AISSMS
INSTITUTE OF INFORMATION TECHNOLOGY (IOIT)
ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University
Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra
Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION

TELESCAN 2023 PRESENTS

A A Y A N S H

CHANGING THE WORLD WITH TECHNOLOGY

अद्वितीय भारत

Editorial Committee

Prof. A.R.Randive
Faculty
Coordinator

Prof. N.S Warade
Faculty
Coordinator

Editorial Committee

Yashashree Bagde (BE-B)
Editorial Secretary

Riddhi Maity   (TE-B)
Jt. Editorial Secretary

Executive Members

Waqi Shaikh
TE-B

Aayushi Ahire
TE-A

Shruti Bhandurge
TE-A

Anish Bhujbal
TE-A

Tushar Bhoge
SY-A

Dipti Dorugade
SY-A

This edition of TELESCAN 23-24 would not have been possible without the relentless dedication and hard work of our incredible team, who have poured their hearts and souls into bringing you a glimpse of the incredible creativity and ta of our department.

We extend my heartfelt gratitude to our faculty co-ordinators, **Prof.A.R. Randive** and **Prof.N.S.Warade** for their support and guidance, our Head of Department, **Dr. M.P. Sardey** for their vision and encouragement, and our Principal, **Dr. P.B. Mane** for fostering an environment where creativity and knowledge flourish.

"Aayansh" is more than just a magazine; it is a journey through the kaleidoscope of India's history, traditions, and contemporary marvels. We hope these pages offer you a deeper understanding of our beloved nation and inspire you to explore its myriad wonders.

Thank you for being a part of this incredible journey, and we invite you to immerse yourselves in the pages of "Aayansh" – a testament to the Unique India we are so proud to call home.

Department of Electronics and Telecommunication Engineering

VISION

To be one of the renowned Electronics & Telecommunication Engineering programmers imparting quality education by promoting professionalism, values and ethics leading to a progressive career in industry & academia globally.

MISSION

1.To boost the employability/entrepreneurship/higher studies through value-added activities.
2.To inculcate research attitude and professional ethics for addressing the needs of industry.

Programme Educational Objectives (PEOs)

PEO1: Engage in solving problems in the E&TC domain by developing products/offering services to cater to the needs of the society.

PEO2: Work in diverse career fields of information and communication technology.

PEO3: Develop new methodologies and technologies for solving real-life problems.

Programme Specific Outcomes (PSOs)

PSO1: Apply domain-specific knowledge to analyze, design and develop electronics and telecommunication systems/applications in the field of Embedded Systems, Very Large-Scale Integration (VLSI), Internet of Things (IoT), and Communication Technology.

PSO2: Select and apply software and hardware tools such as Electronic Design Automation (EDA) and Test/Measurement equipment to solve engineering problems.

Programme Objectives (POs)

Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems,

2. Problem analysis: identify, formulate, research literature, and analyse complex engineering problems. reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions,

5. Modern tool usage: Create, select, and apply appropriate techniques resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethic sand responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leading team, to manage Projects and in multi disciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dear Readers,

Welcome to the latest edition of our TELESCAN 23-24 magazine, "Aayansh," where we embark on a captivating journey through the diverse tapestry of India, unveiling its unique facets and hidden treasures. In this issue, we explore the concept of "अद्वितीय भारत" from a multifaceted perspective, shedding light on the lesser-known, extraordinary aspects of our incredible nation.

Why "Aayansh"?
The word "Aayansh" holds a special place in our hearts, reflecting the essence of our theme . Derived from the Sanskrit language, "Aayansh" (आयांश) can be broken down into two parts: "Aaya" meaning 'arrival' or 'coming,' and "Ansh" meaning 'portion' or 'part.' Together, "Aayansh" signifies the arrival of something significant, a meaningful portion of a greater whole.

It is a term that resonates deeply with our theme, as it symbolizes the dawn of a new era, the emergence of fresh beginnings, and the promise of boundless potential.

We hope that "Aayansh" provides you with a fresh perspective on the myriad treasures of India, reminding us all that our nation's uniqueness lies not just in its past but in the ever-evolving present and the promising future.

Thank you for embarking on this journey with us. We invite you to immerse yourself in the world of "Aayansh" and discover the extraordinary within the ordinary.

Warm regards,
TESA Editorial 2023-24

TABLE OF CONTENTS

Harmoni Tech Spectrum

TABLE OF CONTENTS

Poetry Section

India 2023 Quiz

Canvas Chronicles

Harmoni Tech Spectrum
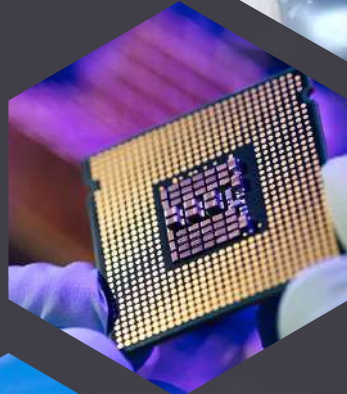
WEB3 DEMYSTIFIED: JOURNEY INTO DECENTRALIZATION

Web 1.0: The Read-Only Web (1990-2004)

Web 1.0, envisioned by Tim Berners-Lee, aimed for decentralization but became a static, company-
controlled space with minimal user interaction. Web 2.0: The Read-Write Web (2004-Present)

Web 2.0 introduced user-generated content but centralized power, leaving users without true
ownership or control.

