I Y A NEWS™
- The Media Helpline
"An Association Based Community Media Organization"
R.N.I Reg. No.- ODIENG/2017/72682 ; R/U R.N.I, Ministry of I&B, Govt. of India
INDIAN YOUTH ASSOCIATION
VOLUME - VI | ISSUE - IV | BHUBANESWAR, ODISHA | JUNE, 2022 | Pages - 20 | Rs. 10/-

From IIT To Home Ministry : Story of The Minister of State (Home), Shri Tusharkanti Behera

(Written By : N.H Priya Garnaik & Akash Kumar Champatiray)

From a person from technological background to becoming the Minister of State (Home), the journey of Shri Tusharkanti Behera is remarkable. He was sworn in as a minister of state (home) recently which is arduous yet incredible. The person who has achieved a lot at this very early age which is a dream for others is none other

than our beloved Tusharkanti Behera. Including this, he had been given the charge as Minister of Electronics and Information Technology, Sports and Youth Affairs on 29th of May 2019, the portfolios which have been the focus of Shri Naveen Patnaik Government where he is implementing his vision and mission of developing Odisha to the fullest.

He took his first step on 1st July 1983 at Khaira, Balasore bringing immense happiness to the face of his father, Shri Suresh Chandra Behera and mother, Smt. Sarala Pandia. His father was working as an Assistant Manager at Food Corporation of India and his mother served as a teacher at Agrahat High School, Choudwar. Shri Tusharkanti Behera married Smt. Nandini Behera on 25th February 2021.

From his very childhood, he was exceptionally talented. After successful completion of his intermediate from Ravenshaw University, he joined the prestigious Indian Institute of Technology, Kharagpur for further studies. There, he completed his Bachelor's as well as Master's degree in Biotechnology and Biochemical Engineering.

After completing his studies, his attraction towards teaching and research landed him as a Asst. Professor at Centurian University of Technology and Management, where he was associated with teaching and research programs in Civil Engineering Department. He was teaching environmental engineering there and was focusing on his research simultaneously. He worked there for about 3.5 years.

It is mention worthy that he was also an Assistant Professor and HOD of Biomedical Engineering Department at Easter Academy of Science and Technology, Odisha and worked there for about 3 years. He was associated with DST project of "Bio Sand Filter" for about 2 years. He was also closely associated with Infosys, Mahindra Satyam, L&T Infotech, POSCO Steel, Reliance ADA as a part of recruitment in colleges.

As a person who loves the society a lot, he tries to resolve the issues in his locality. His hobby includes reading fiction and non-fiction books. Including this, he likes to play carrom and gardening a lot. According to him, everybody should love nature and due to this, he spends some of his precious moments at his garden enjoying the

picturesque view of the nature. He helps the poor people as much as possible and has taken several steps to help the destitute too. His social activity is not only limited to this but also he has set a benchmark for others by doing several activities for the welfare of distressed and orphans.

As a true Odia, he likes to read Odia short stories and novels too. Including this, he promotes Odia Literature as far as possible. He says, "I am an Odia and I am proud of being an Odia". He likes to play badminton a lot. He is the co-founder of KGP Cyber League (A gaming community comprising more than 300 members). Including this, he was associated with Kaling Samaj as a general secretary. Kalinga Samaj is basically a community of Odia IITians comprising of more than 500 members.

He contested assembly polls from Kakatpur in 2014 with a BJP ticket and had lost to BJD candidate, Shri Surendranath Sethi. Failure in his first attempt could not defeat his desires to pursue his political ambitions. He was determined enough to do something great for Odisha and he rose again with more courage and enthusiasm.

In 2019, he was also offered a ticket from the Saafron party, but he returned the ticket and chose to join BJD at the very last moment and emerged victorious this time. He said that when he visited his consituency during the election, people of his constituency started questioning him regarding the promises made by BJP during 2014 elections which made him feel disheartened as he had no specific answer to those questions at that time. At that time, BJD supremo and Chief Minister Naveen Patnaik reposed faith on him and gave him the opportunity to serve the people, he added. Ruling BJD party announced him as it's nominee for Kakatpur constituency in place of Shri Surendranath Sethi on 27th April 2019.

Late Shri Manohar Parrikar was the first ever IITian to become the Chief Minister of Goa. Simillarly, Shri Tusharkanti Behera is the first IITian from Odisha to become a Minister. He had left his job of assistant professor in 2014 to join politics. In accordance to the 38 year old technocrat-turned law and policy maker, the financial status of the people can be upgraded by the utilization of technology to resolve various issues. According to him, a person can serve a limited section of the society if he or she is doing a regular job but politics is something which has tremendous power and no limitations if one really wants to serve the society.

Over the last decade, there has been various development programs in the field of sports. As

a sports minister, he has significant contribution in recent times in the development of sports infrastructures, especially in hockey. Now odisha is the cradle of hockey and recently the state government not only promoted hockey but also sponsored the national teams. Rise of hockey in India is significant and Odisha has a significant contribution in the development of this game.

The Minister can always be found in twitter celebrating the success of others. He is a down to earth person and he congratulates and celebrates the success of every person associated not only with sports but also of other sectors too. He continuously encourages the youth of Odisha to join various sports. His happiness and dedication for upliftment of sports were clearly visible when he celebrated the success of Shri Amit Rohidas and Shri Birendra Lakra at Olympics.

After becoming a minister, he has taken several steps for rapid sports infrastructure development and Odisha is hosting mega events continuously. Currently, Odisha is looking forward to hosting FIFA Under-17 Women's World Cup in 2022 and Hockey World Cup in 2023. Various high-performance centres have been set up to help athletes enhance their performance. He said that he is committed to promoting sports to the fullest and nurturing sporting talents who will bring glory to the state and the country.

As a minister of state (Home), he is currently looking forward to implementing his vision in the maintenance of Odisha's internal security and policies. According to him, a day will surely come when our Odisha will be a benchmark for others which is not unacceptable.

THE CINE EXPRESS COLUMN

Kartik Aaryan : One of The Best Actors in India

(Written By – Our Correspondent, Source – wikipedia.org)

Kartik Aaryan Tiwari (born 22 November 1990, is an Indian actor who works in Hindi films. After pursuing a degree in engineering, he made his acting debut in 2011 with Luv Ranjan's buddy film Pyaar Ka Punchnama. He went on to play supporting roles in the female-led films Akaash Vani (2013) and Kaanchi: The Unbreakable (2014), but these failed to propel his career forward.

Aaryan had his breakthrough by starring in Ranjan's comedies Pyaar Ka Punchnama 2 (2015) and Sonu Ke Titu Ki Sweety (2018), both of which were commercially successful but received criticism for their misogynistic themes. He followed it by starring in the 2019 romantic comedies Luka Chuppi and Pati Patni Aur Woh, and the 2022 comedy horror film Bhool Bhulaiyaa 2. The last of these emerged as his highest-grossing release.

In addition to his acting career, Aaryan endorses several brands and products, and has co-hosted award ceremonies. He appeared in Forbes India's Celebrity 100 list of 2019.

Early life and work (1990–2017)

Kartik Tiwari (later Aaryan) was born on 22 November 1990 in Gwalior, Madhya Pradesh. Both his parents are doctors; his father, Dr. Manish Tiwari, is a paediatrician, and his mother, Dr. Mala Tiwari, is a gynaecologist. He pursued an engineering degree in biotechnology from Navi Mumbai's D. Y. Patil College of Engineering, Navi Mumbai, while secretly harbouring ambitions for a career in film.. He has said that he would skip his classes and travel for two hours to attend auditions. Aaryan

began a modelling career while in university and after three years of unsuccessfully auditioning for films, he did an acting course from the Kreating Charakters institute. He informed his parents of his desire to become an actor only after he signed his first film.

