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TEZPUR QUIZ ASSOCIATION

TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

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The Science Quiz

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QM: Dr. Manjil P. Saikia

(Ahmedabad University)

General Rules

- Use of electronic devices (except electronic wrist watches or medical gadgets) is forbidden throughout the quiz, for participants in the various stages.
- Failure to follow the above rule will result in immediate disqualification.
- We assume a basic knowledge of high school science and mathematics throughout the quiz.
- Dissent is encouraged, if it is logical and fact-based.
- Notwithstanding the above rule, the final decisions to be taken in this quiz rests with the quiz master.
- Science (more so, mathematics) tend to be exact, so should be your answers if you want points.
- The above rules apply throughout the quiz (both prelims and finals).

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Prelims

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Rules

- There are 20 questions in total, each carrying a maximum of 1 point. Some questions have more than one part, for which the marking scheme will be clearly mentioned in the slide.

- The prime numbered questions are starred in the prelims. They will decide ties. In case ties persist after taking into account the starred questions then the non-prime Fibonacci numbers (1 and 8) will decide the ties.

- If the range of the scores (highest score – lowest score) of the qualifying teams (top six from the prelims) is less than 6 then the scores will carry forward to the finals.

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All The Best

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Question 1

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Eratosthenes of Cyrene was a Greek polymath who is known for several things, most prominent among them being measuring the earth's circumference around 240 B.C. with an error on the real value between −2.4% and +0.8%. He was also the chief librarian of the great library of Alexandria.

How is he relevant for us in this quiz?

*Question 2

Identify this recent Nobel laureate.

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*Question 3

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X is a Fellow (Research) at Harvard Medical School. Born, brought up, and educated in India, X moved to the United States to pursue his PhD from the University of Massachusetts, Amherst. **X** works to engineer bone marrow stem cells (also called Hematopoietic stem cells, or HSCs) to cure genetic diseases of blood origin. **X** uses various technologies, including techniques he invented in his prior research, to engineer these HSCs. **X** is also the author of two books—a collection of short stories and a memoir—in his native language. His memoir depicts his extraordinary journey from a poor peasant's family in a far remote corner of India to the US and it is one of the highest sold books in his native language.

Who is **X**?

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Question 4

TEQUAS ANNUAL QUIZ FEST
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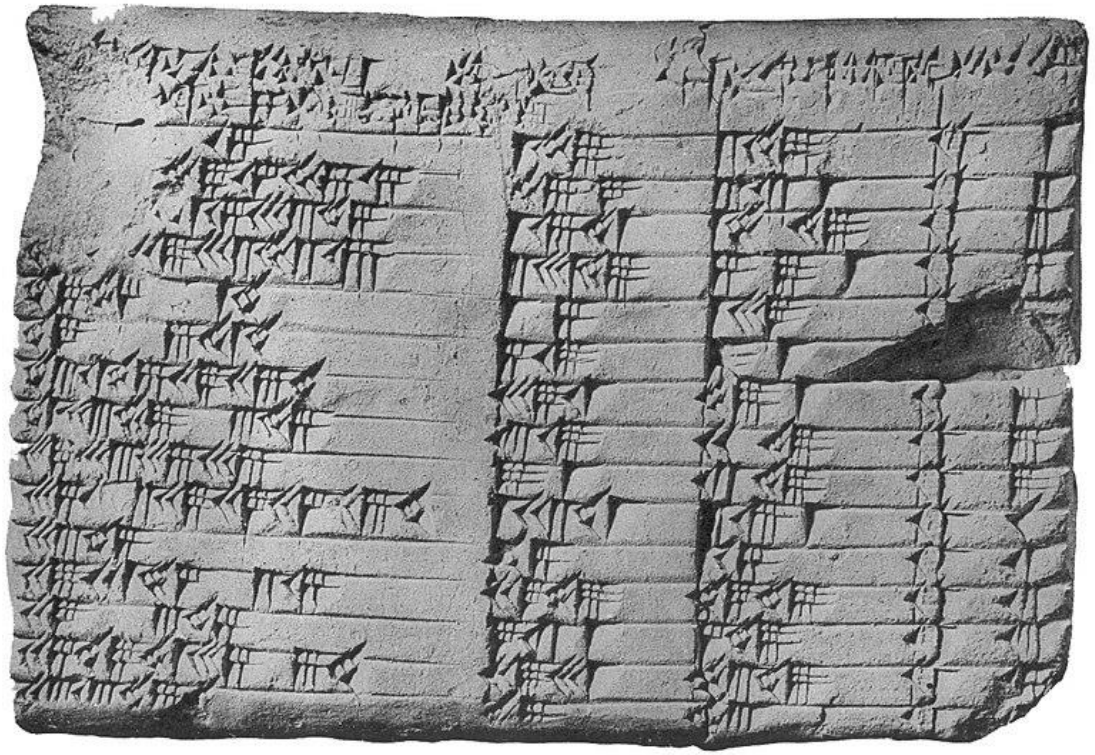
The image is of Plimpton 322, a Babylonian clay tablet dating to around 1800 B.C. containing one of the finest examples of Babylonian mathematics.

The tablet displays a list of triples written in cuneiform script.

Which mathematical theorem is verified with these triples?



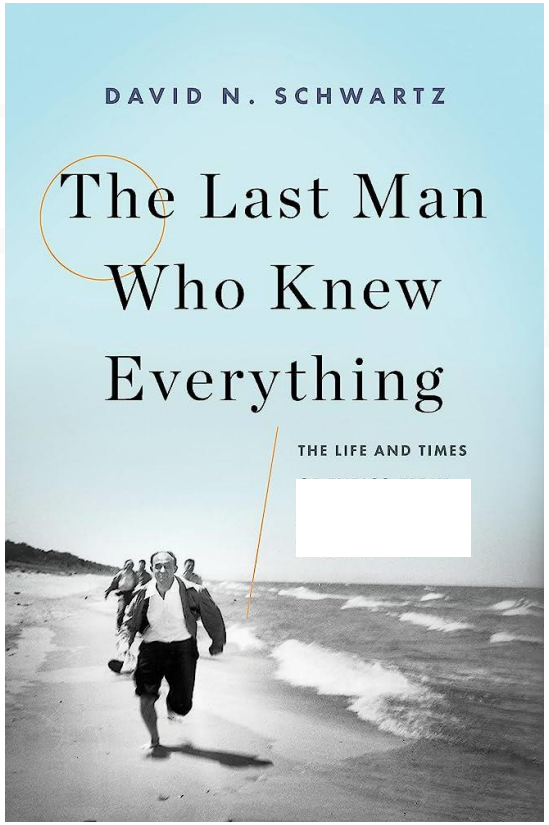
*Question 5

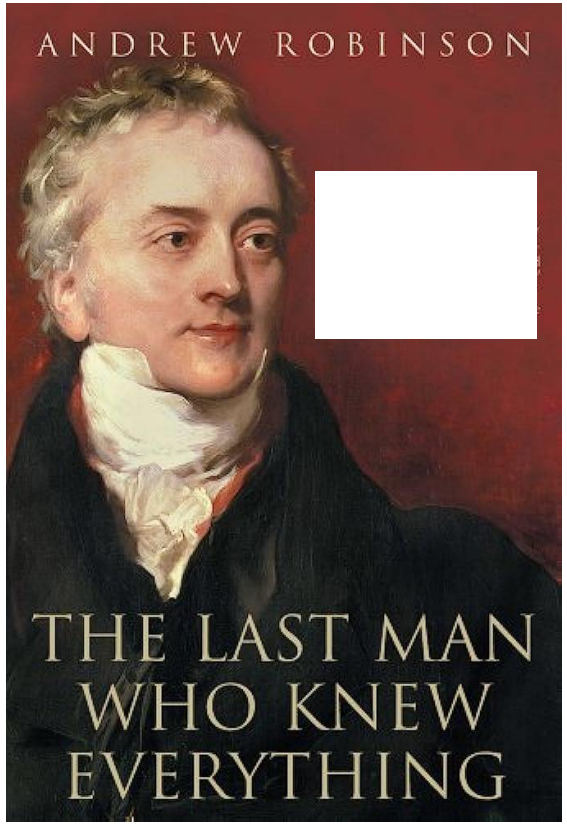
K. R. Parthasarathy was a famous Indian statistician who passed away recently. He was one of the most prominent mathematicians of India post independence and has a stellar legacy.

However, many non-mathematicians might mistake him for someone else due to several web publications mistakenly labelling him as X. Who?

Question 6

Two books with the same title, but about two different scientists. Identify both. **(0.5+0.5)**





*Question 7

Dr. Cyriac Abby Phillips goes by the name of _____ on social media. He is a hepatologist who has devoted a significant amount of his time in debunking pseudoscience related to medicine, in particular about the ill effects of various homeopathic and ayurvedic drugs that are sold unregulated in most of India.

Because of his work on social media he has had to face online vitriol and abuse from homeopathic and ayurvedic practitioners as well as the Indian far-right ecosystem.

What goes in the blank?

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Question 8

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The first person to get a doctorate from Assam was X, who got his degree from the University of Heidelberg in 1890, at the age of 36. Not only, was he the first chemist from Assam, but his published work proceeded that of Sir P. C. Ray as well, commonly recognised as the father of chemistry in India. X's main area was stereochemistry and at Heidelberg, he worked with prominent chemist Viktor Meyer, and might have even met Robert Bunsen, among others. Unfortunately for Assam, he died shortly after his doctorate in 1895.

Who is X, whose family included several Assamese stalwarts, among whom his father is called the 'father of Assamese prose'?