Web 3.0: The Read-Write-Own Era
Web3, coined by Ethereum's Gavin Wood, returns ownership via blockchain, cryptocurrencies, and
NFTS.

Core Web3 Principles:
Decentralization: Shifts power from corporations to users.
Permissionless: Offers equal access for all.
Native Payments: Uses cryptocurrencies for transactions. Trustless: Relies on economic mechanisms, not intermediaries.

Why Web3 Matters:
 Ownership: Web3 ensures true ownership of digital assets through NFTS, even across platforms.
Censorship Resistance: Data on the blockchain, not platforms, gives users control and portability.
Decentralized Autonomous Organizations (DAOS): DAOS enable collective platform ownership and
governance.
Identity: An Ethereum address and ENS profile create a secure, anonymous identity across
platforms.
Native Payments: Cryptocurrency transactions eliminate intermediaries, promoting

Web3 Challenges:
Accessibility: High fees hinder adoption; solutions are underway.
User Experience: Simplifying tech complexities is vital.
Education: Bridging the Web2 to Web3 knowledge gap.
Centralized Infrastructure: Reducing reliance on centralized platforms.

How to Engage:
Join the Web3 journey:
Get a Wallet: Manage cryptocurrencies and NFTS. Find a Community: Connect with like-minded Web3 enthusiasts.
Explore Web3 Apps: Discover innovative dApps.
Join a DAO: Participate in decentralized governance.
Build on Web3: Contribute your expertise or creativity to the ecosystem. Be part of the transformative shift towards a user-centric, decentralized digital frontier.

-Mallikarjun Kotgire

BE -A

"Ten Technologies Leading the Way in Environmental Conservation"

In a world facing ever-pressing environmental challenges, innovative technologies are emerging as powerful tools to combat climate change, promote sustainability, and conserve our natural resources. From modern agriculture to renewable energy solutions, these ten groundbreaking technologies are paving the way for a greener future.

1. Vertical Farming: Vertical farming, the practice of cultivating crops in stacked layers within controlled environments, is revolutionizing agriculture. By utilizing advanced technology such as artificial lighting and hydroponic systems, vertical farming maximizes efficiency, reduces reliance on unpredictable weather conditions, and minimizes greenhouse gas emissions.

2. Solar Energy: Solar energy stands out as one of the cleanest and most sustainable sources of renewable energy. Recent advancements have significantly improved solar cell efficiency, making solar power increasingly accessible and crucial in addressing climate change.

3. Wind Energy: Wind energy, generated by harnessing the power of the wind through turbines, has the potential to cover global electricity demand many times over. It offers a clean and renewable solution to our energy needs.

4. Green Hydrogen: Green hydrogen, produced through water electrolysis using renewable energy, is a versatile clean fuel that can decarbonize industries and contribute to a more sustainable energy landscape.

5. Biodegradable Materials: Biodegradable materials derived from renewable sources provide eco-friendly alternatives to traditional plastics. They naturally break down, reducing pollution and ecosystem degradation.

6. Drone Seeding: Drone reforestation is a modern approach to combat deforestation by using drones to plant tree seeds or seedlings. This technology is efficient, precise, and contributes to carbon sequestration and habitat restoration.

7. Bioluminescent Solar Concentrator: This innovative technology enhances solar panel efficiency by using bioluminescent bacteria to concentrate and redirect light towards the panels, potentially generating electricity even at night.

8. Self-sustaining Eco-Cities: Designed to minimize environmental impact, eco- cities incorporate renewable resources, green spaces, and sustainable urban planning to create carbon-negative living environments

9. Floating Cities: As sea levels rise due to climate change, floating cities provide adaptable, sustainable urban solutions that utilize renewable resources to support growing coastal populations.

10. Carbon Capture Using Artificial Trees: Photobioreactors, or "liquid trees," offer an alternative to traditional trees for carbon capture and air purification in urban areas, providing efficient solutions for air quality improvement.

As we embrace these green innovations, it is crucial to remember that individual commitment to sustainable practices is equally essential. Collectively, we can mitigate the impact of environmental challenges and secure a thriving planet for future generations. These technologies serve as beacons of hope, guiding us toward a greener and more sustainable future.

-Tushar Bhoge
SY-A

The Rise of Quantum Computers All Over the World

Introduction

Quantum computing, a novel paradigm harnessing the principles of quantum mechanics, is poised to revolutionize our world. Utilizing qubits that can exist in a superposition of states,

quantum computers can perform calculations that are currently infeasible for classical computers. This includes breaking modern encryption algorithms and simulating complex molecules.

Global Developments in Quantum Computing

Quantum computing is still in its infancy, but significant strides are being made globally.

Governments and corporations worldwide are investing heavily in research and development:

• United States: IBM has developed a 127-qubit quantum processor, the largest of its
kind globally. They also plan to build a 1,000-qubit quantum processor by 2023.