While still in his third year of college, Aaryan made his acting debut with Luv Ranjan's buddy film Pyaar Ka Punchnama (2011), co-starring Divyendu Sharma, Raayo S Bakhirta, and Nushrat Bharucha, which revolves around the romantic tribulations faced by three young men. He found a casting call for the film on Facebook and secured the role after auditioning for six months. As he had limited financial means at that point, he lived in an apartment with 12 other aspiring actors and earned money by cooking for them. In Pyaar Ka Punchnama, his character's four-minute monologue was one of the lengthiest single shots done for a Hindi film to that point. Reviewing it for Rediff.com,

Shaikh Ayaz found Aaryan's "bursting soliloquy on why women are the way they are and can never be understood [to be] riotously funny". Namrata Joshi of Outlook criticised the film for portraying each of the female characters as a "hard-hearted bitch" but was appreciative of Aaryan's monologue and the chemistry between the three men. The film emerged as a sleeper hit and he received a nomination for the Producers Guild Film Award for Best Male Debut.

After the release of Pyaar Ka Punchnama, Aaryan completed his engineering degree on the insistence of his mother. His next film release came two years later when he collaborated once again with Ranjan and Bharucha in the romance Akaash Vani (2013), which is about the titular lovers who are separated when Vani is married off to an abusive husband. Sudhish Kamath of The Hindu praised the film for exploring chauvinism in India, a rare concept for Hindi film, and praised the chemistry between the two stars, writing that "you can tell how much they are in love, even when they don't have any lines". Sudhir Chaudhary, the cinematographer in Aaryan's previous films, showed his work to Subhash Ghai, who was impressed by Aaryan and cast him in his directorial Kaanchi: The Unbreakable (2014). It is a drama about a woman's quest for justice when her husband is murdered by politicians, in which Aaryan played the love interest of the title character (played by Mishti). Despite a brief role, Aaryan agreed to the project to work with Ghai. Saibal Chatterjee of NDTV disliked the film but wrote that Aaryan "exudes strong screen presence and shows flashes of qualities needed to be a mainstream Bollywood lover boy". Both Akaash Vani and Kaanchi did not perform well commercially, leading Aaryan to question his career prospects.

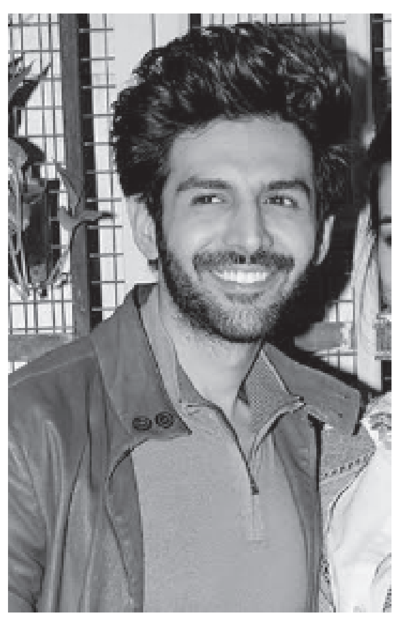
In 2015, Aaryan starred in Ranjan's comedy sequel Pyaar Ka Punchnama 2, which retained some of the original's cast, including him and Bharucha, and added the actors Omkar Kapoor and Sunny Singh. In it, he delivered an even longer, seven minute single-shot monologue. Mike McCahill of The Guardian criticised the film's poor handling of female roles, but considered the banter between Aaryan and Bharucha's characters to be its highlight. Shubha Shetty-Guha of Mid-Day too took note of the misogynistic themes but found parts of it "uproariously funny". When asked about the sexism in the film, Aaryan said that as a proponent of gender equality his character did not reflect his personal beliefs. With earnings of over ?880 million (US$12 million) against a budget of ?220 million (US$2.9 million), Pyaar Ka Punchnama 2 emerged as a major financial success. For his performance, Aaryan won a Stardust Award for Best Actor In A Comic Role.

The following year, Aaryan featured as a young Muslim boy who falls in love with an older woman in Tanuja Chandra's short film Silvat, which was made as part of the Zeal For Unity initiative to bridge cultural barriers between India and Pakistan. As he enjoyed working in comedies, Aaryan next starred alongside Paresh Rawal and Kriti Kharbanda in Guest iin London (2017), which is about a young couple troubled by unwelcome guests. A few scenes between Rawal and him were improvised on set. In a scathing review, Rohit Vats of Hindustan Times criticised the film's reliance on flatulence humour, and wrote that Aaryan "looks good, dances well, does his gags well, but eventually ends up playing the second fiddle to Rawal. Kartik has a likeable vibe, but that gets drowned in Rawal's perennial farting". It did not perform well commercially.

Breakthrough and commercial success (2018–present)

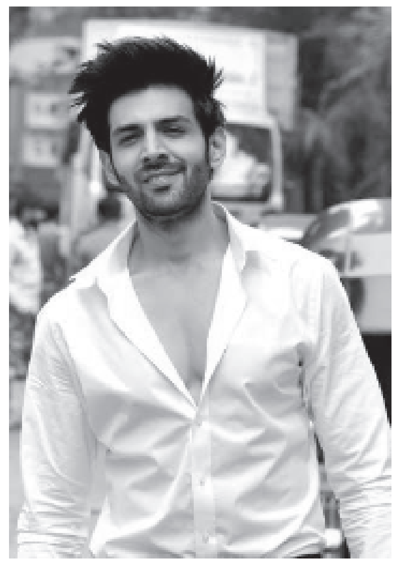
Aaryan's breakthrough came in 2018 when he collaborated with Ranjan and Bharucha for the fourth time in Sonu Ke Titu Ki Sweety, which also reunited him with Singh. The film tells the story of Sonu (Aaryan) who plots to separate his best friend Titu (Singh) from his fiancée Sweety (Bharucha) as Sonu considers her to be a gold digger. As with the Pyaar Ka Punchnama films, reviewers criticised the film's misogyny; Anna M. M. Vetticad of Firstpost took note of the film's homosexual undertones but panned it as a "dreary woman-hate-fest" and thought that Aaryan was "tiresome and hammy" in it. Rajeev Masand too disliked the "objectionable stereotyping" of women but found it to be "unquestionably funny" and credited Aaryan for making his character a "relatable, likeable figure despite his misdeeds". Once again addressing the criticisms, Aaryan said that portraying women as negative characters did not amount to misogyny just as casting men in villainous roles did not amount to misandry. With earnings of ?1.5 billion (US$20 million), the film emerged as Aaryan's biggest success. He won the Zee Cine Award for Best Actor in a Comic Role.

Aaryan believed that the success of Sonu Ke Titu Ki Sweety allowed him to choose from a wider variety of roles. He was drawn to Luka Chuppi (2019), a satire on live-in relationships in small-town India, for depicting social issues through comedy. Co-starring Kriti Sanon, it was filmed in his hometown of Gwalior. Shubhra Gupta of The Indian Express criticised the writing for failing to subvert the issues raised in the film, and thought that both Aaryan and Sanon "come off standard-issue Bollywood". He next starred alongside Bhumi Pednekar and Ananya Panday in the comedy Pati Patni Aur Woh, a remake of the 1978 film of the same name. He took on the part of a philandering husband, which was played by Sanjeev Kumar in the original film. Anupama Chopra considered the film to be less misogynistic than the original; she wrote that Aaryan



"enthusiastically commits" to his part but added that he had been overshadowed by his leading ladies. Both Luka Chuppi and Pati Patni Aur Woh were commercially successful, each grossing over ?1 billion (US$13 million) worldwide. For the latter, he won his second consecutive Zee Cine Award for Best Actor in a Comic Role.

Imtiaz Ali's romantic drama Love Aaj Kal, a spiritual successor to Ali's 2009 film of the same name was Aaryan's sole



film release of 2020. He played dual roles of young men in 1990 and 2020, opposite Arushi Sharma and Sara Ali Khan, respectively, after working on the mannerisms and body language of the characters to differentiate them from each other. In a negative review of the film, Nandini Ramnath of Scroll.in wrote that Aaryan "nails the diffidence and callowness of his characters" but bemoaned that he lacked "brooding quality and simmering intensity" in certain scenes. It emerged as a box office bomb.