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Question 9

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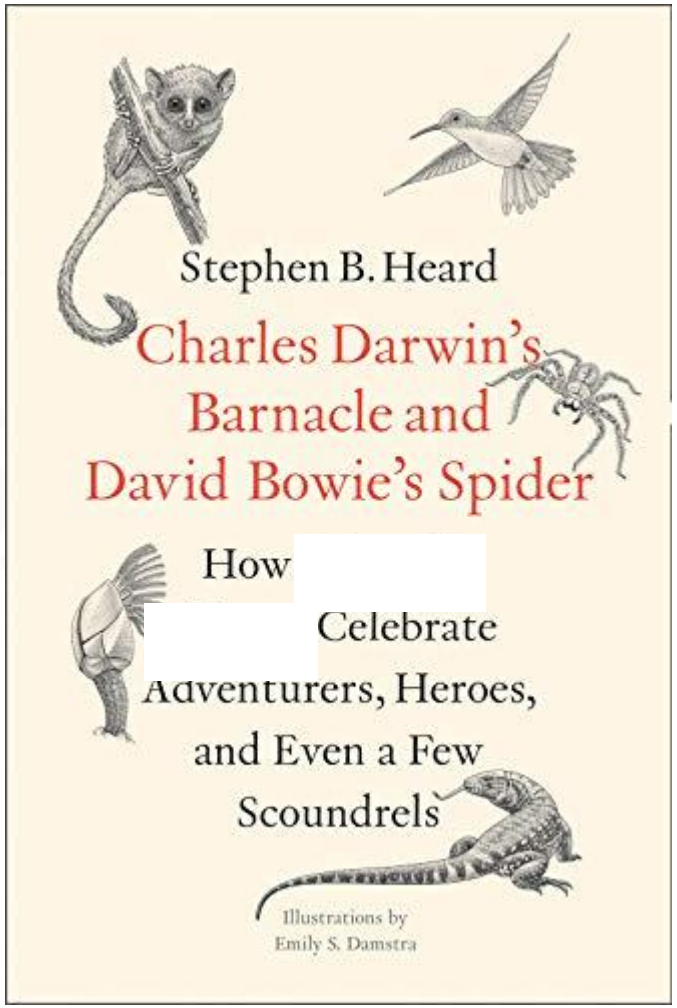
In a small town called Laboc (also spelled Labac), about 32 km from Silchar, X started his laboratory just months after his pioneering work on Y. The microscope and chair that X used are still preserved in the Laboc Tea Estate Hospital, including some drawings made by X.

X was also very interested in epidemiology, and this work resulted in a great mathematical interest which led X to make material contributions to both pure and applied mathematics.

Identify X and Y. **(0.5+0.5)**

Question 10

What are being referred to here?



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*Question 11

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X Y is a simple and low-cost way to remove A and B from water. A and B combined gives the word X and Y is the word for removal. A occurs in combination with many metals, but also on its own and is considered to be seriously harmful for humans in any form. A toxicity is quite prevalent in India and can cause cancers of several forms. B is, by mass, the most common element on Earth. Unlike A, B is an essential requirement for life on Earth.

What is X Y, developed in-house at Tezpur?

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Question 12

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This is the back-end infrastructure which implements the HTCPCP (protocol) using a teapot and a Raspberry Pi.

Which HTTP error message results when the server is not able to implement this protocol?

*Question 13

In ChatGPT, what does GPT stand for?

Question 14

_____’s 1956 experiment that disproved the "law of parity conservation,” once considered an immutable law of physics is one of the most glaring omissions from the Nobel prize committee. The 1959 Nobel Prize was awarded to T-D. Lee and C. N. Yang whose theories were validated first by what became known as the “_____ experiment”.

In 2021, the US Postal Service issued a stamp in _____’s honor wherein she became only the eight physicist to be honored such.

Who is she?

Question 15

What persisting pseudoscientific controversy first surfaced due to this scientific paper published in The Lancet, but later retracted?

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Question 16

On April Fools Day, 2014 the American Physical Society (APS) announced the following:

*APS is proud to announce a new open access initiative designed to further extend the benefits of open access to a broader set of authors. The new policy, effective today, makes all papers authored by _____ freely available. …….. Not since **X** has there been an opportunity like this for _____ in physics.*

Fill in the blanks, and who is **X**? **(0.5+0.5)**

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*Question 17

TEQUAS ANNUAL QUIZ FEST
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Turbulence is a very complicated mathematical concept to understand. It is characterized by chaotic changes in pressure and flow velocity. Turbulence is commonly observed in everyday phenomena such as surf, fast flowing rivers, billowing storm clouds, or smoke from a chimney, and most fluid flows occurring in nature and created in engineering applications are turbulent.

Which famous piece of artwork shows one of the best such depictions of this phenomenon?

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Question 18

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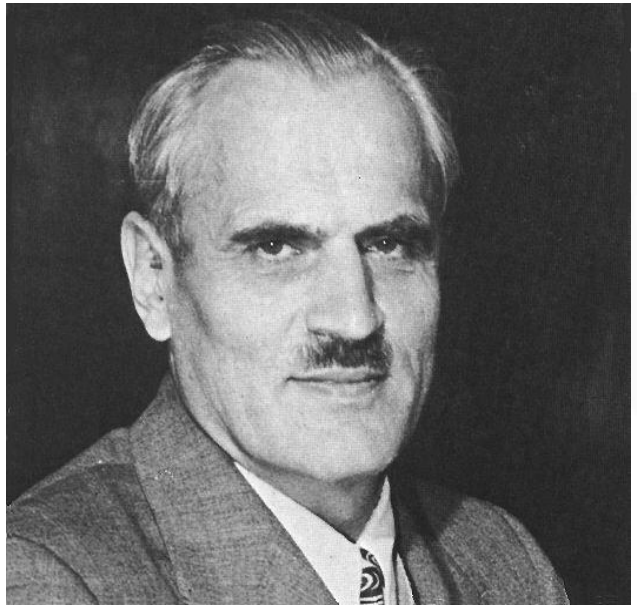
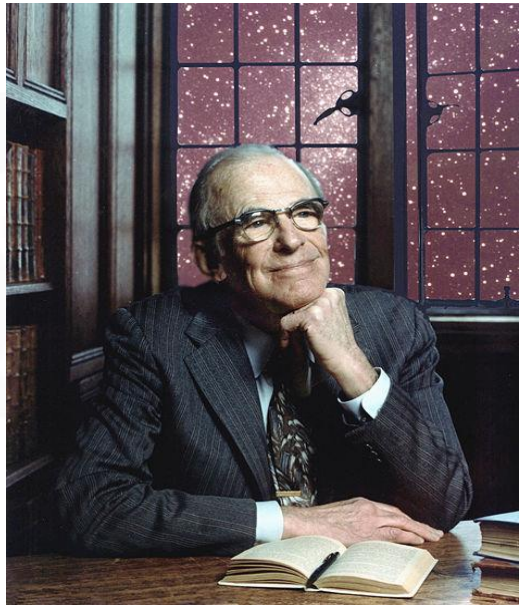
Who has been added to this illustrious list?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The **X Tie Club** was an informal scientific club of select scientists who were interested in how proteins were synthesised from genes, specifically the genetic code. It was created by George Gamow in 1954. The club consisted of 20 full members, each representing an **Y**, and four honorary members, representing the four **Z**s.

What are **X**, **Y** and **Z**? **(0.5 for X, 0.25 each for Y and Z)**

Question 20

Whose name goes in the blank?

What would you have thought, _____,
If instead you dropped cows and did say, "Oh!
To lessen the sound
Of the moos from the ground,
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Recap

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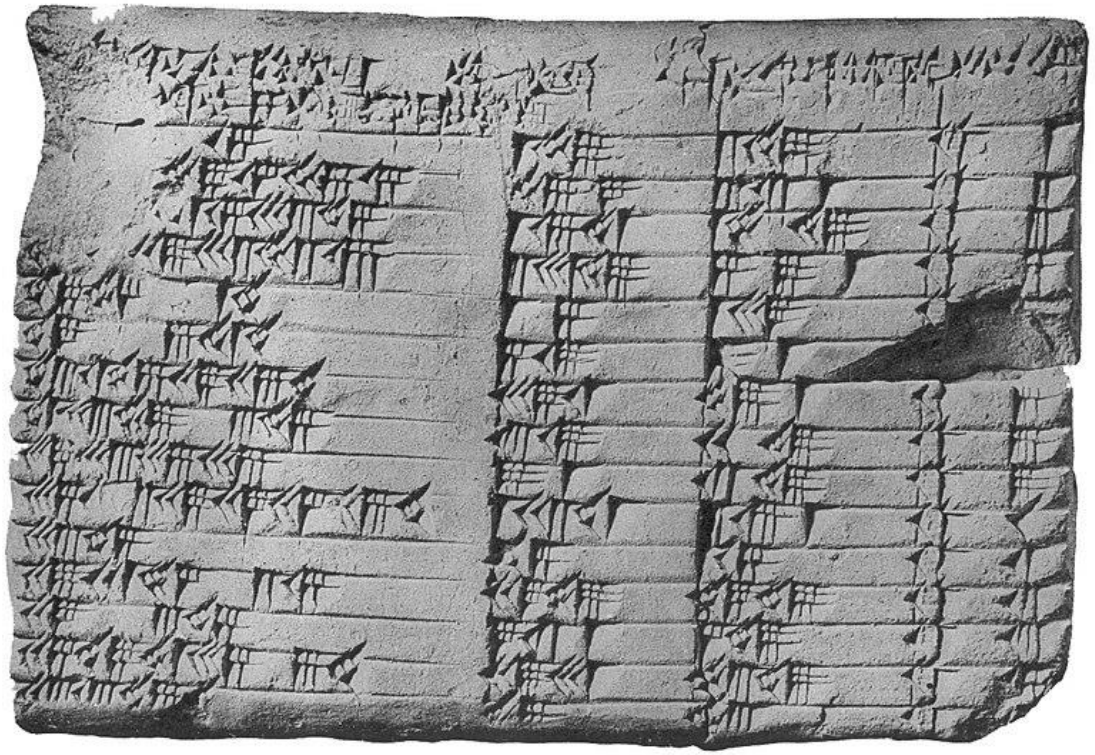