• China: Researchers have developed a 66-qubit quantum processor, marking China's largest quantum computer. Tech giants like Alibaba and Baidu are also developing their own quantum computers.

•Europe: The European Commission has launched a €1 billion initiative to fund research into quantum computing and develop applications.

Potential Impacts of Quantum Computing

Quantum computing holds the potential to revolutionize various industries:

• Medicine: Quantum computers could simulate molecular behavior, aiding scientist in designing new drugs that are more effective and have fewer side effects.

• Finance: Quantum computers could develop new financial algorithms and analyze financial data more accurately. This could lead to new trading algorithms for stocks and bonds.

• Materials Science: Quantum computers could design new materials with improved
properties, such as increased strength, reduced weight, and enhanced efficiency.

Conclusion

While still in its early stages, quantum computing holds immense potential to transform various industries. The rise of quantum computing is a global trend, with heavy investments in research and development from governments and corporations worldwide. As we continue to make strides in this field, we can expect significant breakthroughs that will redefine ourapproach to problem-solving.

ATHARVA CHANDRAKANT GAIKWAD
TE-A

Automating Parking System using Python and IoT

In many developing countries the increase in population increases day by day rapidly. In cities people can face many problems including parking to park the vehicle. Normally at places such as theatres, market areas, malls and offices and in metropolitan cities. This project is designed to relax from the time-consuming parking system. In this project we used an advanced smart parking system.

In parking, firstly when a car enters it shows availability or unavailability of parking in the display to ensure the space of parking. Every motor vehicle enters society, the automatic parking system registers data on the system of every person, and it can record the plate no. License enters addresses etc. We use ANPR automatic Number plate Recognition to capture the number of plates and their data on the ANPR system.

Opens is a computer which a library uses for video capturing, image processing and machine learning and helps to provide the standard development environment for computer vision applications by including capabilities like face detection and object detection.

- Ramraje Deshmukh

SY-A

EMERGING INDIA

India is not a spiritually leading country but also known as technologically emerging and developed country. Right from all space missions to creating it's own Unique Identification Authority that is UIDAI using aadhar card. Even India recently hosted G2O summit 2023 with huge success.

India is a country with a rich and diverse cultural heritage which includes philosophy, religion and various traditions. India has been birthplace of major world religions. This country has a long history with the hint of philosophy. India is everywhere right from Mars to moon and now leading its own mission to sun. India is renowned for its contribution to yoga and meditation which now is considered one of the effective way of keeping mental health stable.

India is now emerging global IT hub with artificial intelligence as well as data analytics. India's journey as an emerging economic powerhouse is a remarkable tale of resilience, innovation, and ambition. With its diverse culture, youthful workforce, and commitment to growth, India continues to shape the global economic landscape. As the country navigates its challenges and leverages its strengths, its role in the world economy is set to grow, making it an exciting prospect for investors, innovators, and global stakeholders.

-Aayushi Ahire TE-B

Towards a Sustainable Future: Harnessing Nature's Wisdom for Environmental Conservation and Ecosystem Regeneration

The introduction provides an overview of the current environmental challenges facing our planet, such as climate change, biodiversity loss, water scarcity, and unsustainable resource consumption. It emphasizes the need for transformative actions and highlights the significance of learning from nature to find effective solutions.

Ecosystem Restoration and Regeneration:
This section delves into the importance of biodiversity and ecosystems in sustaining life on Earth. It discusses the role of forests in mitigating climate change and the need to protect existing forests while restoring degraded areas. The introduction of the "Restore" platform for ecosystem restoration is also highlighted as a means to engage global participation in conservation efforts.

Sustainable Agriculture: Nature-Inspired Farming:
The section explores the urgent need for sustainable agriculture practices in light of increasing human population and technological impacts on the environment. The potential benefits of permaculture in enhancing crop growth and pest management are discussed, emphasizing the importance of biodiversity in farming.

Natural Disaster Resilience through Ecosystems:
The section underscores the increasing impact of natural disasters on countries and the importance of investing in resilience and disaster risk management. Successful examples of integrating disaster risk management into various sectors are discussed, emphasizing the significance of prevention over response.

Climate Change Mitigation Strategies:
This part presents a compelling story of an individual's transformation from ignorance to action on climate change. It emphasizes the power of education, collective action, and sustainable choices in addressing climate challenges.

The introduction provides an overview of the current environmental challenges facing our planet, such as climate change, biodiversity loss, water scarcity, and unsustainable resource consumption.

It emphasizes the need for transformative actions and highlights the significance of learning from nature to find effective solutions. The introduction of the "Restore" platform for ecosystem restoration is also highlighted as a means to engage global participation in conservation efforts.

Nature-Inspired Farming: The section explores the urgent need for sustainable practices in light of increasing human population and technological impacts on the environment. The potential benefits is enhancing crop growth and pest management are discussed, emphasizing the importance of biodiversity.

Sustainable Forestry: This segment reflects on the author's personal experiences critiquing traditional forestry practices that prioritize profit over biodiversity and ecosystem services. The importance of adopting nature-based principles in forestry is highlighted, aiming to maintain and develop natural ecosystems while promoting sustainable production.