Aaryan was cast by Dharma Productions in the comedy sequel Dostana 2, but after filming for 20 days, he was fired. Bollywood Hungama reported that it was due to creative differences between him and producer Karan Johar, and that the production company would not work with Aaryan in the future. In 2021, Aaryan starred in Ram Madhvani's thriller Dhamaka, a remake of the Korean film The Terror Live (2013). Filmed entirely in 10 days, it was released on Netflix. Stutee Ghosh of The Quint believed Aaryan's dark, against-type performance to be among the film's positive aspects. The following year, Aaryan starred in Anees Bazmee's horror comedy Bhool Bhulaiyaa 2 with Tabu and Kiara Advani. He temporarily lost his voice while filming its climax sequence. In a mixed review, Shalini Langer of The Indian Express noted that Aaryan's "cockiness [and] enthusiasm... lends some much-needed energy to the film". The film emerged as his highest-grossing release, with worldwide earnings of over ?2 billion (US$26 million).

Upcoming films

Aaryan will next star in a remake of the Telugu film Ala Vaikunthapurramuloo (2020), titled Shehzada, and in Shashanka Ghosh's romantic thriller Freddy. He has committed to star in Om Raut's as-yet untitled action film and in the Sajid Nadiadwala-produced romance Satyanarayan Ki Katha. He will also collaborate with Hansal Mehta in the social drama Captain India, in which he will play an airforce officer.

THE ART & CULTURE COLUMN

Symbolism In The Cult of Lord Jagannath

(Written By : Parikshita Panigrahi, G.M College, Sambalpur)

India's rich religious heritage is steeped in symbolism and suggestiveness. The Sanatan Vedic Consciousness perceives divinity even in inanimate objects like wood, stone and soil. Even Islam, which is otherwise opposed to idolatry, partially accepts the existence of an indwelling spirit in apparently lifeless objects. The circumambulation of the black stone pillar at the holy shrine of Mecca is a case in point. The upasana of Purushottama Sri Jagannath is but an amalgam of certain symbolic rituals. The present essay is an attempt at highlighting this symbolic form of worship.

The devotees of Lord Jagannath get a darshan of Sri Patitapabana as soon as they set foot in Shree Mandir. Madala Panji, the temple chronicle informs us that Gajapati Ramachandra Dev (1732-1743 AD) was forced to marry a Muslim girl and convert to Islam under the weight of circumstances. Thus, being an outcast (Patita), he was not permitted to enter the temple. However, taking cognizance of the disgraced King's devotion to the Lord, the Muktimandap Council of Scholars got the image of Patitapabana installed in the Entrance Hall as a compromise. Ramachandra Dev worshipped this image of the Lord from outside the temple throughout his life. However, the theory sounds fallacious from historical point of view because "Kanchi Kaveri", a poem written much before the reign of Ramachandra Dev in the Fifteenth century narrates how Gajapati Purushottama Dev had worshipped Patitapabana before embarking on his military expeditions against Kanchi. Moreover, Patitapabana is eulogized in Purushottama Dev's "Mukti Chintamani" which is a treatise on the order and protocol of worshipping different deities in the temple. So it seems, Patitapabana carries some other symbolic significance. Man is patita (fallen) by birth and cannot attain salvation without divine grace. Therefore, the ritual in all probability is a symbolic instruction to man to consider himself a patita and show humility before the darshan of Darubrahma.

It is an age-old custom in Shree Kshetra to seek the blessings of Kashi Vishwanath prior to the darshan of Sri Jagannath. "Ekamra Chandrika" describes a similar custom in vogue at Shaivite shrine Bhubaneswar where the devotee is required to seek the permission of Sri Ananta Vasudev for the darshan of Lord Lingaraj. This unique tradition hints at the essential oneness and inseparability of Madhava (Lord Vishnu) and Umadhava (Lord Shiva).

The flight of 22 stairs leading from the Entrance Hall to the inner corridor of the temple is held in high esteem by the devotees. These stairs represent the 22 principles that set the sub lunar world in motion – five basic elements (earth, water, fire, air and ether), five senses, five principal organs (tongue, hands, feet, rectum and genital), five prana vayus (prana, apana, samana, udana and vyana), mind and intellect. These principles or tattvas bind human beings in snares of illusion and the repetitive cycle of birth and death. So crossing the 22 stairs indicates that unison with God is possible only when one overcomes the onslaughts of these 22 principles.

Paying obeisance to Neela Chakra from the temple of Vali is a very popular ritual in Shree Mandir. Vali is a symbol of surrender which is the highest form of devotion. Srila Roopa Goswami's "Bhakti Rasamrita Sindhu" lists the devotees who best exemplify the nine-fold path of devotion to God.

They are King Parikshit (listening to the Lord's pastimes), Sage Shuka (narration of God's glory), Prahlada (meditation), Laxmi (tending to Lord's lotus-feet), Prithu (ritualistic worship), Akroor (prayer), Hanuman (selfless service), Arjuna (friendship) and Vali (surrender). Unconditional surrender marks the climax of devotion as it leads to effacement of self and consequent loss of ego. Arrogance widens the gulf between Jeevatma and Paramatma and one who overcomes it becomes yoga-siddha. So the sight of the blue wheel from Vali's temple teaches us that glorification of the self is the greatest impediment on the path of devotion. The ritual intends to arouse in us the emotion of complete surrender before venturing into the sanctum sanctorum.

The iconography of the deities in the Shree Mandir is also symbolic in nature. At the earthly level, the perception of the complete in the incomplete may sound paradoxical, but at the level of the divine, void-completeness, visible-invisible, manifest-unmanifest, attribute and the absence thereof, belong to the same league. The Absolute is invariably a mixture of opposites, a fusion of contradictions. Ishopanishad defines the Brahman as "anoraniyan mahato maheeyan" or the one who is smaller than an 'anu' (atom) and at the same time larger than the largest thing conceivable. Therefore, void is the only thing that can be absolute. We find in the deities a synthesis of the Poorna Purushottama of the Vaishnavas and the Shunya Purusha of the worshippers of the Formless God. The Brihadaranyaka Upanishad defines the absolute nature of reality in the following terms:

"I am Absolute and so is He. Absolute begets Absolute and what remains after Absolute is deducted from the Absolute is Absolute itself!" [5/1/1]

In Mathematics too, cipher or zero (void) is the only thing that is Absolute because addition, multiplication or subtraction of zero with/from zero always yields zero. Again, $0/x = 0$ and $0/0 = x/0 =$ undefined or 'avyakta'. Hence, the apparent incompleteness of the images of the Lord is actually a reflection of their completeness.

On the Jewelled Throne of Shree Mandir, Devi Subhadra is seated between Lord Balabhadra and Lord Jagannath. In the views of transcendentalists, Sri Balabhadra is Jeeva (soul), Devi Subhadra is Maya (illusion) and Sri Jagannath is Parama (Ultimate Reality). It means the jeevatma pining for liberation and union with the Paramatma has to transcend the frontiers of illusion. Again, the Lord's image sports the symbolic motifs of the nine planets of Indian Astrology. His mandala-shaped eyes are symbolic of the sun and the moon. His nose and red lips represent the triangular Mangal and the bow-shaped Buddha. His 'tilak' resembles the diadem-decked Brihaspati, and the 'rahurekha' the preceptor of demons. His dark complexion bears similarity with the awe-inspiring Shani. His crown is the alligator-shaped Rahu and His spiral torso, the serpentine Ketu. It is no wonder then that astrologers hail Him as 'graha-roopi-Janardana', the Lord in the guise of planets.

The complexion of the deities is also replete with symbolism. Popular opinion holds that the white, yellow, dark and reddish complexion of the four-fold images represent the Caucasoid, the Mongoloid, the Negroid and the Red Indians respectively. But the authenticity of the view is debatable as it is hard to believe that the then carpenters who carved out the images had knowledge about all the ethnic groups beyond the geographical limits of Aryavartta. Rather, a mantra from the Rig Veda sounds more plausible in this context: "Omkarasya tridha roopah shweta Peeta scha Shyamala". It means the Formless AUM assumes Form in three colours – white, yellow and dark. White is the sum of all colours. Hence the white-complexioned Balabhadra is the all-devouring Maharudra of Doom's Day. The yellow-complexioned Devi Subhadra is a reflection of Laxmi, the golden-hued consort of Lord Hari described in Shree Sooktam. Finally, black is not a colour, rather a negation of all colours. So dark-hued Lord Jagannath is the Ultimate force that eludes all attributes, the force beyond the purview of form, shape, texture, colour and odour. The Lord's enigmatic smile is a bitter invective on the misplaced pride of the ignorant man. His ever-open eyes are symbolic of eternal vigil. In this connection, the Lord tells Arjuna in the Bhagavad Gita (3/22-24) that He has nothing unattainable and no duty worth carrying out. Still He remains glued to karma since man follows the footprints of the Maker all the time. If God stops working, He shall be the cause of lethargy and inaction among the people. The Lord of the Universe therefore maintains uninterrupted vigil to uphold order and harmony in His creation.

