology, and is considered to be one of the highest honours in the field.

What is **Y** and who is **X**?

(Half points for each.)

Food Engineering and Technology

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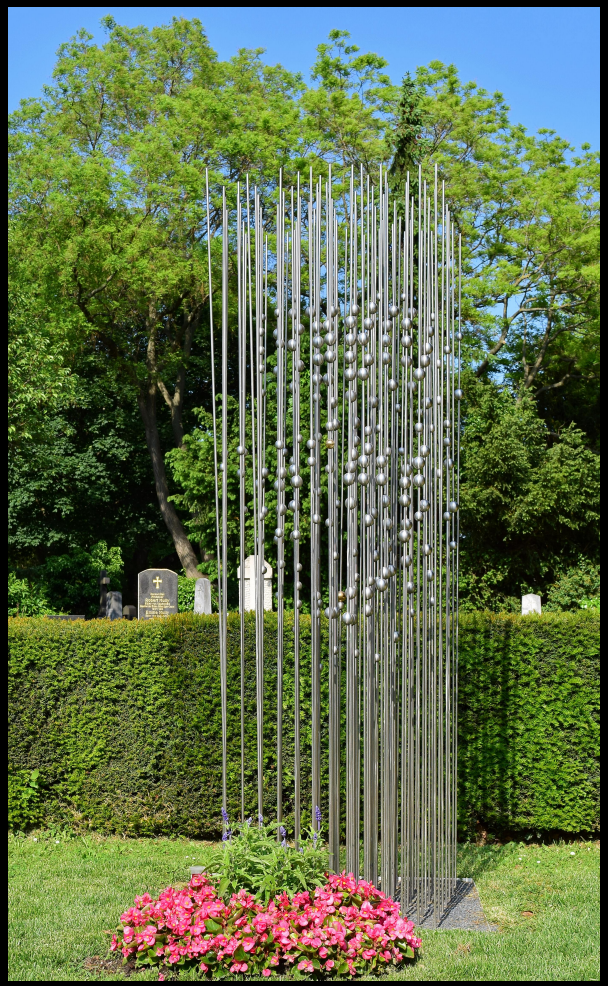
Food Engineering and Technology

Y=canning; X= Nicholas Appert.

Go Back to Topics

Electronics and Communications Engineering

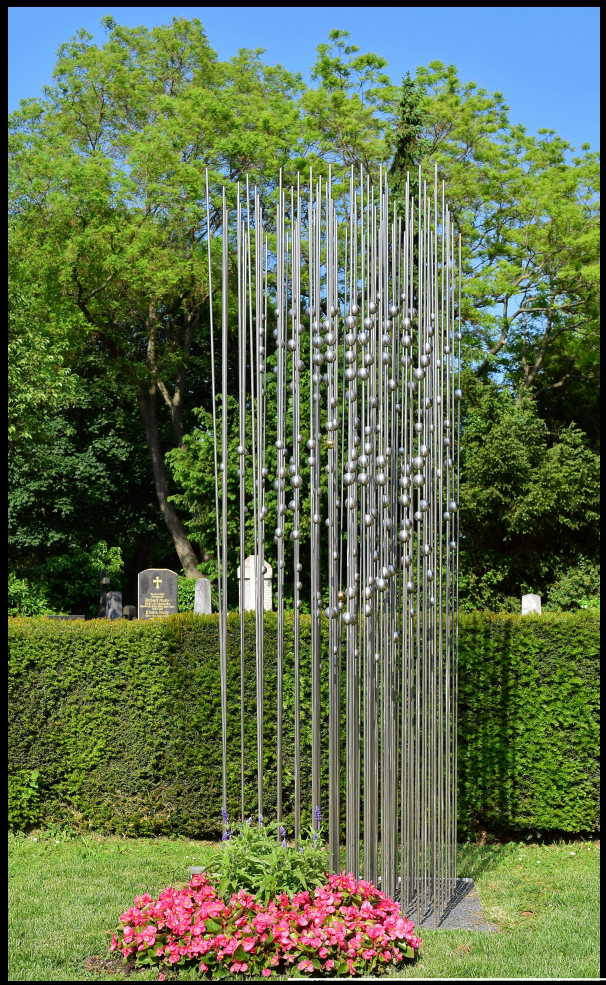
Electronics and Communications Engineering



This grave-side memorial at *Zentralfriedhof Wien* (Vienna Central Cemetery), incorporates 88 steel rods representing the 88 frequencies in **X**s patented *frequency hopping technology*. Those rods, when viewed from the right angle, generate an illusion of **X**s face.

Who is **X**, known mostly as a mid 20th century Hollywood actress?

Electronics and Communications Engineering



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Who is **X**, known mostly as a mid 20th century Hollywood actress?

Hedy Lamarr.

Go Back to Topics

Social Work

Social Work

X is a retired surgeon who has made it his mission to encourage people to go for **No Scalpel Vasectomy** (NSV). **X** uses religious texts to put forward his agenda for NSV and mainly targets the rural populace.

Although **X** has received several prestigious awards from many organizations, he was not a household name, until recently.

Woo is **X**?

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Dr. Illias Ali.

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Commerce

Commerce

The _____ Index is published by **The Economist** as an informal way of measuring the *purchasing power parity* (PPP) between two currencies and provides a test of the extent to which market exchange rates result in goods costing the same in different countries.

In 2018, to celebrate the 50th anniversary of _____, the manufacturer issued a currency named _____Coin.

Which index?

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In 2018, to celebrate the 50th anniversary of _____, the manufacturer issued a currency named _____Coin.

Which index?

Big Mac.