-Siddhika Bande

SY-A

The Dawn of Flying Taxis: A Technical Perspective

Introduction

The advent of electric vertical take-off and landing (eVTOL) aircraft, colloquially known as flying taxis, has the potential to revolutionize urban mobility. These vehicles, designed to take off and land vertically like helicopters but powered by electric motors, offer a more efficient and environmentally friendly mode of transportation.

Technical Overview:

Flying taxis typically employ four to six propellers, which are tilted to generate lift and thrust. These propellers are powered by electric motors, which in turn are powered by batteries. The process of taking off involves tilting the propellers downwards to generate lift and propel the aircraft upwards.

Once airborne, the propellers tilt forwards for forward propulsion. For landing, the propellers tilt backwards to slow down the aircraft and generate drag, allowing it to descend and land vertically.

Advantages:

Flying taxis offer several advantages over traditional modes of transportation:
Speed: With top speeds reaching up to 200 mph, as seen in Joby Aviation's eVTOL aircraft, flying taxis can significantly outpace cars in congested urban areas.

Convenience:

The ability to take off and land vertically allows these vehicles to operate from various locations, including rooftops and helipads, eliminating the need for airport commutes.

Environmental Impact:

Being electrically powered, flying taxis produce zero emissions, making them a more environmentally friendly option compared to cars and public transportation.

Challenges:

Despite their potential, several challenges need to be addressed before flying taxis can become a mainstream mode of transportation:

Safety: Ensuring the safety of these vehicles is paramount. While there have been accidents during testing phases, companies are continually working on improving aircraft safety. Regulatory bodies like the FAA are also developing new regulations for eVTOL aircraft.

Cost:

The high development and production costs of these vehicles pose a significant challenge. However, efforts are underway to reduce these costs and make flying taxis more affordable for consumers.

Infrastructure:

The development of supporting infrastructure such as landing pads, charging stations, and air traffic control systems is crucial for the successful implementation of flying taxis.

Conclusion:

Flying taxis hold immense potential in transforming urban mobility with their speed, convenience, and environmental benefits. However, addressing the challenges related to safety, cost, and infrastructure is critical before they can become a widespread form of transportation. As companies strive to improve the safety and affordability of flying taxis, governments worldwide are developing new regulations to ensure their safe operation. The dawn of flying taxis is indeed an exciting prospect in the realm of urban mobility.

-Atharva Chandrakant Gaikwad

TE A

FILM INDUSTRY OF BHARAT

BHARAT, a country known for its rich cultural tapestry and diversity, is also known for its influential film industry. The origins of Bharatiya cinema can be traced back to the early 20th Century when Dadasaheb Phalke, often hailed as the father of Bharatiya cinema, released the first Bharatiya silent film " Raja Harishchandra", in 1913. This marked the inception of journey that would see Bharatiya cinema diversify into various regional industries, each with its unique style and characteristics.

Bollywood, located in Mumbai (formerly Bombay), is the largest and prominent film industry in Bharat known for its Hindi-language films, Bollywood productions are celebrated for their colorful storytelling, dance sequences, melodious songs and vibrant costumes. Over the years, Bollywood has not only captured the hearts of Bharat varsha but has also garnered a significant following globally, making it a key player on the international cinematic stage.

 Movies like Sholay, DDLJ, Hum sath sath hai attracted the masses and specially 90's movies gave a different dimension for the romantic love stories which continues to influence the youth till today. However ,Bharat's film
landscape isn't confined to Bollywood alone.
The country has multitude of regional film industries, including Tamil, Telugu, Bengali, Marathi etc each flourishing in its own right. These regional industries contribute to the diverse fabric of Bharatiya cinema, showcasing the linguistic and cultural richness of the nation.

In recent years, Bharatiya cinema has evolved , placing a strong emphasis on cinematic excellence. Directors, Actors & technical crews have elevated their craft , resulting in films that not only resonate with the Bharatiya audience but also receive international acclaim.

Themes ranging from societal issues to Historical events, Love stories, and more are explored through Bharatiya films, influencing public opinions and sparking conversation on important subjects. Bharatiya film Industry has embraced advancements in technology and leveraging cutting edge tools to enhance the overall inematic experience .High quality cinematography , advanced visual effects, and the use of virtual reality(VR),Artificial Intelligence (AI),and 3D technology have revolutionized film making , enabling film makers to create visually stunning narratives.

While the film Industry continues to prosper and gain international recognition , It is not without its challenges. Piracy, Funding issues and the rise of digital platforms pose significant hurdles . However, the advent of digital streaming platform has created new opportunities for film makers ,offering an alternative platform to showcase their work; reach a broader audience.

The Bharatiya Film industry is a dynamic and evolving entity, mirroring the spirit; essence of Bharat.Its ability to wave compelling narratives that resonate with the diverse audience, its embrance of technology; its global reach make it an essential component of country's cultural heritage. Bharatiya cinema stands as a testimony to the creativity,talent,passion that Bharat possess for story telling through the enhancing world of cinema.