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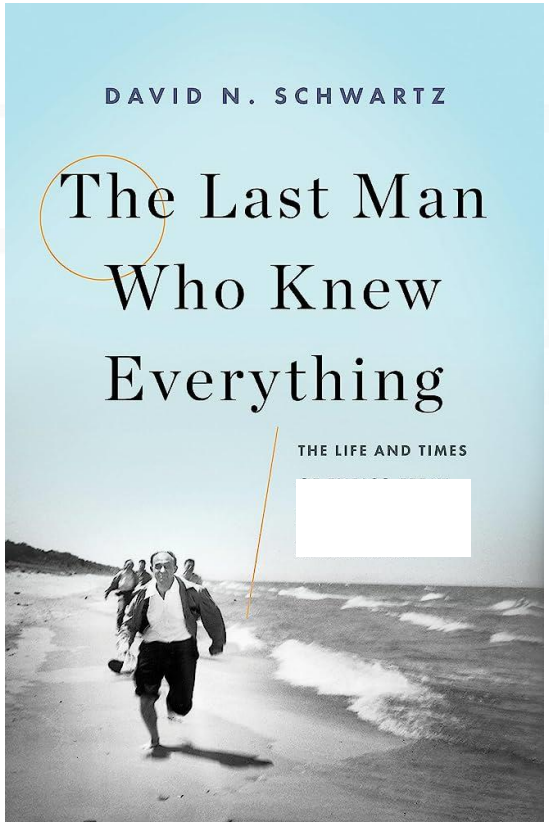

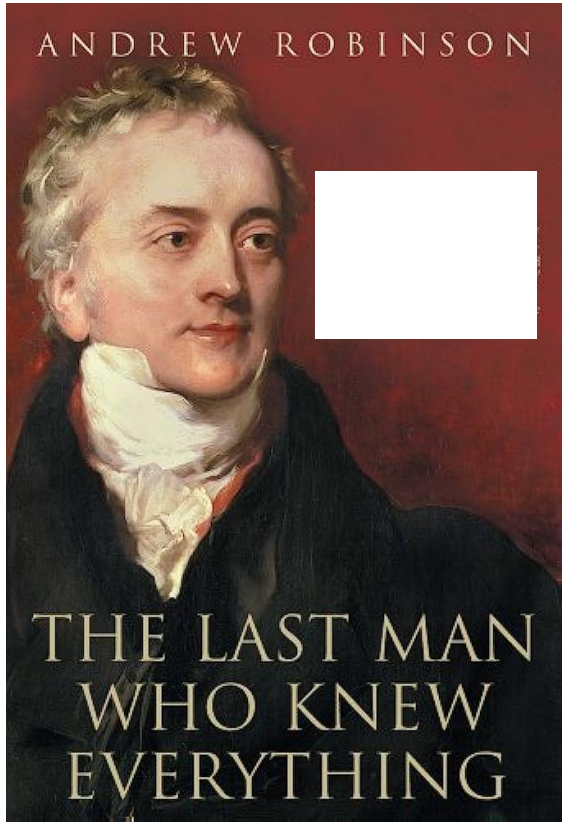

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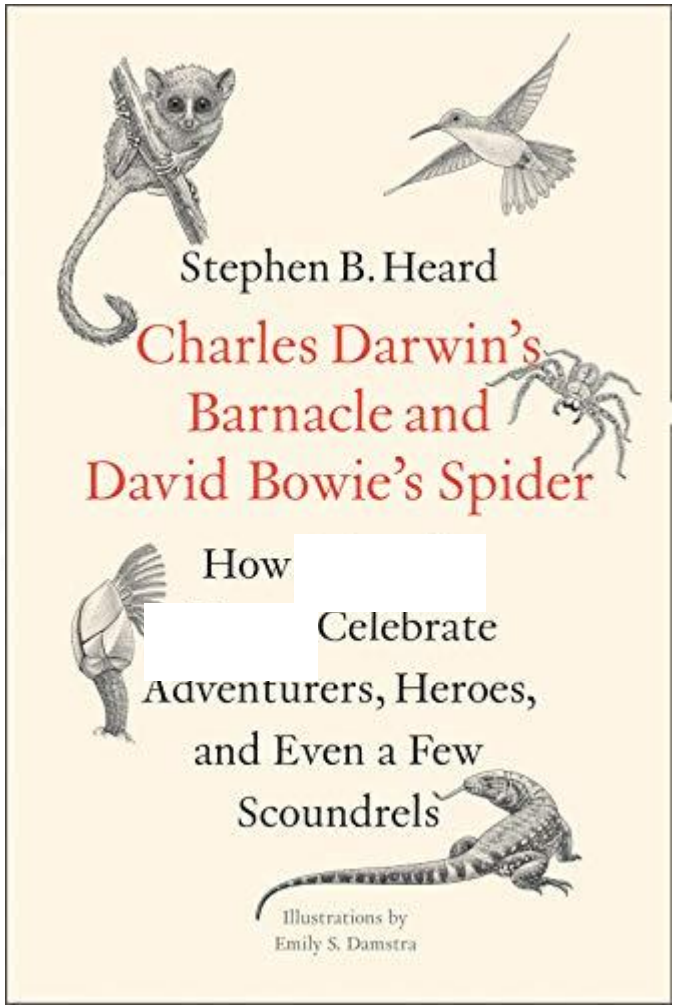

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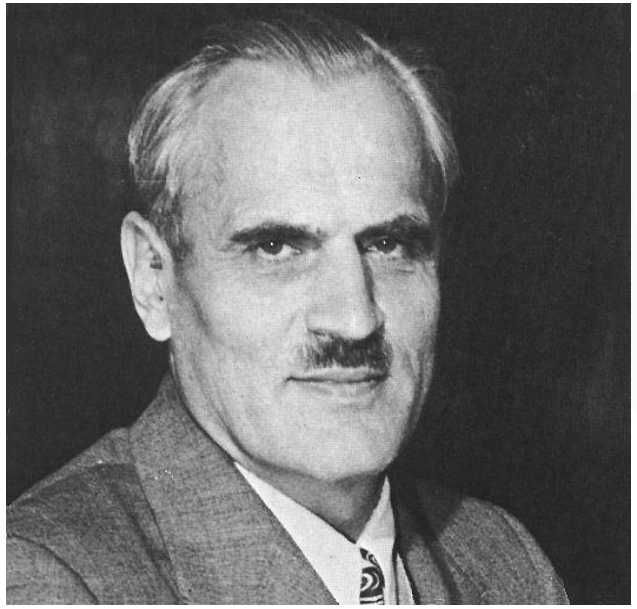
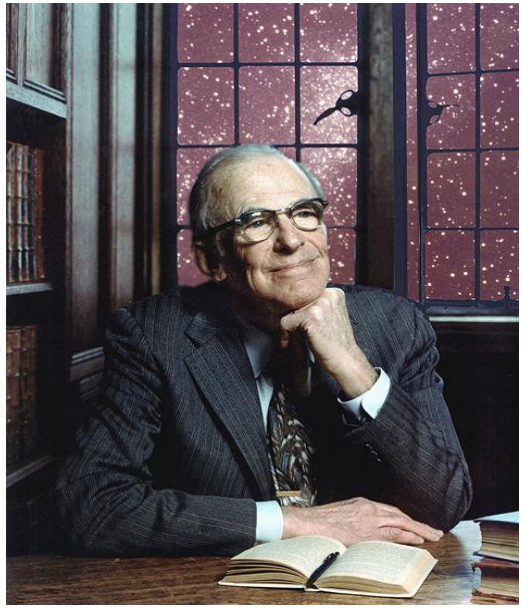


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Answers

TEQUAS ANNUAL QUIZ FEST
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Question 1

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How is he relevant for us in this quiz?

The Sieve of Erathosthenes, which sieves out the prime numbers (starred questions).

*Question 2

Identify this recent Nobel laureate.

Svante Paabo

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*Question 3

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Rubul Mout

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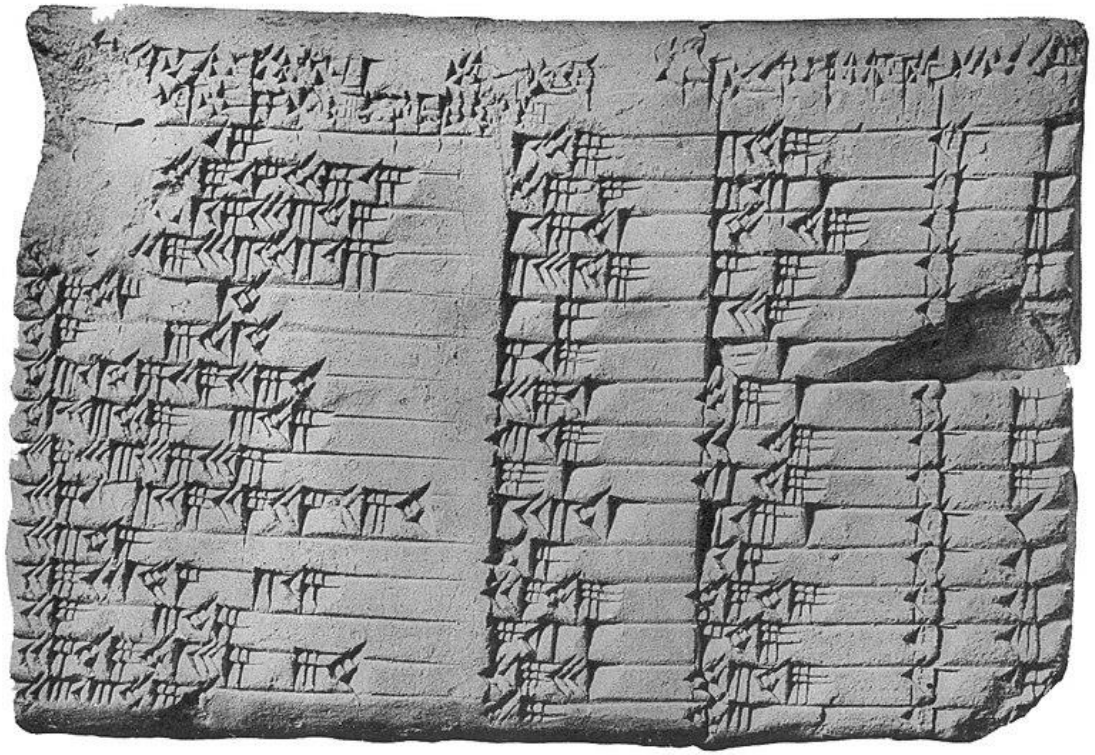