Go Back to Topics

Chemical Sciences

Chemical Sciences

X was accidentally discovered in 1938 by **Roy J. Plunkett** while he was working for **DuPont**. He was attempting to make a new chlorofluorocarbon refrigerant; a gas in the experiment's pressure bottle stopped flowing before the bottle's weight had dropped to the point signaling "empty". Plunkett became curious as to the source of the weight and found the bottle's interior coated with a waxy white material that was oddly slippery.

Analysis showed that it was a polymerized chemical, with the iron from inside the container having acted as a catalyst at high pressure. **Kinetic Chemicals** patented this new *plastic* in 1941, and registered the _____ trademark in 1945.

An early use was in the Manhattan Project as a material to coat valves and seals in the pipes holding highly reactive uranium hexafluoride.

What is **X**? And, fill in the blanks. (Half points for each part.)

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Chemical Sciences

X=Polytetrafluoroethylene; Teflon.

Go Back to Topics

Energy

Energy

X was charged with **tax fraud** and **selling adulterated tobacco**, and *was guillotined* in 1794. However, his death, no doubt tragic, is not so much remembered as his work is.

He did several pioneering work, but the most important was his 'disproof' of the **phlogiston** theory. However, he proposed another theory, _____ which is in itself obsolete now; but at that time produced many remarkable and correct scientific theories.

Who is **X** and what theory did he propose?

(No half points.)

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(No half points.)

Antoine-Laurent de Lavoisier; caloric theory.

Go Back to Topics

Physics

Ralph Alpher, then a PhD student, wrote the paper **The Origin of Chemical Elements**, with his supervisor **George Gamow** in 1948. This paper was important for the **Big Bang Theory** and it argued that the Big Bang would create hydrogen, helium and heavier elements in the correct proportions to explain their abundance in the early universe.

Although, not entirely correct; but the paper was important for several subsequent developments. Alpher, is however not given as much credit for this work as he deserved. But, this paper is perhaps one of the most talked about papers in whimsical circles. Why?

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Go Back to Topics

Cultural Studies

Cultural Studies

X was a famous Italian semiotician, philosopher and writer. One of his most famous books include _____ _____, an extremely popular scientific instrument, which appears quite often in museum displays as well as quizzes.

_____ _____ is named after a French physicist Léon _____. An exact replica of the first such instrument is on display at the **Panthéon** in **Paris**, which was also the site of _____'s historic experiment, to show a commonly known fact.

Who is **X**? What is the instrument, and what was the experiment about? (Half points for each part.)

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Who is **X**? What is the instrument, and what was the experiment about? (Half points for each part.)

X=Umberto Eco; Foucault's Pendulum, to show the rotation of the Earth.

Go Back to Topics

Sociology

Sociology

The **Matilda Effect** was first proposed by **Matilda Joslyn Gage** in her essay *Women as Inventor*. She cited several examples, most prominently of **Nettie Stevens, Maria Skodowska Curie, Lise Meitner, Marietta Blau, Rosalind Franklin**, and **Jocelyn Bell Burnell** to show this effect.

What is the Matilda effect?

Sociology

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What is the Matilda effect?

Bias against acknowledging the achievements of those women scientists whose work is attributed to their male colleagues.

Go Back to Topics

Education

Education

Jakow Trachtenberg was a Russian Jewish prisoner in a Nazi concentration camp. To keep his mind occupied during his imprisonment, he devised the **Trachtenberg system**.

The system is well-known to many of us by now. Other similar systems also exist, the most prominent being **X**. The name of **X** is heavily criticized and has nothing to do with what the name implies. The propaganda associated with **X**, has been debunked several times and yet, the name continues to be used widely.

What is **X**?

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What is **X**?

Vedic Mathematics.

Go Back to Topics

Hindi

Hindi

The name of this organic compound comes from a Hindi (and ultimately Sanskrit) word, which distinguishes the colour of a dye that is produced via reactions involving the compound.

Until the late $1880s$, there was no good synthetic option to manufacture this dye, and hence a large part of the world production came from India.

Which chemical compound, and what dye?

(No half points.)

Hindi

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Which chemical compound, and what dye?

(No half points.)

Aniline (from nili), Indigo dye.

Go Back to Topics

Civil Engineering

Civil Engineering

X is mostly known as a mathematician and physicist, but he did work in several branches of study, including civil engineering where he found a means of *calculating the load-carrying and deflection characteristics of beams*.

Much of the modern mathematical notations that we use can be traced back to **X**, whose collected works fill up more than 80 volumes. **X Identity** is perhaps the most well known mathematical formula.

Project X is a website dedicated to a series of computational problems intended to be solved with computer programs, needing less than one minute of CPU time.

Who is **X**?

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Project X is a website dedicated to a series of computational problems intended to be solved with computer programs, needing less than one minute of CPU time.

Who is **X**?

X=Leonhard Euler.

Go Back to Topics

Law

The bill #246 of the 1897 sitting of the **Indiana General Assembly** is notorious for trying to establish a certain *truth*. It was written by **Edward J. Goodwin**, an Indiana physician introduced by Taylor I. Record in the House under the long title *A Bill for an act introducing a new _____ truth and offered as a contribution to education to be used only by the State of Indiana free of cost by paying any royalties whatever on the same, provided it is accepted and adopted by the official action of the Legislature of 1897*.

Fortunately, the bill never became law, due to the intervention of Prof. C. A. Waldo of Purdue University, who happened to be present in the legislature on the day it went up for a vote. In fact, the *truth* alluded to in the title was already known to be *false*, due to the work of **Ferdinand von Lindemann** in 1882.

What exactly did the bill intend to show?

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Indiana Pi Bill

Goodwin thought that he could square the circle; also known as Indiana Pi Bill.

Indiana Pi Bill

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Go Back to Topics