~Deepak Sanjay Mhatugade
TE-B

Rogan Art

Castor oil is the base of the paint. Rogan art means oil in Parsi. Oil is heated for the two days until it becomes honey-like texture. It's a very dangerous process since anytime oil can catch the fire.

Once, the oil is cooled, oil is combines with pigment to create the paint. Colors are grinded on the stone, then some water is added and grinding process is continued. Then approximate amount of rogan(castor oil) is added into the grinded colors. Rogan and colors are smashed together until they become one. In rogan painting , the pattern is applied using metal blocks with patterns carved into them.

In rogan painting, elaborate designs are produced freehand, by trailing thread-like strands of paint of a stylus. Frequently, half of a design is painted, then the cloth is folded in half, transferring a mirror image to the other half of the fabric.

The designs include floral motifs, animals, and local folk art. The craft nearly died out in the late 20th century and very few families practice this art.

-Debshika Dutta
TE-A

IS THE INDIAN MEDIA A WARPED REFLECTION OF OUR SOCIETY?

Newt Gyrich once said, "If Thomas Edison invented the electric bulb today, the media would report it on news as: 'Candle making industry threatened. Truth but not absolute, reality but not make believe. Whatever, welcome to the magical world of media.

The media has an uncanny knack of presenting the truth in such a way that in- spite of the issue being real, the final result is far from the truth. The quote of Newt Gyrich which I mentioned earlier clearly shows that the media reports are likened to a pizza whose base is genuine but the topping is altered to suit the palate of the masses.

The main reason for distorting facts and twisting reality is nothing but commercialization of the media. With the mushrooming of news channels the standard of reporting has drastically deteriorated. In order to be the first of the reporting group to announce under the caption of 'Breaking News' faulty announcements are made hurriedly.

Authenticity goes off to the wind. Anything and everything is passed off as breaking news and in a hurry to be the first one to do so, no reported. effort is made to look into the authenticity of the news. Half baked truths are served to the masses thereby clouding their perceptions. The media shows no respect to the sentiments and the ethics of the people whom they claim to serve.

Another reason for a distorted presentation is the gullibility of the people who are associated with their predilection for news. All the aspects of the society: social or political all have been given a definite colour.

For example the image of women has gone through several unjust projections at the hands of the media. News channels are either owned or funded by a political party or a private agency who have their own ideologies to propagate thereby resulting in the twisting and distorting of facts.

The latest technology and props help the media to twist/alter or play down the news. In conclusion I would like to say that.... YES media is the mirror of the society but that is the mirror which we come across in amusement parks... which either bloats or dwarfs the image but never portrays the reality .

-Riddhi Maity
TE-B

26

Universal Constants: The Immutable Foundations of the Physical World

Introduction

In the realm of science, universal constants hold a profound significance. They are the bedrock upon which our understanding of the laws of physics is built. Universally accepted as constants, these fundamental physical quantities are believed to remain unchanging throughout the vast expanse of the universe. From the speed of light to the gravitational constant, these constants provide us with a reliable framework to comprehend the workings of the physical world.

The Infallible Speed of Light

At the forefront of these universal constants stands the speed of light, denoted by "c." With an approximate value of 299,792,458 meters per second in a vacuum, the speed of light serves as an absolute constant. It establishes the cosmic speed limit, representing the maximum velocity at which information and objects can travel. The constancy of light's speed has been experimentally verified and is a cornerstone of Einstein's theory of relativity, which revolutionized our understanding of space and time.

Planck's Constant: Quantum Precision

Another essential universal constant is Planck's constant, symbolized as "h." With a value of approximately $6.62607015 \times 10^{-34}$ joule-seconds, Planck's constant plays a vital role in quantum mechanics. It relates the energy of a photon to its frequency and underpins the principles of wave-particle duality. Planck's constant provides an understanding of the discrete nature of energy at the atomic and subatomic scales, guiding the behavior of particles and waves in the quantum world.

Gravity's Unyielding Strength

The gravitational constant, represented by "G," is a fundamental universal constant that governs the force of gravity between objects. With a value of roughly 6.67430×10^{-11} cubic meters per kilogram per second squared, the gravitational constant defines the attraction between massive bodies. The constancy of the gravitational constant is deeply embedded in our understanding of gravity, as formulated by Sir Isaac Newton and later refined by Albert Einstein's theory of general relativity

The Unwavering Boltzmann Constant

The Boltzmann constant, denoted by "k," is a universal constant that links temperature to the average kinetic energy of particles in a gas. With a value of approximately 1.380649 × 10^-23 joules per Kelvin, the Boltzmann constant plays a central role in statistical mechanics and thermodynamics. It allows scientists to make precise calculations, predict the behavior of gases, and understand the relationship between temperature and energy.

The Immutable Foundations

These universal constants, along with others such as the elementary charge (e) and the Avogadro constant (N_a), form the immutable foundations of our scientific understanding. They provide consistency, reliability, and predictability to the laws of physics. These constants serve as the linchpins of countless equations and theories, enabling scientists to make accurate predictions, formulate mathematical models, and deepen our understanding of the physical world.