Pythagorean Theorem (or, Pythagorean triples)

*Question 5

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S. Ramanujan

Question 6

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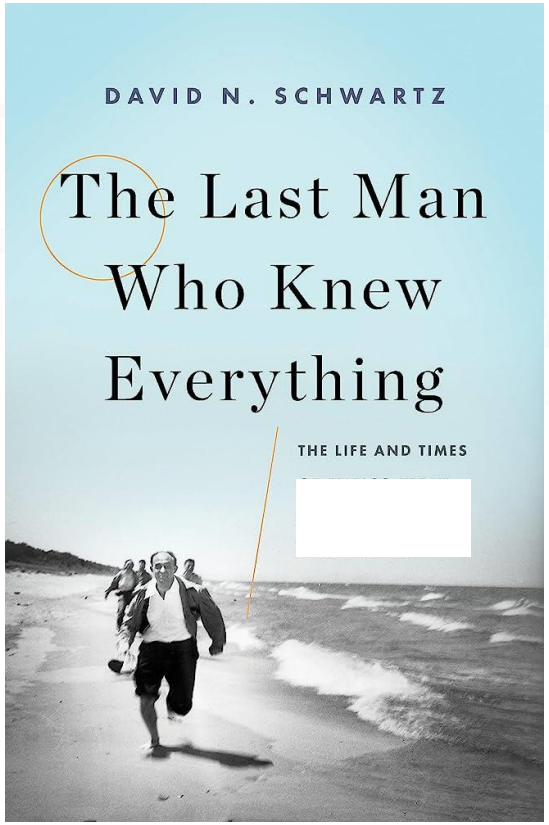

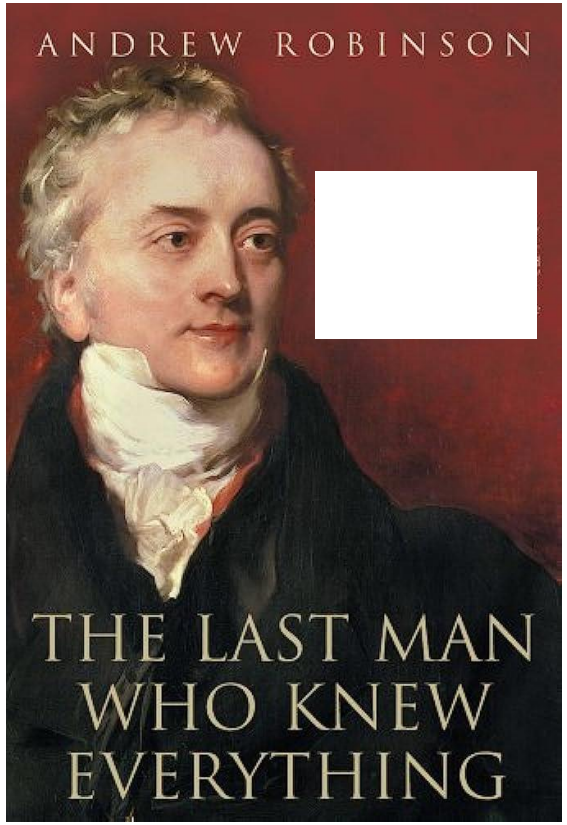

Enrico Fermi & Thomas Young

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What goes in the blank?

TheLiverDoc

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Radhikaram Dhekial Phookan

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Identify X and Y. **(0.5+0.5)**

Sir Ronald Ross & Malaria

Question 10

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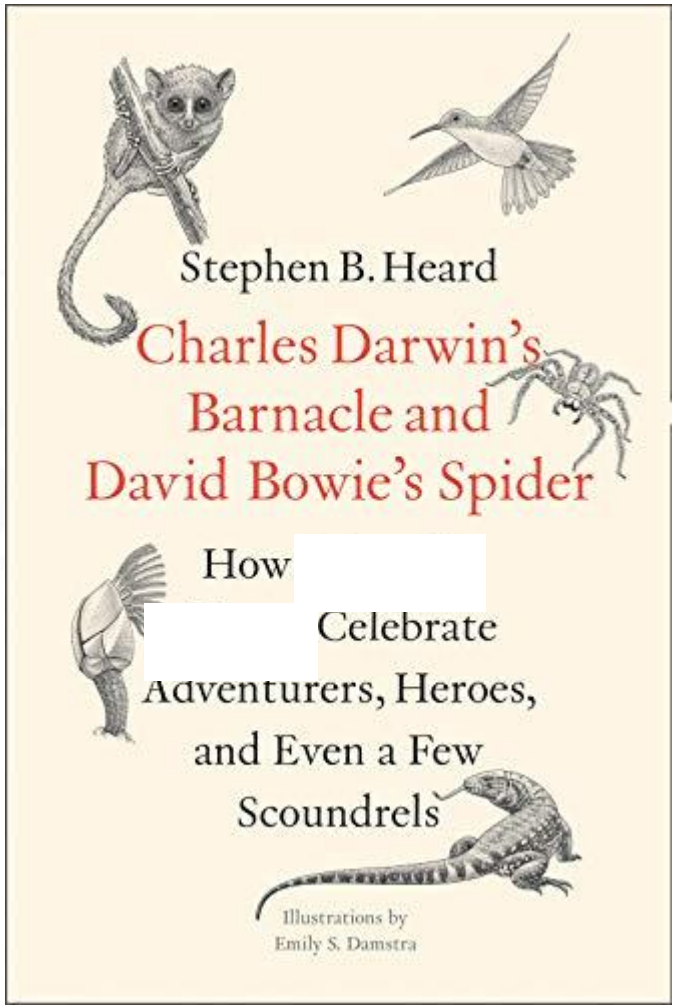

Scientific Names

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418 I’m a teapot error

*Question 13

In ChatGPT, what does GPT stand for?

Generative Pre-Trained Transformer

Question 14

_____’s 1956 experiment that disproved the "law of parity conservation,” once considered an immutable law of physics is one of the most glaring omissions from the Nobel prize committee. The 1959 Nobel Prize was awarded to T-D. Lee and C. N. Yang whose theories were validated first by what became known as the “_____ experiment”.

In 2021, the US Postal Service issued a stamp in _____’s honor wherein she became only the eight physicist to be honored such.

Who is she?

Chien-Shiung Wu

Question 15

What persisting pseudoscientific controversy first surfaced due to this scientific paper published in The Lancet, but later retracted?

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Vaccines cause autism

Question 16

On April Fools Day, 2014 the American Physical Society (APS) announced the following:

*APS is proud to announce a new open access initiative designed to further extend the benefits of open access to a broader set of authors. The new policy, effective today, makes all papers authored by _____ freely available. …….. Not since **X** has there been an opportunity like this for _____ in physics.*

Fill in the blanks, and who is **X**? **(0.5+0.5)**

Cats/Felines, & Schrodinger

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*Question 17

TEQUAS ANNUAL QUIZ FEST
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Turbulence is a very complicated mathematical concept to understand. It is characterized by chaotic changes in pressure and flow velocity. Turbulence is commonly observed in everyday phenomena such as surf, fast flowing rivers, billowing storm clouds, or smoke from a chimney, and most fluid flows occurring in nature and created in engineering applications are turbulent.

Which famous piece of artwork shows one of the best such depictions of this phenomenon?

The Starry Night by Vincent van Gogh

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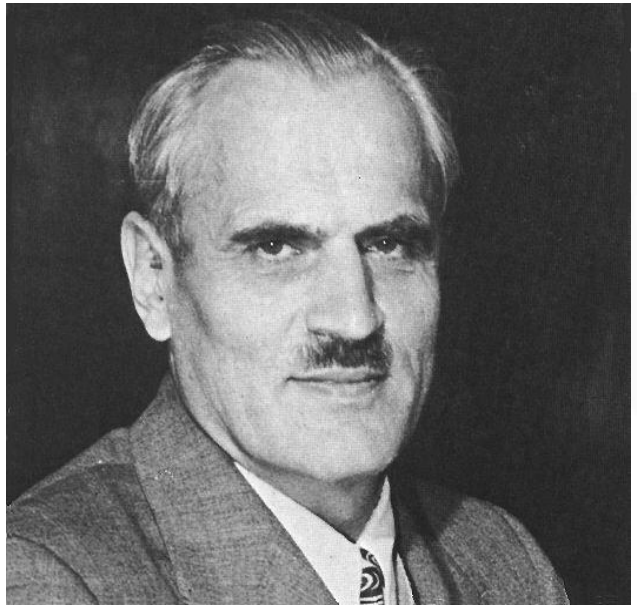
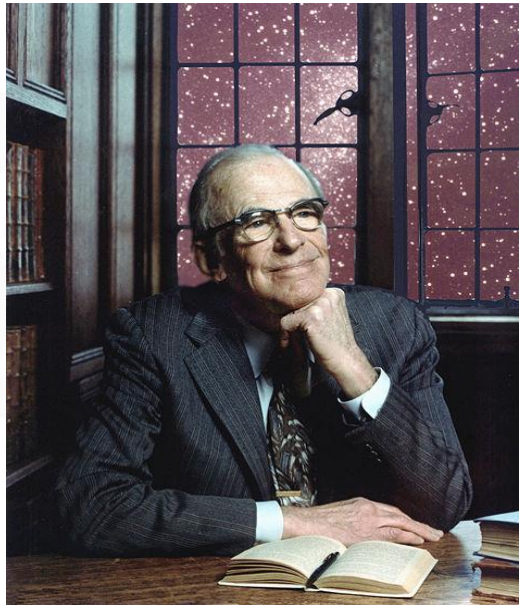
Question 18

TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

Who has been added to this illustrious list?