The abundance of humanization of the Lord's rituals symbolically suggests that pinda-brahmanda, Jeeva-Shiva, and Nara-Narayana are basically identical. Consumption of Mahaprasad by Brahmins and untouchables together, and the ritual purification of the chariots by the Gajapati carry the symbolic message of equality in the eyes of God. The principle of equality also prevails in the order of the movement of chariots. For instance, the chariot of Lord Jagannath gets precedence when all the three are dragged to the Lions' Gate from the place of construction. The chariot of Lord Balabhadra moves first during the Car Festival, and the chariot of Devi Subhadra is pulled firstwhile getting the chariots ready for south-ward movement.

Rath Yatra is the holiest of the Lord's 12 annual festivals. One who sees the Lord on the chariot is believed to be liberated from the bondage of birth and death. "The Kathopanishad" says that our body is verily a chariot occupied by the soul. Intellect the charioteer drives it by reining in the senses. So the hidden intent of Rath Yatra is to awaken our intellect so that the soul can complete its journey to its original abode. The 42 chariot wheels (16 of Nandighosh, 14 of Taladhwaj and 12 of Darpadalan) have their own symbolism. One who witnesses the cyclic motion of the 84 wheels (42 on Gundicha and 42 on Bahuda) is promised exemption from the pains of 84 types of hell.

Navakalevara is a unique phenomenon in India's religious tradition. It suggests that change is an indisputable fact and that death is not the end of life, rather the beginning of a life hereafter. Navakalevara inspires us to comprehend the evanescent nature of material life and aspire for transcendental bliss which goes beyond the spatio-temporal limits of the body and the senses.

ENVIRONMENT & AGRICULTURE COLUMN

India's Agri Exports Soaring High

(Written By – Sandip Das, Source – employmentnews.gov.in)

Proactive measures taken by the government have ensured that India's agricultural and allied sector product exports crossed a record US $ 50 billion in 2021-22, thus playing a key role in enhancing farmer income.

The Government of India's consistent and sustained thrust on boosting India's agricultural and allied sectors products exports have started to show results. Despite the unprecedented global pandemic-COVID-19, India has been able to meet rising global demand and is also emerging as a significant supplier of food and other agricultural products. India's exports of agricultural products, including marine and plantation products, for 2021- 22 rose to a record US $ 50 billion, which was an increase of more than 20% from the previous financial year. As per the provisional figures released by the Ministry of Commerce and Industry, the export growth has been achieved mostly because of a surge in shipments of rice, marine products, sugar, buffalo meat, raw cotton and wheat.

"This growth in agricultural products exports has been achieved in spite of unprecedented logistical challenges in the form of high freight rates, container shortages etc," a statement by the Ministry of Commerce in April, 2022 had stated. It also stated that growth in agri-exports will go a long way in realising Prime Minister Narendra Modi's vision of improving farmers' income.

In 2021-22, highest ever exports have been achieved for commodities such as rice ($ 9.65 billion), wheat ($ 2.19 billion), sugar ($ 4.6 billion) and other cereals ($ 1.08 billion). Exports of wheat rose by more than 273% to $ 2.19 billion in 2021-22 in comparison to previous year. The Commerce Ministry statement also stated that increase in agri-exports of these products has benefitted farmers in Punjab, Haryana, Uttar Pradesh, Bihar, West Bengal, Chhattisgarh, Madhya Pradesh, Telangana, Andhra Pradesh, Maharashtra etc.

"Meanwhile, India has also captured close to 50% of the global rice trade. In 2021-22, the export of marine products was at $7.71 billion which had economically benefited farmers in the coastal states of West Bengal, Andhra Pradesh, Odisha, Tamil Nadu, Kerala, Maharashtra and Gujarat.

Spices exports rose to $4 billion for the second year in a row in the last financial year, while despite facing tremendous supply side issues, coffee exports have crossed $ 1 billion for the first time, which has improved realisations for coffee growers in Karnataka, Kerala and Tamil Nadu.

The major market for India's agriculture products were the United States, China, Bangladesh, UAE, Vietnam, Saudi Arabia, Indonesia, Nepal, Iran and Malaysia.

Officials from the Commerce Ministry have attributed the sharp rise in agri - exports to sustained efforts on the part of the Department of Commerce and its various export promotion agencies like Agricultural and Process Food Products Exports Development Authority (APEDA), Marine Products Export Development Authority (MPEDA), Coffee Board and various commodity boards.

Besides, the Commerce Minis-try also engaged with state governments and district administrations for promoting agriculture exports. The agricultural commodities have been exported from clusters like Varanasi (fresh vegetables, mangoes), Anantapur (banana), Nagpur (orange), Lucknow (mango), Theni (banana), Solapur (pomegranate), Krishna & Chittoor (mango) etc.

"During Covid-19 pandemic, while many countries were stockpiling their rice, wheat and other cereals, we took a proactive role in organising logistics and developing value chains which has given a boost to cereal exports," M Angamuthu, Chairman, APEDA said.

After October 2020, there has been a sharp spike in global agri-commodity prices, with the lifting of Covid-induced lockdowns and also the aftereffects of the massive financial infusion in the post pandemic phase.

According to Commerce Ministry officials, the focus of the government policies has been to provide the requisite support to export promotion bodies and the farmers so as to enable them to increase exports of agricultural products from the country. Several measures have been initiated in the last eight years for boosting India's agricultural and allied food products exports basket.

Some of the measures initiated include:

Agriculture Export Policy- To promote agricultural exports, the Government has introduced a comprehensive Agriculture Export Policy (AEP) in 2018 aimed at harnessing export potential of Indian agriculture, through suitable policy instruments, to make India a global power in agriculture, and raise farmers income.

Key objectives of the AEP:

- To diversify our export basket, destinations and boost high value- and value-added agricultural exports, including focus on perishables.
- To promote novel, indigenous, organic, ethnic, traditional and nontraditional Agri products exports.
- To provide an institutional mechanism for pursuing market access, tackling barriers and dealing with sanitary and phytosanitary issues.
- To strive to double India's share in world agri-exports by integrating with global value chains.
- Enable farmers to benefit from export opportunities in overseas markets.

So far 21 states - Maharashtra, Uttar Pradesh, Kerala, Nagaland, Tamil Nadu, Assam, Punjab, Karnataka, Gujarat, Rajasthan, Andhra Pradesh, Telangana, Manipur, Sikkim, Uttarakhand, M.P., Mizoram, Meghalaya, Tripura, Arunachal Pradesh and Himachal Pradesh and two Union Territories -- Ladakh and Andaman & Nicobar Islands have finalized their specific exports policy.

The government has identified 46 unique product district clusters for export promotion while 29 cluster level committees have been formed for promotion of agri exports. APEDA has formed Export Promotion Forums under its Chairmanship and having representatives of Department of Commerce, Department of Agriculture, State Governments, National Referral Laboratories and ten leading exporters of Grapes, Onions, Mango, Banana, Pomegranate, Flori-culture, Rice, Dairy Products and Nutri cereals.

The Ministry of Commerce and Industry has also initiated several schemes to promote exports such as Trade Infrastructure for Export Scheme, Market Access Initiatives Scheme, Merchandise Exports from India Scheme etc. In addition, assistance to the exporters of agricultural products is also being provided under the Export Promotion Schemes of APEDA, Marine Products Export Development Authority (MPEDA), Tobacco Board, Tea Board, Coffee Board, Rubber Board and Spices Board. Besides, for boosting honey exports, India has made Nuclear Magnetic Resonance testing mandatory for honey exported to the USA.