The Quest for Knowledge and Refinement

While universal constants are regarded as constants based on extensive experimental evidence, the nature of scientific inquiry necessitates an ongoing quest for knowledge. Scientists continue to explore, experiment, and refine their understanding of the universe. The possibility of variations or modifications to these constants remains an area of scientific investigation. Any potential deviations would require rigorous scrutiny, verification, and an expansion of our scientific frameworks.

Conclusion

Universal constants are the steadfast pillars of the physical world, providing the foundation for our understanding of the laws of physics. From the unyielding speed of light to the unchanging force of gravity, these constants offer consistency, precision, and predictability. They have shaped our knowledge and continue to guide scientific inquiry. As we delve deeper into the mysteries of the universe, the quest to comprehend these constants further propels our understanding of the cosmos.

Suprriya Lohar
Assistant Professor
E & TC Dept.

Modern Heat Flow Measurement Techniques

Differential Scanning Calorimetry (DSC) and Isothermal Titration Calorimetry (ITC) are two popular Modern Heat flow measurement techniques.
Let us learn about Differential Scanning Calorimetry (DSC) vs. Isothermal Titration Calorimetry (ITC)

1 DSC (Differential Scanning Calorimetry):

Principle:
Differential Scanning Calorimetry (DSC) is a technique that measures the heat flow associated with thermal transitions in a sample as it is subjected to a controlled temperature increase relative to a reference material. It quantifies changes in heat capacity and provides information on thermal stability, phase transitions, and enthalpy changes.

Applications:

Protein Stability Analysis: DSC is widely used in the biopharmaceutical industry to assess the thermal stability of proteins, including monoclonal antibodies and enzymes. It helps in formulation development and storage condition optimization.

Polymers and Materials: DSC is essential for characterizing polymers, including determining glass transition temperatures and melting points, aiding in material selection, and quality control.

Pharmaceuticals: It plays a crucial role in the analysis of pharmaceuticals, including drug-polymer interactions, formulation optimization, and the determination of drug purity.

Food Science: DSC is applied in food science to evaluate the thermal properties of food products, including phase transitions in fats, proteins, and carbohydrates.

2 Isothermal Titration Calorimetry (ITC):

Principle:

Isothermal Titration Calorimetry (ITC) is an analytical technique used to measure heat changes associated with molecular interactions, such as binding events, in a solution under isothermal conditions. It directly quantifies binding constants (K) and enthalpy changes (ΔH) without the need for labeling.

Applications:

Drug-Target Binding: ITC is extensively used in drug discovery to study interactions between drug candidates and their biological targets. It provides crucial information about binding affinity and thermodynamics, aiding in drug design.

Protein-Ligand Interactions: ITC is employed to understand molecular recognition processes, protein-ligand binding, and the characterization of binding sites, which has implications in biochemistry and structural biology.

Enzyme Kinetics: ITC can determine enzymatic reaction kinetics by measuring the heat released or absorbed during enzymatic reactions. This information is valuable for studying enzyme mechanisms.

Biomolecular Interactions: Beyond drug discovery, ITC is used in various biological studies to investigate protein-protein interactions, DNA-protein binding, and other biomolecular interactions.

3 Comparison:

Both DSC and ITC are calorimetric techniques used to study heat changes in samples.

DSC focuses on thermal transitions and stability, while ITC is primarily used for studying molecular interactions.DSC provides information on phase transitions and heat capacity changes, while ITC quantifies binding thermodynamics.DSC is more suitable for materials and stability studies, whereas ITC is essential for understanding molecular recognition and binding events in biology and drug discovery.

In summary, DSC and ITC are complementary techniques that find applications in different scientific domains, with DSC being prominent in materials and stability analysis and ITC excelling in the study of molecular interactions and binding thermodynamics.

-Prof. Varsha Kiran Patil
E & TC Dept.

POETRY

INDIA

In the heart of Asia, a land so vast,
Where history and culture forever will last.
India, a nation of colors and grace,
A tapestry of traditions in every place.

From the Himalayas' towering might,
To the oceans' embrace, so vast and wide.
A land of contrasts, where stories unfold,
In every corner, a tale to be told.

In Rajasthan's deserts, where camels roam,
To Kerala's backwaters, a tranquil home.
From the bustling streets of Delhi's embrace,
To the sacred Ganges, a river of grace.

In temples and mosques, and churches so old,
A tapestry of faith, in stories untold.
Unity in diversity, the nation's sweet song,
In India, a place where all belong.

From Bollywood's magic to cricket's cheer,
In the heart of every Indian, love is clear.
A land of resilience, of dreams taking flight,
India, a beacon of hope, shining so bright.

So, let us celebrate this land so grand,
Where history, culture, and beauty stand.
In every heart, India's spirit does reside,
A nation of pride, forever side by side.