James Webb

Hubble, Compton, Spitzer, Chandra

*Question 19

The **X Tie Club** was an informal scientific club of select scientists who were interested in how proteins were synthesised from genes, specifically the genetic code. It was created by George Gamow in 1954. The club consisted of 20 full members, each representing an **Y**, and four honorary members, representing the four **Z**s.

What are **X**, **Y** and **Z**? **(0.5 for X, 0.25 each for Y and Z)**

X=RNA, Y=amino acids, Z=nucleotides

Question 20

Whose name goes in the blank?

What would you have thought, _____,
If instead you dropped cows and did say, "Oh!
To lessen the sound
Of the moos from the ground,
They should fall not through air but through mayo!”

Galileo

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21 | 22 | 23 JULY

Finals

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Rules

TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

- We will follow infinite bounce/pounce format (except for the written rounds).
- Each question carries a maximum of 1 point, for more than one part answers, the marking scheme will be mentioned in the slides.
- For direct questions the marking scheme is +1/-0.
- For pounce the marking scheme is +1/-1.

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All the best

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Question 1

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In 2005, a paper titled '**Rooter: A Methodology for the Typical Unification of Access Points and Redundancy**' *written* by three MIT students Jeremy Stribling, Dan Aguayo and Max Krohn (cofounder of OKCupid) was accepted for the World Multiconference on Systemics, Cybernetics and Informatics (WMSCI).

WMSCI however withdrew the team's invitation to attend the conference and present the paper. Not to be deterred, the students raised $2,500 to travel to Orlando, Florida, where they rented out a room inside the conference space to hold their own "session" of talks, which went viral.

Why did WMSCI withdraw the team's paper?

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The team were the inventors of SciGen, and their paper was a randomly generated paper o gibberish.

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Question 2

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The **X Principle** explains why topspin imparted to a tennis ball makes it descend faster than a ball that's hit without spin. It also helps explain how an aircraft's wing generates the force needed to lift a plane into the air. The Principle is named after D. **X**, who discovered this relationship in the 1730s. When he happened upon the Principle, he found ways to use it in real life, devising an instrument to measure blood pressure, for example, that worked because of his Principle.

Which Principle?

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The Bernoulli Principle

Question 3

Homo naledi is one of the most recently discovered species of the genus Homo. The word naledi means star in the Sotho language, and was chosen because the species was discovered in the Rising Star Cave in 2013.

A series of very recent papers (June 2023) suggest, that these small-brained human relatives practiced something in the tight passageways of the vast limestone cave system in South Africa where they were discovered. Some of them etched cave walls with crosshatches and others cooked small animals, more than 100,000 years before such practices emerged in modern humans.

Which practice that was previously thought to have been first done by a modern human about 78,000 years ago in a cave in Kenya?

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Burying the deal/funerals.

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Question 4

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One of the earliest usages of **X** was in 2nd century in Ptolemy's Almagest to represent a zero or an empty quantity. Another usage of **X** was in a 1976 paper by the famous computer scientist Donald Knuth, who used the **Big X** notation to discuss growth of functions. But the usage in mathematics didn't stick.

However, the most famous usage of **X** is quite recent where **X** skipped ahead of two of its neighbors because one of them was too close to a word used to describe itself and the other one was too close to the name of a current politician.

What is **X**?

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Omicron, skipped ahead of Nu (too close to the word ‘new’) and Xi (too similar to the Chinese president)

Question 5

An in-depth analysis of exposure to infectious agents

Wouter Graumans [a], William J.R. Stone [b], Teun Bousema [a,b,*]

[a] Department of Medical Microbiology & Radboud Center for Infectious Diseases, Radboud University Medical Center, Nijmegen, the Netherlands
[b] Department of Infection Biology, Faculty of Infectious and Tropical Diseases, London School of Hygiene & Tropical Medicine, London, United Kingdom

ARTICLE INFO

Keywords:
Travel medicine
Infectious diseases

ABSTRACT

Global travelers, whether tourists or , are exposed to a smörgåsbord of infectious agents. We hypothesized that agents pre-occupied wit their peril, fail to correctly prioritize travel medicine. To examine our hypothesis, we examined adherence to international travel advice during the 86 international journeys that was observed to undertake in spanning 1962–2021. Scrutinizing these missions involved ~3113 min of evening hours per author that could easily have been spent on more pressing societal issues t

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No time to die: An in-depth analysis of James Bond's exposure to infectious agents

Wouter Graumans [a], William J.R. Stone [b], Teun Bousema [a,b,*]

[a] Department of Medical Microbiology & Radboud Center for Infectious Diseases, Radboud University Medical Center, Nijmegen, the Netherlands
[b] Department of Infection Biology, Faculty of Infectious and Tropical Diseases, London School of Hygiene & Tropical Medicine, London, United Kingdom

ARTICLE INFO

Keywords:
Travel medicine
Infectious diseases
Sexual health
Counterterrorism
Espionage

ABSTRACT

Global travelers, whether tourists or secret agents, are exposed to a smörgåsbord of infectious agents. We hypothesized that agents pre-occupied with espionage and counterterrorism may, at their peril, fail to correctly prioritize travel medicine. To examine our hypothesis, we examined adherence to international travel advice during the 86 international journeys that James Bond was observed to undertake in feature films spanning 1962–2021. Scrutinizing these missions involved ~3113 min of evening hours per author that could easily have been spent on more pressing societal issues. We uncovered above-average sexual activity, often without sufficient

Question 6

Laura X was one of the first European women to earn a PhD, and the first to do in science. She has many firsts to her credit, becoming at one point the highest salaried employee at the University of Bologna. She shares her last name with an Indian stand-up comedian.

Her major work was in understanding and teaching Newtonian mechanics and **Y electricity**, a theory of electricity named after Y which proposed in very simple terms, that electricity should be thought of as the movement of a single liquid. A body would show signs of electricity when it held either too much, or too little of this liquid.

Identity the surname X and the scientist Y. **(0.5+0.5)**

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X=Bassi
Y=Benjamin Franklin

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Scores

Question 7

We know about **X**'s interests and innovations in several areas, but usually his work with concrete is seldom mentioned. **X** founded the Portland Cement Company in 1899 who supplied the concrete for the construction of Yankee Stadium in 1922, but went bankrupt a few years later.

X patented a device in 1917 whose description was "*The object of my invention is to construct a building of a cement mixture by a single molding operation, all its parts, including the sides, roofs, partitions, bath tubs, floors, etc., being formed of an integral mass of a cement mixture*." This resulted in a new kind of home with various benefits, some of the concrete houses thus built still stand in the US.

Who is **X**?

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Thomas A. Edison

Question 8

Who is he and what is he holding?

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Manu Prakash, holding a (unassembled) foldscope

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Question 9

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X is almost a regular fixture of science quizzes (appearing in **Y**), but usually not in the format that they are appearing in this question.

X is identified by something which is eponymous with the name of **X**. The name **X** is widely used in cyber security and is usually attributed to a person who violates laws for nefarious reasons.

X aspires to be a ‘classhole’, or a classy asshole and tries very hard to achieve this goal throughout.

Who/what are X and Y? (0.5+0.5)

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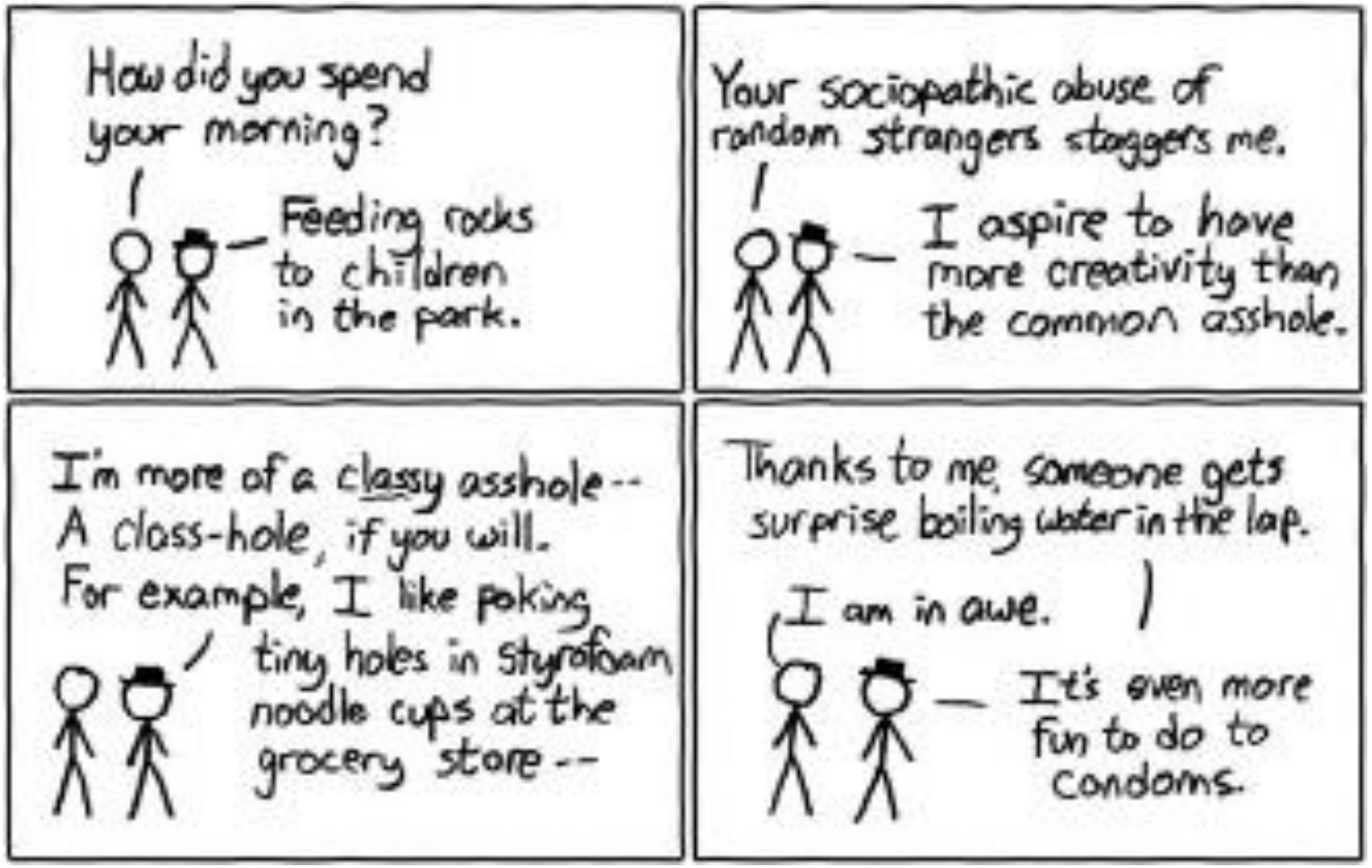
X=Black Hat, Y=xkcd



Question 10

Gabrielle _____ was one of the most influential anatomists of the 16th century. His work mainly dealt with the anatomy of the head, discovering the smallest bone of our bodies in our ears (but was not the one who got priority for this discovery). He was also considered to be an authority in the field of sexuality. He was the first person to describe a condom in writing.