Central Sector Scheme for providing Transport and Marketing Assistance

A new Central Sector Scheme - Transport and Marketing Assistance for Specified Agriculture Products - for providing assistance for the international component of freight, to mitigate the freight disadvantage for the export of agriculture products, and marketing of agricultural products has been brought about. A Farmer Connect Portal has been set up for providing a platform for farmers, Farmer Producer Organizations (FPOs) and cooperatives to interact with exporters.

APEDA in collaboration with other stakeholder in the value chain has organised BuyerSeller Meets (BSMs) in the clusters to provide export market linkages. Regular interactions, through videoconferences, have been held with the Indian Missions abroad to assess and exploit export opportunities. Besides that, country specific BSMs, through Indian Missions, have also been organized. Common Digital Platform for Certificate of Origin has been launched to facilitate trade and exports.

Thirteen dedicated 'AgriCells' in Indian embassies Vietnam, USA, Bangladesh, Nepal, United Arab Emirates, Iran, Saudi Arabia, Malaysia, Indonesia, Singapore, China, Japan and Argentina were created to provide inputs on real time for boosting exports.

APEDA, which has a share of more than 50% in India's agricultural and processed food products exports, initiated registration of pack-houses for horticulture products to meet the quality requirements of the international market. Registration of export units for peanut shelling and grading and processing units, for instance, is to ensure quality adherence for the European Union and non-EU countries.

The export promotion body has taken several initiatives to promote Geographical Identification (GI)-registered agricultural and processed food products in India by organising virtual buyer-seller meets with the major importing countries across the world. In order to ensure seamless quality certification of products to be exported, the export promotion body has recognised 220 labs across India to provide services of testing a wide range of products and exporters.

With these series of measures initiated, India's agricultural and allied food products are likely to continue to surge in coming years bringing in benefits to the farmers. This surge in exports has been achieved even while India's agricultural and allied sectors, on which more than half of the country's population depends for their livelihood, continue to provide food security to crores of people in the country.

HEALTH AND FAMILY WELFARE COLUMN

12 Habits of Super-Healthy People

(Reviewed By – Melinda Ratini, Source – webmd.com)

Have Breakfast

It's important for a bunch of reasons. It jump-starts your metabolism and stops you from overeating later. Plus, studies

show that adults who have a healthy breakfast do better at work, and kids who eat a morning meal score higher on tests. If a big plateful first thing isn't for you, keep it light with a granola bar or a piece of fruit. Just don't skip it.

Plan Your Meals

It'll help you save time and money in the long run. Block out some time, then sit down and consider your goals and needs.

Do you want to lose weight? Cut back on sugar, fat, or carbs? Add protein or vitamins? Meal prep keeps you in control. You know what you're eating and when. A bonus: It'll be that much easier to skip those doughnuts in the breakroom at work.

Drink Plenty of Water

It can do so many good things for you. Staying hydrated is at the

top of the list, but it may also help you lose weight. Another reason to go for H2O? Sugary drinks are linked to obesity and type 2 diabetes. If you aren't a fan of plain water, add flavor with slices of orange, lemon, lime, watermelon, or cucumber.

Take an Exercise Break

Don't just grab another cup of coffee -- get up and move. Do some deep lunges or stretches.

It's great for your body and mind. Just 30 minutes of walking five times a week may help keep the blues at bay. And if you can't do those minutes all at once, short bursts help, too.

Go Offline

Checking your email and social media a lot? Sure, your friends' and family's latest updates are just a click away, but do you really need to see pictures of your cousin's latest meal? Let it wait until morning. Set a time to log

off and put the phone down. When you cut back on screen time, it frees you to do other things. Take a walk, read a book, or help your cousin chop veggies for their next great dinner.

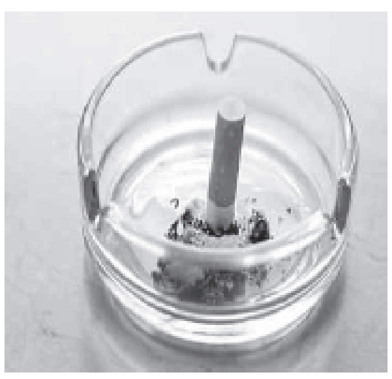
Learn Something New

New skills help keep your brain healthy. Sign up for a dance class or a creative writing workshop.

Better yet, master a new language. The mental work it takes can slow the signs of aging and may even delay the effects of Alzheimer's disease.

Don't Smoke7/12

If you light up, quit. It's a big move toward better health. Your body repairs itself quickly. As



soon as 20 minutes after your last cigarette, your heart rate and blood pressure drop. Why wait? Kick the habit, today. Your doctor will be happy to help you get started.

Sleep Well8/12

There are almost too many benefits to list. A good night's sleep keeps you in a better mood, sharpens memory and focus, and helps you learn new things. In the long term, it lowers your risk of

heart disease and helps you keep trim. Aim to get 7 to 9 hours a night. For the best rest, do it on schedule -- turning in and waking up at about the same times every day.

Train Your Muscles

Strength training helps your body trade fat for muscle mass.

That means you'll burn more calories even when you're being a couch potato. But these workouts can also help you slim down, strengthen your heart, and build up your bones. Do strength-training exercises -- like push-ups, lunges, and weight lifting -- at least twice a week.

Head Outdoors10/12

A few minutes in the sunshine raises vitamin D levels, and that's good for your bones, your heart,

and your mood. Plus, being outside means you're more likely to move your body instead of parking it in front of the TV or computer. Choose nature over city streets, if you can. One study found that people who strolled in urban green spaces were calmer than people who walked in built-up areas.

Keep Your Balance11/12

If you're young and active, good balance will help you avoid

injuries. If you're older, it will keep you active longer and lower the chances you'll fall and break a bone. No matter your age, good balance means better muscle tone, a healthier heart, and greater confidence. Yoga and tai chi are great ways to work on it, but just about anything that keeps you moving, even walking, can help.

Be Mindful12/12

It can mean meditating or simply stopping to smell the roses. However you do it, studies show mindfulness slashes stress,

Even washing dishes can be good for your brain, as long as you do it mindfully.

From Page 20 (Climate change...)

All countries should adopt national food-based dietary guidelines. These can be a key policy instrument to translate global evidence on healthy and sustainable diets into practical, culturally appropriate, and context- and population-specific dietary recommendations. Innovation policies should prioritize R&D for nutrient-rich foods (including fruits and vegetables) to make healthy diets more affordable. Targeted consumer subsidies and removal of taxes on healthy foods will also help to lower the costs of healthy diets for low-income households. Consumers can be encouraged to make healthy, sustainable food choices through educational campaigns and changes in food environments, including use of food standards, labeling, and certifications that warn of unhealthy foods and signal the nutritional value and environmental footprint of foods.

Climate change impacts — including shifts in crop production, rising temperatures, changing humidity levels, and more frequent extreme weather — will affect whole value chains through which agricultural products are traded, aggregated, processed, and sold to consumers. Incentives for producers and other value chain actors will be altered as climate change reduces the effectiveness of some inputs, increases risks, and impacts transaction costs. International trade that takes equitable account of GHG emissions can play a key role in softening these impacts by reducing price volatility and providing access to food for countries that have suffered a drop in production. Both trade and investments in climate-smart practices all along value chains can support adaptation through increased efficiency of resource use and reductions in food loss.

Climate-smart practices in value chains can also reduce the large share of agrifood sector GHG emissions generated beyond the farmgate, largely by energy use and food loss and waste. Free and open trade should be an integral part of climate-smart agricultural and food policies. Trade allows countries to obtain nutritious foods at the lowest cost and can be a key tool for adaptation in the face of weather-related production variability. Globally, trade, in conjunction with efforts to reduce transport-related GHGs, can promote more efficient use of natural resources and help reduce GHG emissions from agrifood production. Investments along value chains for efficient and safe storage and transport of food crops and products, including low-emissions cold chains for perishable products and other measures to prevent spoilage and safety hazards, can improve access to healthy diets and reduce food loss and waste. Increasing consumer demand for sustainably produced foods, for example through certification programs, can create incentives for changing practices along entire value chains.