-Waqi Shaikh
TE-B

भारतमाता

विस्मयाचे करून निरांजन ओवाळू आरती ,
भारतमाता मुकुट शोभतो साऱ्या जगतावरी||

गनिमी कावा शिवरायांचा शत्रु वर चालला
भल्या भल्यांच्या सामर्थ्याला धुळीत मिळविला
संस्थापक स्वराज्याचा इतिहास हा रचती||

बळ लाभले संतांचेही
शिकवण साहित्याची ,
अद्भुत भारत निर्मितीला साथ समर्थ वीरांची
स्वप्न उराशी महासत्तेचे पूर्णत्वा येती||

बीज रोवूनी स्वातंत्र्याचे
निर्मिले शौर्य ठाई ठाई
वारस जिजाऊ सावित्रीचा होई ,
पराक्रमाच्या पटलावरती महिला सरसावती||

यान झेपे आकाशी
आनंद उरी चा न मावे नभी,
भेदूनी पटल अपेक्षांचे
तिरंगा शोभे चंद्रावरी ||

भारत माता मुकुट शोभतो साऱ्या जगतावरी ||

-Dipti Dorugade
SY-A

34

माणुस

त्याने स्वताला माणुस म्हणवलय

पण त्यातल माणुसपण हरवलय

त्यानेच त्याच जीवन पोखरलय

स्वताहाला एकांतात गुंतवलय

अन माणसातल माणुसच हरवलय

या नवयुगात स्वताहाला अडकवलय

सगळ्या नात्याला आयुष्यातून हाकललय

त्यानेच त्याच सगळ आयुष्य

बिखरलय आनंदाला चिखलात रुतवलय

सगळ जगण वाऱ्याला सोपवलय

त्याने स्वताहाला माणुस म्हणवलय

पण त्यातल माणुसपण हरवलय

-Tanuja Patil
BE-A

YOU: BEGINNING AND THE END

Let's talk about it!!! First year of college and so many
new faces, so many new connections, right? Connections which seemed that
it would last for lifetime?
"FriendsForever" groups?

For the first time you felt so good and connected with each other, you
experience the soul-to-soul-connection.
But suddenly you also don't know how come things have fallen aside and
you no more feel connected.
Conversation with every passing day lessens, the
talkative you now don't know what to speak about , or things starts
becoming awkward, the opinion differences, the clashes and the list goes on
.
What are its consequences?
You start becoming sad about it. Every damn day feels so mentally
exhausting, you find yourself more of distracted.
You just can't figure out what was wrong? You
just start blaming yourself or others. The phase when
you start thinking the reason why every other person is leaving you. The
phase when you start thinking stuffs like "what' is wrong in me?
I should change according to them so they'll stay". Seeing others having so
many friends and happy, you start comparing.

Remember one thing, people will come and go. The person who stays with
you is you. You should never ever try to force someone to stay in your life.
And also accept the fact that no one is going to be in your life forever.

If someone has to stay they will be in your life irrespective of thousand and
lakhs of opposing reasons. Care for people, have good time with them, but
never get attached to them. Instead work on yourself. Develop new interests,
learn new things. In short, work on yourself.

Never get dependent on other person for your happiness or for them to solve
your problems. Take the charge of your life. You know once you start
depending on others to solve your problem, you no more will think for the
Set the right metrics for your happiness.
solutions but the sons of problems.
The metrics you decide your life by will define your happiness, version of
success and failure, and self-worth. So if the metric by which you base
your success is how much money you have in your savings, your life will
have little meaning if you have very little money.

On the other hand, if your metric of a successful life is a measure of how many people you help on a given day, your rate of succeeding goes up significantly. That is if you don't live alone on an island and cannot help another person.

So, prioritize yourself and and your own happiness. Always put big smile on your face. Spread happiness and positivity. Most importantly, stay in the present moment.

-Debshika Dutta
TE-A

ये तो अभी शुरुवात है

आ रही हैं आवाजें चंद्रमा की घाटी से।

चंद्रयान फिर उड़ रहा भारत की माटी से।

इतिहास बनाने की अब भारत की बारी है।

अब देखो सूरज तक जाने की तैयारी है।

धैर्य रखो बस अंबर में मानव भी भेजेंगे।

धरा चांद पर पानी भी हम ही खोजेंगे ।

-Pratik Sarode
BE-A

INDIA 2023 QUIZ

1.In Chandrayaan 3 mission the mission life of the Lander and Rover equal to........
A. 14 Earth Days
B. 24 Earth Days
C. 16 Earth Days
D. 12 Earth Days

2. Which launcher is used for Chandrayaan-3?
A. GSLV
B. LVSM
C. GSLV-Mk3
D. PSLV

3. Who is the director of the Chandrayaan 3 mission?
A. Veeramuthuvel
B. M Vanitha
C. Ritu Karidhal
D. K. Sivan

4.The new Parliament building will be spread across an area of _____.
A. 84,500 sq metres
B. 74,500 sq metres
C. 64,500 sq metres
D. 54,500 sq metres

5.On which date the new Parliament building was formally inaugurated?
A. 27 May 2023
B. 28 May 2023
C. 29 May 2023
D. 30 May 2023

6.What is the theme of the G20 summit happening in India?
A. Shaping an Interconnected World
B. Fighting poverty with rigidity
C. "One Earth-One Family-One Future".
D. Making the world together

7.What is the official language of the G 20 Summit?
A. English
B. French
C. Spanish
D. All of the above