His name is remembered by high-school students today due to a pair of anatomical objects in the female body which is essential for human reproduction. Who is he or what is named after him in the female reproductive system?

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Falloppio/Fallopian tubes

Question 11

Carl Wilhelm Scheele is best known today as the person who didn't get credit for discovering **X** because he published it later than **Y**. Issac Asimov called him "*hard-luck Scheele*" because he made a number of chemical discoveries that were later credited to others.

Scheele's study of **X** was prompted by a complaint by Torbern Olof Bergman who informed Scheele that the saltpeter he had purchased from Scheele's employer, after long heating, produced red vapors when it came into contact with acetic acid. Scheele's quick explanation was that the saltpeter had absorbed *phlogiston* with the heat and gave off a new *phlogisticated gas* as an active principle when combined with an acid.

What is **X** and who is **Y**? (0.5+0.5)

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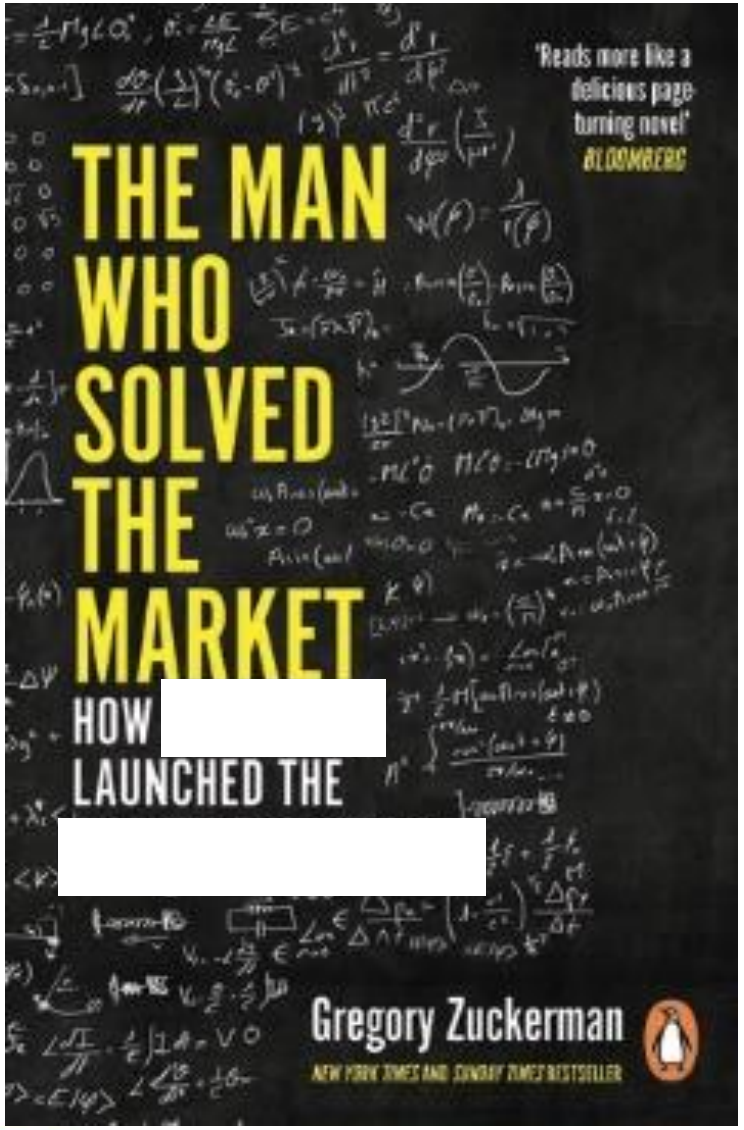
X=Oxygen, Y=James Priestley

Question 12

Identify the blanked out words.
(0.5+0.5)



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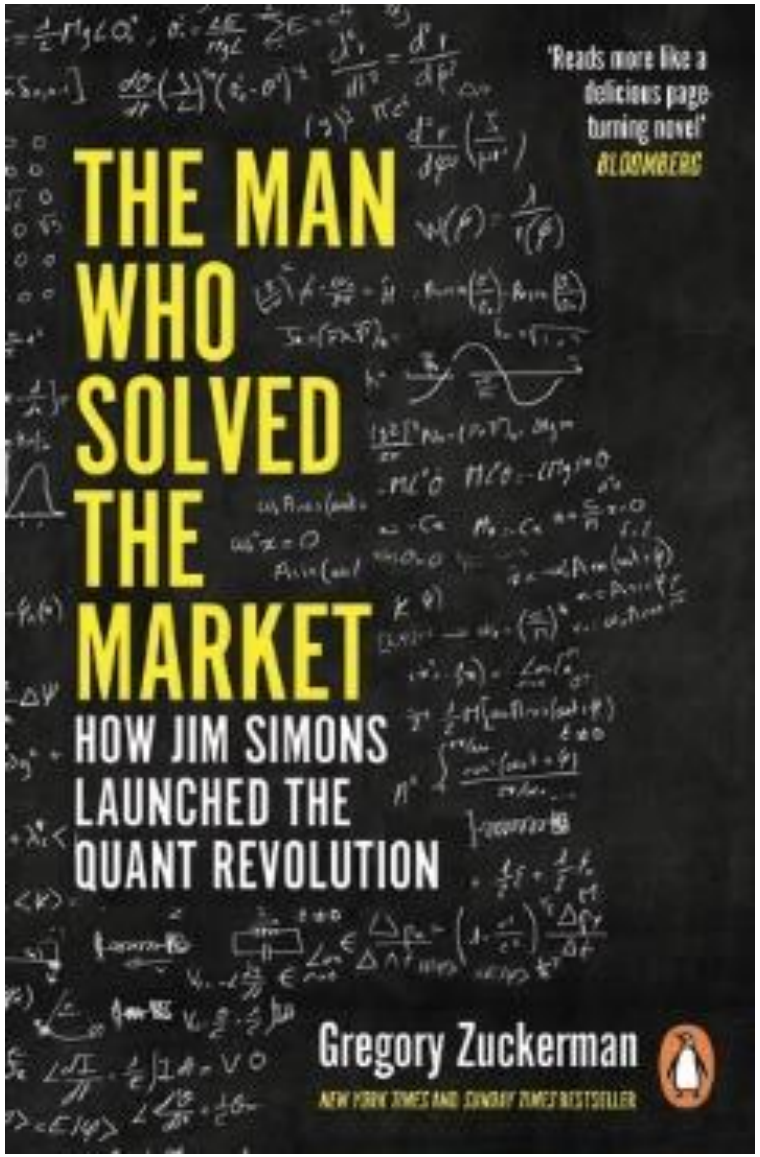
'Reads more like a delicious page turning novel'
BLOOMBERG
THE MAN WHO SOLVED THE MARKET
HOW JIM SIMONS LAUNCHED THE QUANT REVOLUTION
Gregory Zuckerman
NEW YORK TIMES AND SUNDAY TIMES BESTSELLER

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Scores

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Written Round

TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

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Rules

TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

- There are five questions, all written.
- Each correct answer fetches 1 point.
- The answers are connected with a particular theme.
- Identifying the theme correctly fetches 1 point.
- Identifying how each answer is connected with the theme fetches 1 point each (so a maximum of 5 points). So, a total of 11 (5+1+5) points can be claimed in this round.

Question 13

_____ are shelled cephalopods that died out about 66 million years ago. Before they were properly understood, one of the explanations for them was that they were coiled-up snakes that had been turned to stone, earning them the nickname *'snakestones'*.

What?

Question 14

The _____ is a hypothetical all-encompassing theoretical framework of physics that fully explains and links together all aspects of the universe. Among the several leading physicists who have worked on this was also Albert Einstein.

What?

Question 15

Taken from Wikipedia, which word is blanked out?