Poor rural populations who depend on agrifood systems for food and livelihoods are among the most vulnerable to the impacts of climate change. These groups remain underserved in many ways, including access to markets, finance, and knowledge, as well as energy and natural resources, and hence have limited capacity to benefit from innovations in food systems. Policy reforms must both improve access to services, markets, and financial tools, particularly for women and other vulnerable groups, and ensure a secure safety net for all vulnerable populations. Social protection systems now cover about 2 billion people around the world, and while their potentially important role in addressing climate change challenges has been recognized for more than a decade, they now need to be expanded to do so more effectively. Increased resilience, empowerment, and agency among the disadvantaged can support multiple social, economic, and environmental benefits.

Climate-positive food systems transformation will require development of context-appropriate institutions and "soft" infrastructure inclusive of rural and urban food system actors, including equal access to digital climate services, innovative insurance tools, advisory services, and financial services to support increased productivity and sustainability. Women's participation, along with that of other vulnerable groups, should be strengthened across all resource governance, including in clean energy systems, water systems, landscapes, crop development, and digital innovations. Social protection programs can provide a safety net for vulnerable groups and support sustainable food systems transformation, including the transition to more climate-resilient crops and to off-farm and urban employment. Expanding "adaptive" social protection programs that comprise traditional social assistance, humanitarian responses, and disaster relief, and that are integrated with complementary climate investments targeted to the poor, can immediately reduce the impact of shocks and support inclusion in food systems transformation. Improved real-time monitoring of food crisis risks is needed to take early and preventative action to protect vulnerable populations in contexts affected by conflict, natural resource scarcity, and exposure to climate shocks.

The future of food systems depends on access to sufficient funding to facilitate a shift to sustainable production and consumption and to better livelihoods. Current financial flows — including agricultural support, international development funds, and private investment — are at best insufficient and at worst counterproductive to climate-resilient development. They often support unsustainable and unhealthy production while undervaluing environmental impacts. As much as $350 billion per year will be needed to meet climate-related goals in food systems, much of which could be "reoriented" from existing sources. Moving forward, investment for environmental, social, economic, and nutrition goals could be increased in several ways. Reform of counterproductive incentives created by current agricultural, trade, and investment policies can mobilize both public and private finance for climate-positive food system transformations and reorient funds toward climate finance. Public support to agriculture, around an estimated $620 billion, should be repurposed toward R&D for green innovations and to incentives to producers to adopt climate-smart technologies and practices.

Such innovations should focus on increasing productivity, reducing emissions, and enhancing resilience in food production. International development funds should be clearly targeted to meeting climate and sustainability goals, and used to leverage or crowd-in private funds from global capital markets. Reorientation of consumer demand, through better information, food environments, and fiscal tools, will also create incentives for producers to adopt and invest in sustainable and climate-resilient practices. Innovative mechanisms for tapping additional resources, such as publicly guaranteed "green bonds" or climate-impact transparency requirements for banks and investors, should be explored to ensure climate finance needs will be met. Achieving these reforms and ensuring widespread adoption of innovations will be politically challenging. Policy solutions, including incentives, institutions, and financing, will need to be tailored to a wide range of contexts and to balance environmental, nutritional, economic, and social goals. Regions, countries, and local landscapes will need to establish their own priorities, address potential trade-offs, build constituencies for reform, and ensure that reforms generate widespread benefits. Investing in policies and innovations to support sustainable food systems will contribute significantly to global economic prosperity, poverty reduction, food security, and healthy diets as well as to planetary health.

Achieving the ambitious goals set for food systems will require inclusive, holistic approaches that consider all components of our food systems, from local to global and from farmer to consumer. Charting optimal pathways for sustainable food systems transformation will be challenging, but we must step up our efforts now to ensure our global future.

But man is not made for defeat. A man can be destroyed but not defeated.

SCIENCE & TECHNOLOGY COLUMN

Great Scientists Who Contributed To The Freedom Movement

(Written By - Nimish Kapoor, Source – employmentnews.gov.in)

As we celebrate 75 years of India's independence, we remember the contributions of freedom fighters who dedicated their lives to earn this independence. Some took the path of non-violence and some opted for direct confrontation. However, very few people are aware of the fact that our scientists also contributed in their own way in India's freedom movement. The British authorities applied every possible means to humiliate their efforts and belittle their contributions. They were challenged to build their own laboratories a

d develop their own instruments. Our scientists bravely faced the disdain of the British rule and developed the infrastructure on which the nation built its own path post-independence. India's scientific heritage is centuries old, but the foundations of scientific institutions that we see in the country today were laid by our scientists by fighting the British.The list of such scientists is very long. We would explore here four early scientists who laid the foundation of indigenous science in the country. Several Indians working in the Geological Survey, Botanical Survey, Zoological Survey, Archaeological Survey, and Survey of India had worked on scientific research and made valuable contributions. Their researches were published in the journals in England. The knowledge from India was used for the advancement of science in England. The scientific advancement was not used for the benefit of India. The British didn't want the Indians to do any research in India and never acknowledged their achievements.

Mahendra Lal Sircar (1833-1904)

Mahendra Lal Sircar was born in 1833 in a poor family at Kolkata. He was brilliant in studies and in 1835 started studying in the Medical College in Calcutta (now Kolkata). In the absence of the English lecturers his classmates used to ask him to teach them. He completed his MD and started practicing medicine. In 1863 a branch of British Medical Association (BMA) was opened in Calcutta and Sircar was made the General Secretary of the Association.

At that time Homeopathy was already practised in India, but the British were disdainful towards it. When Sircar was unable to cure one of his patients and that patient got cured with Homeopathy, he became curious to know more about this form of treatment. He started studying Homeopathy scientifically and in 1867 presented his study in the meeting of the BMA. But his appreciation for Homeopathy agonized the British. As a consequence, he was expelled from the Association. His practice also got affected and the authorities tried their best to stop his practice. He was deeply saddened by this development. He felt that the British gave him the scientific vision, the reasoning, and with this he could see the truth and had the courage to stand for it. For one year his clinic was almost closed. The BMA's journal stopped publishing his articles. This started a sort of churning within him and consequently in 1868 he started 'The Calcutta Journal of Medicine', India's first scientific research journal. He started it with a special mention of Charak Samhita where Maharshi Charak says, "that alone is the right medicine which can remove disease; He alone is the true physician who can restore health."

Mahender Lal Sircar established the Indian Association for the Cultivation of Science (IACS) in 1876 with the objective to enable Indians to cultivate science in all its disciplines. With a collection of Rs.61,000, Sircar pleaded that the work of IACS should be carried on with our own efforts, unaided by the government. In a timespan of only few years, IACS set-up seven sections in general physics, chemistry, astronomy, systematic botany, systematic zoology, physiology, and geology. The establishment of the Indian Science Congress Association (ISCA) in 1914 was another major landmark. ISCA was a common forum for scientists working in different parts of the country.

Pramatha Nath Bose (1855-1934)

P.N. Bose was a geologist and one of the pioneers to ask for more extensive science education. In 1894, he wrote 'A History of Hindu Civilisation Under the British Rule'. He was appointed as a graded scientist in the Geological Survey of India. He was the first Indian to get this job in the organisation. He graduated in Science from London University and passed out from the Royal School of Mines in 1878. During his years as geologist with Geological Survey of India (GSI) he discovered, along with many other remarkable discoveries, iron ore mines in Dhulli and Rajhara in Madhya Pradesh.

The then Director of Geological Survey of India, H.B. Medlicott was not pleased to see an Indian appointed as a graded scientist. After his retirement, Pramatha Nath was to become the next Director; but the post was given to a British officer who was ten years junior to him and much less qualified. Medlicott at that time had said, "Indians are incapable of any original work in natural science. So let us exercise a little discretion with our weaker brethren and not expect them to run before they can walk." This was an insult for the country which had an abundance of scientific brilliance. Consequently, Bose resigned from his post in 1903.