8.**Who is the first Asian athlete to win an Olympic gold medal in the men's Javelin throw**?
A. Shivpal Singh
B. Davinder Singh Kang
C. Neeraj Chopra
D. None of these

9. **What was the record for javelin throw in Neeraj Chopra's Olympics gold?**
A. 89.9m
B. 85.6m
C. 78.6m
D. 87.58m

10.**What is Aditya L1 Mission?**
A. First Indian mission to study Sun
B. ISRO mission to study stars
C. Another mission to study the moon
D. Mission to understand the orbit

11. **What is the full form of PSLV?**
A. Polar Satellite Launch Vehicle
B. Pole Space Land Vehicle
C. Power Satellite Launch Vehicle
D. Polar Space Launch Vehicle

12.**Which country is the host of Asian Games 2023?**
A. India
B. China
C. Bangladesh
D. Japan

13.**What is the primary purpose of the Indian Penal Code (IPC) enacted in 1860?**
A. To regulate civil disputes
B. To establish a legal framework for businesses
C. To define crimes and their punishments
D. To govern international relations

14.**India launched the 'NET Zero' Innovation Virtual Centre with which country?**
A. USA
B. UK
C. Australia
D. South Korea

15.What is the maximum punishment for murder under the IPC?
A. Life imprisonment
B. 10 years in prison
C. Death penalty
D. 7 years in prison

16.What is the term for the legal process by which evidence is presented in court to prove or disprove a case?
A. Investigation
B. Trial
C. Examination
D. Evidence

17. What is the primary objective of the Digital Personal Data Protection Bill 2023 (DPDP Bill)?
A. To promote the sharing of personal data
B. To protect the privacy of individuals' personal data
C. To regulate e-commerce platforms
D. To promote government surveillance

18.Who is responsible for regulating and overseeing the implementation of the DPDP Bill in India?
A. Ministry of Health
B. Ministry of Finance
C. Ministry of Electronics and Information Technology
D. Ministry of Environment

19.Which aspect of data processing does the DPDP Bill emphasize to ensure data localization?
A. Data encryption
B. Data transfer agreements
C. Storage of sensitive personal data within India
D. Data anonymization

20. According to the DPDP Bill, who has the right to access their personal data and request its deletion?
A. Only government agencies
B. Only data fiduciaries
C. Data subjects (individuals
D. Data processors

Answer Key

1. A
2. C
3. C
4. C
5. B
6. C
7. D
8. C
9. D
10. A
11. A
12. B
13. C
14. B
15. C
16. D
17. B
18. C
19. C
20. C

Utkarsh Kadtare

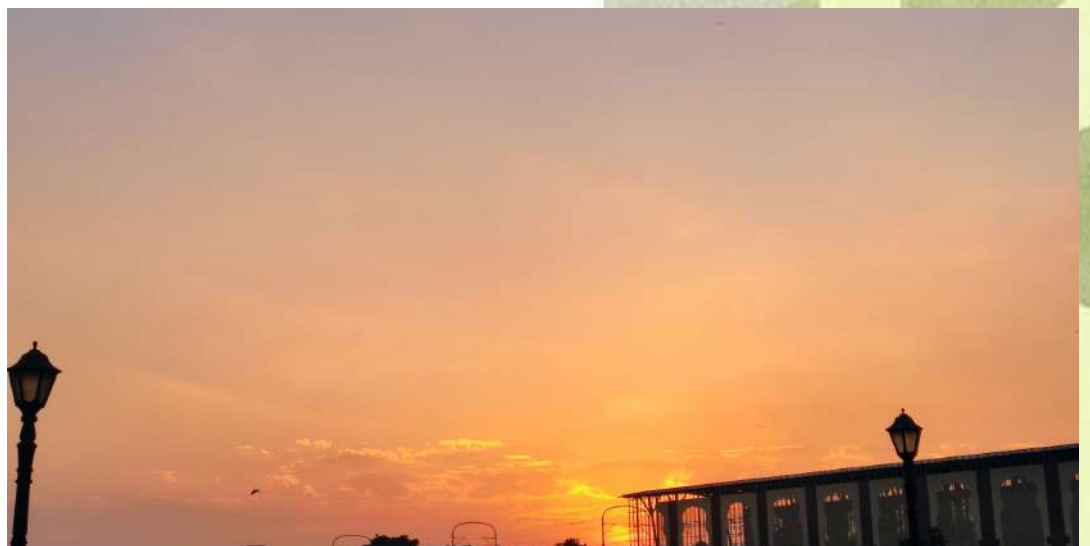**TE A**

Pranav Shinde

TE B

Shivtej Deshmukh

SE A

Waqi Shaikh
TE B

Saurabh Pawar
SY B

Shivtej Deshmukh
SY A

Dipti Dorugade
SY A

Shraddha kolambkar

TE A

Pratik Sarode

BE-A

Saurabh Pawar

SE B

Atharva Gaikwad
TE A

Digital
ART

Waqi Shaikh
TE B

Atharva Gaikwad
TE A

Yashashree Bagde

BE B

Vaishnavi Kagade

TE-A