The Side State in Side, Turkey

The of Ephesus

Tlos southern Turkey

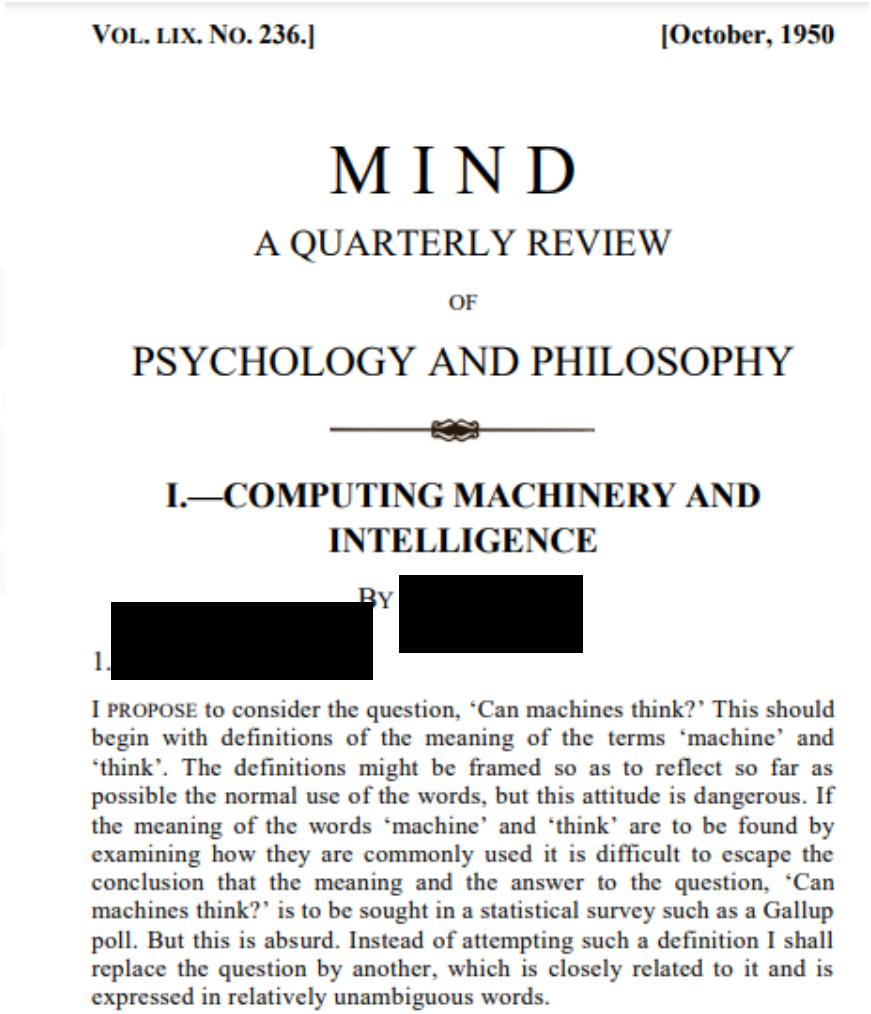
The of the Competaliasts on Delos, Greece

Remains of the Roman built in Athens during the Roman period

The of Hierapolis, Turkey

Question 16

What is the title of the first section?



VOL. LIX. NO. 236.] [October, 1950

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—COMPUTING MACHINERY AND INTELLIGENCE

BY

I. [redacted]

I PROPOSE to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'. The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words 'machine' and 'think' are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, 'Can machines think?' is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a definition I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words.

Question 17

Which mathematical symbol, first used in its current form by John Wallis is also used by the autism rights movement as well as several brands such as Fujitsu and the 2022 Football World Cup?

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TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

Recap

Question 13

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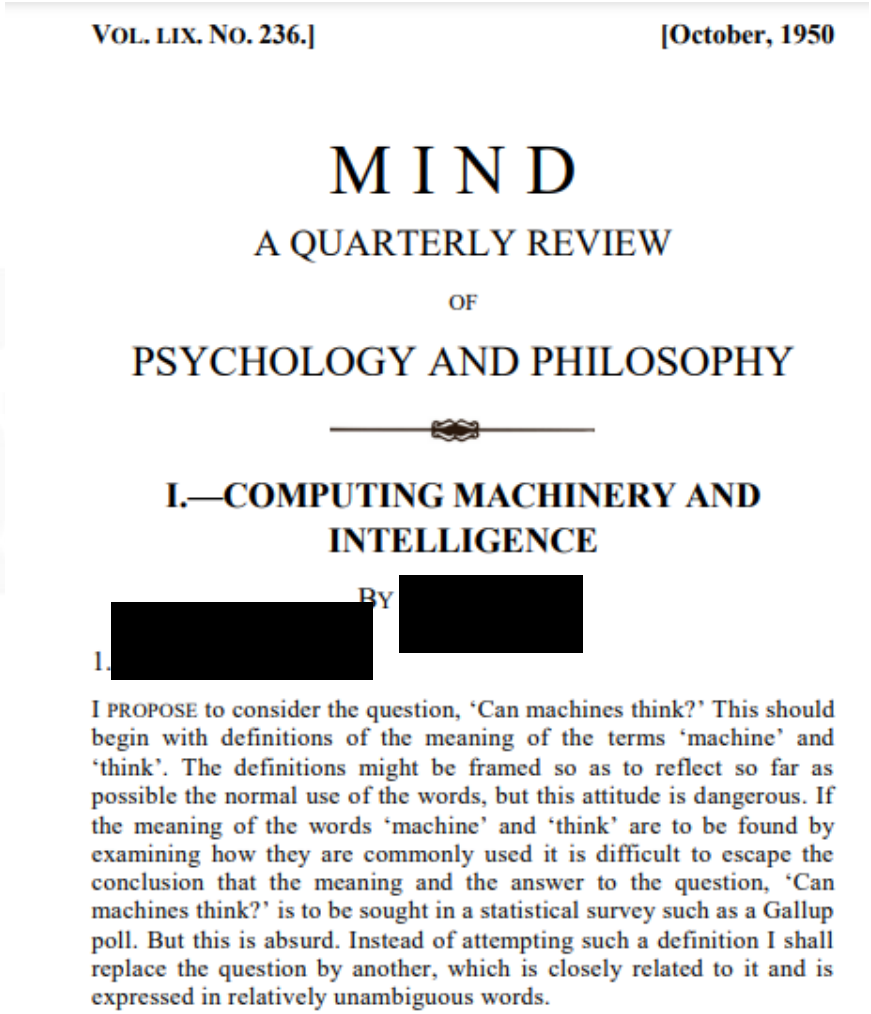

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Answer & Theme

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21 | 22 | 23 JULY

13. Ammonite – Mary Anning
14. The Theory of Everything – Stephen Hawking
15. Agora – Hypatia
16. The Imitation Game – Alan M. Turing
17. Infinity – Richard Feynman

Theme: Movies based on scientists

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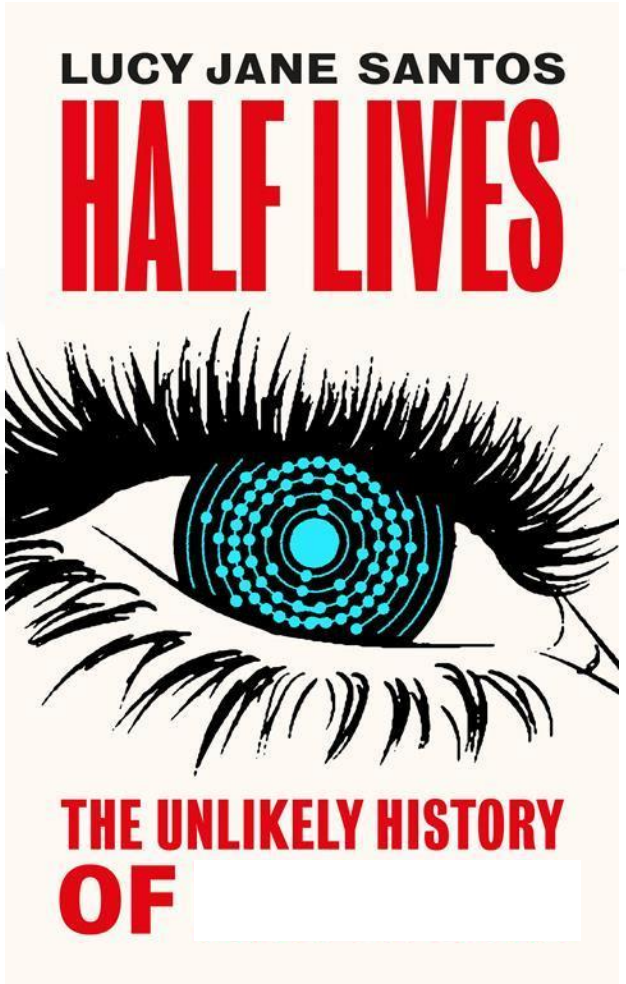
Written Round

Rules

- There are four questions, all written.
- Each correct answer fetches 1 point.
- The answers are connected with a particular theme. Each giving half of the connection to the theme.
- Identifying the theme correctly fetches 1 point.
- Identifying the other half that goes into the theme fetches 1 point each (so a maximum of 4 points). So a total of 9 (4+1+4) points can be claimed in this round.

Question 18

Which word is blanked out?



Question 19

_____ chemistry is a class of simple, atom-economy reactions commonly used for joining two molecular entities of choice. It is not a single specific reaction, but describes a way of generating products that follow examples in nature, which also generates substances by joining small modular unit.

The most common usage of the term _____ is usually associated with ‘computers’.

What?

Question 20

The **central dogma of molecular biology** is an explanation of the flow of genetic information within a biological system. It is often stated as "DNA makes RNA, and RNA makes protein“. One of the most important discoveries which sealed this dogma was determining the amino acid sequence of _____ and numerous other proteins, demonstrating in the process that each had a unique, definite structure.

What?

Question 21

What is blanked out?

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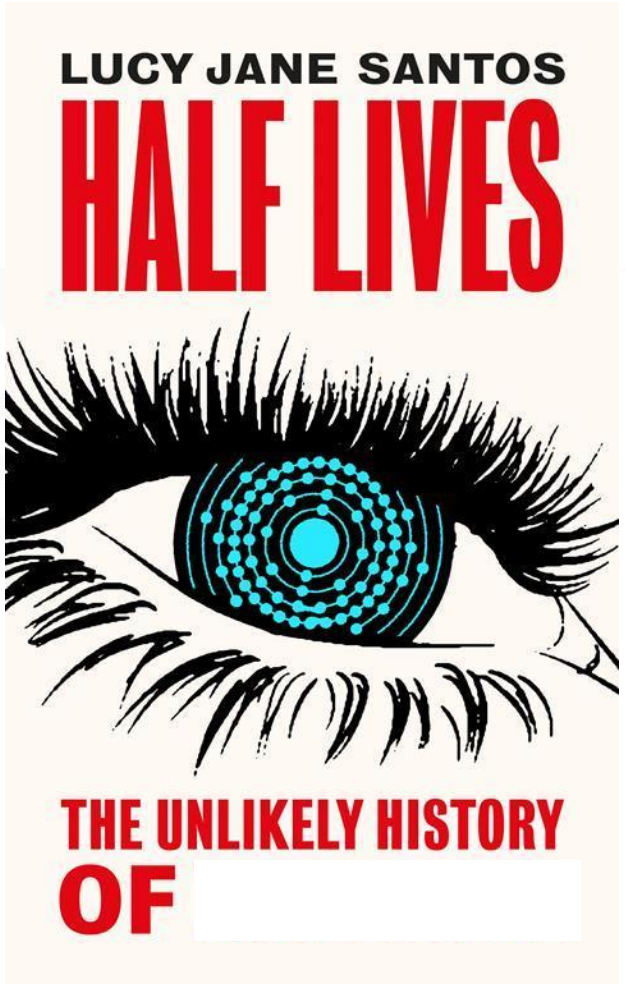
21 | 22 | 23 JULY

Recap

Question 18

Which word is blanked out?