After resigning from Geological Survey of India, Bose came in contact with Jamsetji Tata. The Maharaja of Mayurbhanj was also interested in the mining industry. Pramatha Nath was appointed by the Maharaja as his geological adviser. The most remarkable achievement of Bose's life was to discover deposits of iron ores in the Gorumahisani Hills of Mayurbhanj. The Maharaja of Mayurbhanj, along with Pramatha Nath, got in touch with Jamsetji Tata. It was Bose who had shown the location to Tata where Tata Iron and Steel Company at Sakchi(now Jamshedpur) was to be established. In 1907 Dorabji Tata fulfilled his dream and established the company.

Acharya Jagadish Chandra Bose (1858-1937)

Sir JC Bose should be considered the first non-violent freedom fighter. As the Sepoy Mutiny of 1857 was the First War of Independence against the British rule, the protest of Jagadish Chandra was the first non-violent protest against British misrule, which he won. Bose fought both with the British administrators and the European scientists to establish himself as a plant physiologist. He was not easily accepted in Oxford. He manufactured his own instruments and appointed local artisans to develop the instruments he needed.

Bose received his bachelor's degree from St. Xavier's College, Calcutta. Father Lafont, a Belgian priest and professor at the college, initiated Bose in the study of natural sciences. Physics was earlier called natural philosophy. After getting his B.Sc degree from Calcutta University, he went to England to study medicine, which could not pursue because of his ill health. He shifted to Cambridge to study Tripos in the natural sciences, namely, physics, chemistry, and botany. He graduated in 1884 and simultaneously also graduated in Bachelor of Arts from the University College of London.

In 1904, Lord Rayleigh received Nobel Prize for the discovery of argon gas. He was the president of the London's Royal Society. He had sent a letter of recommendation for his brilliant student, Jagadish Chandra Bose, and suggested that he should be allowed to teach Physics. When he applied for the job, he was told that Indians are incapable of having any rational thoughts and that is why he couldn't be permitted to teach a subject like physics! Though Bose was much more qualified than most of his European colleagues, he was appointed in the Provincial Service, and that too on a temporary basis. His salary was one-third that of a professor. Bose refused to accept the salary but continued to teach at Presidency College. After three years, finally the government relented and he was appointed as a full professor with both rank and salary. This was one of his first peaceful non-violent protests that he won! His fight against injustice and discrimination was a Satyagraha like Gandhiji's Satyagraha in 1917 in Champaran, Bihar.

1894, Bose started his research work. He didn't receive any help from the British. He had set up his own laboratory and incurred all the expenditure. The research conducted by him was unparalleled; even the scientists from the European countries could not achieve the success he received. James Clark Maxwell had propounded the principle of electromagnetic waves and he needed to verify it through experiments. Till then no one in the world had generated microwaves. This was done by Jagadish Chandra for the first time in the world. He then went to London and presented his research there. However, Marconi later received the Nobel prize for the invention

Jagadish Chandra reiterated the fact that if we do not succeed in creating knowledge, we would not be honoured in the world. The British wanted to suppress this. Today, he is not only called the 'father of microwave' but also the 'father of Biophysics'. He is also considered the father of Plant Neurobiology. Jagadish Chandra can also be considered the 'father of Chronobiology', which is an emerging field. The 2017 Nobel Prize was awarded in this, and it involves researches on circadian rhythm. It was Bose who had studied this for the first time. He was the first to imagine that plants also sleep. Today the modern science accepts this, but the British tried to suppress it with all their might.

Acharya Prafulla Chandra Ray (1861-1944)

Acharya PC Ray, the father of Indian chemistry, can also be considered the father of Indian history of science. In 1902 and 1908 he wrote two volumes of History of Hindu Chemistry. The main objective of these volumes was to show that there is a continuous scientific tradition in Chemical science running right from modern period to the medieval and the ancient periods. He also founded the Bengal Chemicals and Pharmaceuticals Limited. He was also a great Sanskrit scholar who translated the twelfth and thirteenth century chemistry texts Rasendra Chintamani and Rasaprakasa Sudhakara.

Ray wrote these books to raise self-esteem in Indian people. One cannot have self-esteem without being self-sufficient. Ray thought of this in 1901. For building modern industries one needs the help of science. In 1892, with a small capital of Rs.700, he established the first swadeshi industry, Bengal Chemical Works. The company initially manufactured herbal products and indigenous medicines. In 1901, the enterprise became a limited company, Bengal Chemical and Pharmaceutical Works Ltd (BCPW). This was India's first pharmaceutical company

Ray was a staunch nationalist,and the deterioration of the Indian society due to suppression by the British pained him. He was sympathetic towards the revolutionaries and often provided them shelter and food at his factories. After his death, many revolutionaries and his colleagues mentioned his indirect support and help in manufacturing explosives.The contemporary government records mention him as a "Revolutionary in the garb of a Scientist"

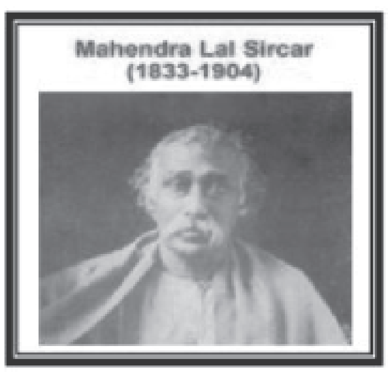
In 1905, the Swadeshi Movement rose against Lord Curzon's proposed division of Bengal. However, scientists like PC Ray had already started the mission to make the country selfreliant, free, and independent in the field of science. Prafulla Chandra met Tata and told him that sulphuric acid was required for the production of steel. The country which produced a large amount of sulphuric acid had bigger GDP. He wanted to produce sulphuric acid in India so that the GDP could be higher.

In 1901 Prafulla Chandra met Mahatma Gandhi for the first time in the house of Gopal Krishna Gokhale. Prafulla Chandra developed great reverence for Gandhiji at this very first meeting. Gandhiji's simplicity, patriotism and devotion to duty appealed to him very much. Gandhiji also had great regard for Prafulla Chandra. He knew how hard he worked to help the poor and the needy.

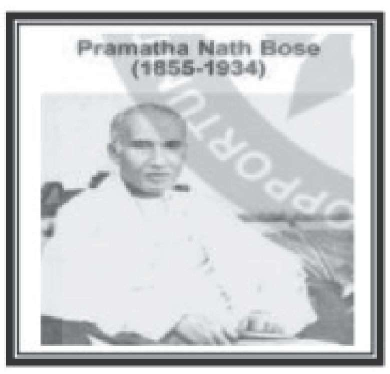
Acharya Prafulla Chandra Ray created a new generation of Indians that included Satyendra Nath Bose, Meghnad Saha, Shanthi Swarup Bhatnagar, and Chandrasekhar Venkata Raman. These luminaries dedicated their lives developing science in the country. This second generation of the scientists made the Golden Period of Indian Science a reality. From 1910 to 1930, the modern science rose to the new heights. In 1924 Satyendra Nath Bose published his research paper which drew Einstein's attention. On the basis of that Bose-Einstein condensate was developed and it helped Quantum Physics immensely. In 1928, Chandrasekhar Venkata Raman presented his research work to the world and received Nobel Prize in 1930. This period is also remembered for other great scientists like Srinivasa Ramanujan, Meghnad Saha, Sisir Kumar Mitra and many more.

GREAT SCIENTISTS WHO CONTRIBUTED TO THE FREEDOM MOVEMENT

he

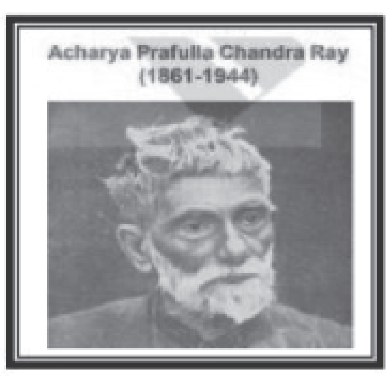


Mahendra Lal Sircar (1833-1904)



Pramatha Nath Bose (1855-1934)

Acharya Jagadish Chandra Bose (1858-1937)



Acharya Prafulla Chandra Ray (1861-1944)

THE ART & CULTURE COLUMN

The Mojo of Nagaland Culture - Cultural Diversity of Nagaland

(Written By – Our Correspondent, Source – holidify.com)

A land of tribes, Nagaland is an abode amongst the hills yet to be explored. The picturesque state has stellar landscapes, beautiful tea gardens, high mountains, and vibrant culture.