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Question 21

What is blanked out?

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Answer & Theme

TEQUAS ANNUAL QUIZ FEST
21 | 22 | 23 JULY

18. Radium – Radioactivity (Marie Curie)
19. Click – chirally catalysed oxidation reactions (Karl Barry Sharpless)
20. Insulin – first DNA sequencing technique (Frederick Sanger)
21. Transistor – BCS Theory, microscopic theory of superconductivity (John Bardeen)

Theme: Scientists with two science Nobel Prizes.

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21 | 22 | 23 JULY

Scores

Question 22

The setup involves two sliding blocks in a perfectly idealized world where there's no friction, and all collisions are perfectly elastic, meaning no energy is lost. One block is sent towards another, smaller one, which starts off stationary, and there's a wall behind it so that the small one bounces back and forth until it redirects the big block's momentum enough to outpace it away from the wall.

If that first block has a mass which is some power of 100 times the mass of the second, for example 1,000,000 times as much, a surprising fact pops out regarding the number of total collisions.

What fact?

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The number of collisions gives the digits of Pi.

Question 23

Nicole Oresme was a French philosopher of the later Middle Ages. He wrote several influential works on economics, mathematics, physics, philosophy, theology, etc.

His most important contributions to mathematics are contained in *Tractatus de configurationibus qualitatum et motuum*. In a quality, or accidental form, such as heat, he distinguished the *intensio* (the degree of heat at each point) and the *extensio* (as the length of the heated rod). Oresme conceived the idea of visualizing these concepts by plane figures.

Which important mathematical innovation was this very close to?

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Rectangular coordinate system

Question 24

Linear or point-projection perspective is one of two types of graphical projection perspective in the graphic arts (the other is parallel projection). Linear perspective is an approximate representation, generally on a flat surface, of an image as it is seen by the eye. Perspective drawing is useful for representing a three-dimensional scene in a two-dimensional medium, like paper.

Who is generally credited as the first person to describe a precise system of linear perspective?

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Filippo Brunelleschi

Question 25

The most famous incident of such a type of disaster was a 1999 NASA disaster. Two less well know instances are the following.

On 23 July 1983, Air Canada Flight 143 ran completely out of fuel about halfway through its flight from Montreal to Edmonton.

On January 26, 2004 at Tokyo Disneyland's Space Mountain, an axle broke on a roller coaster train mid-ride, causing it to derail.

What were the root causes of these disasters?

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Error in unit conversion (metric to other units)

Question 26

This demonstration in 1676 is usually considered the first measurement of a universal quantity made on Earth. By timing the eclipses of Io (moon of Jupiter), **X** made this measurement. In his calculations **X** used the idea and observations that the apparent time between eclipses would be greater when the Earth relatively moves away from Jupiter and lesser while moving closer.

Who is **X**? What was the demonstration? (**0.5+0.5**)

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X=Ole Roemer, measuring the speed of light

Question 27

In 1909, chemist Sorensen introduced the concept of **X** originally using a slightly altered notation that what is used today. A quote from Sorensen is as follows: "*For the sign **Y**, I propose the name 'hydrogen ion exponent'……Then, for the hydrogen ion exponent of a solution, the negative value of the Briggsian logarithm of the related hydrogen ion normality factor is to be understood*".

What are **X** and **Y**? (**0.5+0.5**)

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X=pH, Y=p

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Scores

Question 28

One of the late 19th/early 20th century scientific feuds is between Emil Von Behring and Paul Ehrlich. Von Behring is believed to have cheated Ehrlich out of recognition and financial reward in relation to collaborative research in diphtheria. The two men developed a diphtheria serum by repeatedly injecting the deadly toxin into a horse. The serum was used effectively during an epidemic in Germany. A chemical company preparing to undertake commercial production and marketing of the diphtheria serum offered a contract to both men, but von Behring maneuvered to claim all the considerable financial rewards for himself.

What was the 'historic' outcome of this incident?

(Hint: think of X-rays and osmotic pressures)

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Von Behring won the first Nobel Prize in medicine or physiology for this work.

X-rays and osmotic pressures were the respective winners of the physics and chemistry Nobels in 1901.

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Question 29

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Sir George **X** usually appears in science quizzes due to his eponymously named famous **Y-X** problem. Students of science and engineering first meet **X** when they study a 'generalization' of the fundamental theorem of calculus. **X**'s contributions are varied and ranges from fluid dynamics, light, polarization, chemical analysis to ophthalmology. **X** also has a non-SI unit (CGS unit) named after him related to viscosity.

Who is **X**? What is the **Y-X** problem? (**0.5+0.5**)

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X=Stokes, Y=Navier

Question 30

Kuru is a rare, incurable, and fatal neurodegenerative disorder that was formerly common among the Fore people of Papua New Guinea. Kuru is a form of transmissible spongiform encephalopathy (TSE) caused by the transmission of abnormally folded proteins (prions), which leads to symptoms such as tremors and loss of coordination from neurodegeneration.

It is now widely accepted that kuru was transmitted among members of the Fore tribe of Papua New Guinea via a funerary tradition and was usually more prevalent among women and children who partook of something where the prevalence of the disease is most.

What tradition?

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Cannibalism (women and children ate the brains)

Question 31

The _____ **machine** was invented in 1784 by the English mathematician George _____ as a laboratory experiment to verify the mechanical laws of motion with constant acceleration. It is a common classroom demonstration used to illustrate principles of classical mechanics.

The ideal machine consists of two objects of mass m_1 and m_2, connected by an inextensible massless string over an ideal massless pulley. Both masses experience uniform acceleration.

Which machine?

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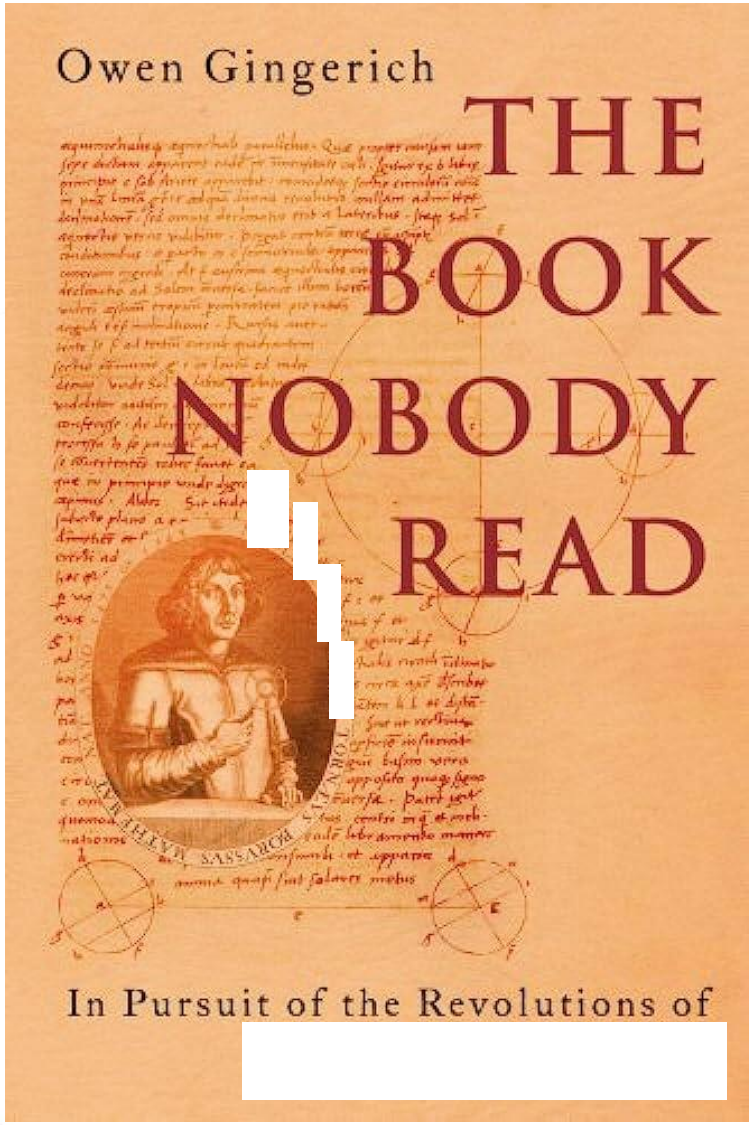
Atwood Machine

Question 32

Which book?



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De revolutionibus orbium coelestium (On the Revolutions of the Heavenly Spheres) by Copernicus

Question 33

One of the most prevalent misconceptions related to high school mathematics is this ‘fact’ that students repeat when they go to university. However, since the 1760s, thanks to the work of Johann H. Lambert this ‘fact’ is known to be false.

One of the earliest sources of this ‘fact’ is due to the work of Archimedes. In the Indian context, this ‘fact’ also appears in the work of Bhaskara II.

What is this ‘fact’ that is directly relevant to this quiz?

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Pi=22/7, Pi is approximated by 22/7, today (22 July) is Pi Approximation Day (22-07)

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Scores

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Ties?

Rules

- We will follow sudden death format.
- No pounces.

Question 34

Which is the first element named after a person (although indirectly)?

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Samarium

Question 35

Identify both.

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Left=Paul Dirac, Right=Richard Feynman

Question 36

Google Doodle honoring which Indian scientist?

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P. C. Mahalanobis

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End