What is Naga Culture Known For?

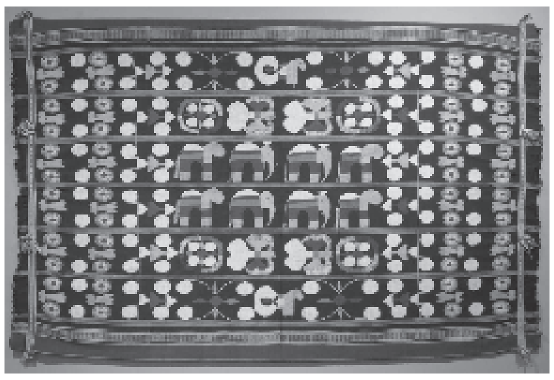
Nagaland exquisitely rich in flora and fauna and is a habitat to some of the dandiest plants and animals, not leaving behind the beautiful birds to which this place is home. Owing to its diversity in birds, Nagaland is referred to as, **The Falcon Capital of The World**. Nagaland supports a flamboyant tribal culture which leaves anybody visiting the place amazed and dazzled.

The Long-living Tribes: The Essence of Naga Culture and Tradition

Nagaland has an ancient history of tribes whose count sums to be as much as 66 including the sub-tribes. Out of these, 16 are considered as major tribes. With a difference in language, all tribes have a similar leafy dress code,

eating habits and traditional laws. Nagas are mostly Christians. The state is regarded as the most Baptist state in the world as 75% of it is dominated by them. Soft-heartedness and hospitality of Nagas leave anyone visiting the place astounded. They have a zest for life and are very exuberant when it comes to celebrating festivals or any other day of equal significance.

Warrior Background of Nagaland People



Tribe traditions and loyalties play an important role in Naga society. They have a strong warrior background; they used to make armed raids to the nearby villages. Once a prevalent ritual, Head Hunting has now become obsolete. In this ritual, the warring tribes used to take the heads of their enemies in order to establish triumph.

Traditional Dress of Nagaland

These tribes carry certain folklores depicting the gallant acts of their ancestors. Their costumes aptly display the ancestral lineage. The design of shawl denotes the social status of the wearer. The attire worn by the males include a conical red headgear decorated with Hornbill's black and white feathers and wild boar's canine teeth. Also, one cannot overlook the necklaces, the bangles and the tattoos which are reminiscent

of the old age wars and sacrifices. The blend of western culture with the ancient relics has made this tribal culture of Nagaland more resonant.

Religions in Nagaland

The nearly 2 Million population of Nagaland has an 88% of Christian occupancy according to the 2011 census. Nagaland is one of the three states with a Christian-majority in India followed by Mizoram and Meghalaya. 75% of the total population is Baptist, making it the only predominantly Baptist State in the World and the most Baptist State in the World followed by Mississippi at 55% and Texas at 51%. Most of the Catholic concentration lies in the Phek, Wokha and Kohima Districts and also the urban areas of Dimapur. Hinduism, Islam and Jainism forms the Minority Religions of Nagaland along with smaller percentages of Sikhism, Naga Folk Religions and others.

Marriage Culture

The Nagas follow some atypical traditions when it comes to marriage. Any relationship between a boy and a girl within the same community is considered as a social evil. The Angami tribal members tend to strangle a fowl and decide the fate of the couple on the basis of the posture which the fowl adopts while dying. The match is immediately broken if the fowl adopts an inauspicious posture.

In Mongsen tribal community, the couples are engaged and are sent on a trading expedition. If this expedition turns out to be profitable then the marriage is fixed for them otherwise they are declared unfit for each other.

There are many other practices which vary from tribe to tribe such as, in some communities pre-nuptial relations are allowed but not beyond a certain limit while some consider it as a taboo. In some communities, the groom has to pay a price for the girl in the form of a dowry and hence in those communities the girls are given a lot of care and regard. In some other communities like Sema, Lothas and Changs a man can have multiple wives at the same time.

Art and Craft

Though the main occupation of the Nagaland people is irrigation, they have been blessed with dexterity, especially the women. The ordinary metals such as iron, brass and tin are used to make exquisite jewellery in the form of armlets, neckbands, bangles and much more. Beads are also used to make beautiful necklaces.

The Nagas have carried their traditional art of weaving by knitting unique colours and designs producing shawls, shoulder bags, table mats, etc which reflect the integrity and soul of their ancient dynamics. The present generation has stepped into the fashion industry producing the fabrics that represent the amalgamation of ancestral motifs and modern appeal. The tourists get mesmerised by such a beautiful display of handicrafts and tend to buy a lot of souvenirs. The craft is not just limited to fabric and metals, wooden carvings and bamboo works are also an essential part of the craft of these people.

Folk Dance and Music of Nagaland

Owing to the joie de vivre nature of Nagas, dance and music are an essential part of their culture. The tribal dance and music will set your feet tapping. The dance is generally performed in groups on the folk songs perfectly synchronised with music through various musical instruments such as Asem (drums), Tati, Mouth Organ, Bamboo Flute, etc. The tribal dance becomes more extravagant by the virtue of the colourful and unique traditional costumes and jewellery. The folk songs narrate the stories of bravery, romance and historic incidents. Certainly, this place has some fantastic taste in dance and music which tourists tend to cherish.

The Hornbill Festival

Marked as the festival of festivals, it is organised by the state government to encourage the interaction among the various tribes and preserve the heritage and traditions of Nagaland. It was started in 200 and turned out to be a huge success and is thus celebrated every year in the first week of December. Earlier it was celebrated for first seven days of December but due to its huge popularity, it is now celebrated for 10 days. People from overseas come to relish the

breathtaking celebrations of this festival. Various activities such as Naga wrestling, archery, beauty contest, Naga king chilli eating contest, musical concerts are held along with local people displaying their craft and selling the wooden carvings, food, herbal medicines. Colourful performances are held and this

place turns into the most happening place on earth for these ten days.

Nagaland Food

The soft and sweet spoken Nagaland people do not mind spiciness in their food. The kitchen in every household of Nagaland has some good deal of spices stored. Even the ginger used by the people in this region is different from the regular one. The spiciness and aroma which their ginger comprises are hard to find elsewhere. Nagaland is the home of Bhut Jolokia, one of the spiciest chillies in the world.

The people here prefer steaming their food to frying. All the tribes have distinct cuisines which use meat, fish and fermented products extensively. The locally grown herbs, ghost peppers, ginger and garlic are used a lot in

almost all the dishes.

Smoked pork cooked with fermented soya bean is the dish of state cherished along with rice and chutney called Tathu. The other common dishes are snails cooked with pork and silkworm larvae, Naga curry made with crushed potato and tomato.

Nagaland might be small when measured geographically but culturally it has many flavours endowed. The traditions, fairs, festivals, art and craft of the various tribes are full of vibrant colours and energy. The zest with which people live here is inspirational. One must make the Nagaland people as their host and cherish the culture at par along with the stellar geography of the place.

THE CORPORATE & BUSINESS COLUMN

What Is Experimental Marketing ?

(Written By – Our Correspondent, Source – businessnewsdaily.com)

Traditional marketing is dead, at least, in the most traditional sense. A billboard with a picture of your product next to smiling faces just doesn't cut it anymore. Consumers now fast-forward through commercials, have ad blockers on their computers, and are more likely than ever to opt for commercial-free streaming services over live TV.

So what's an advertiser to do?

It may be time for your business to change directions and look to experiential marketing, which focuses on connecting consumers with a positive experience associated with a brand, rather than directly with a product.

What is experiential marketing?

Experiential marketing, also called engagement marketing, is a marketing strategy that directly engages consumers and encourages them to participate in a brand experience.

"Experiential marketing is all about creating a lasting impression on consumers that they want to share with others, and that ultimately leads to brand loyalty," said Katherine Rowland, digital marketing executive at Your Parking Space.

In traditional marketing, consumers are regarded as passive receivers of a company's message. In experiential marketing, a brand involves the consumer directly and often offers a window into the evolution of an advertising campaign. This allows a business to forge a relationship with the consumer by allowing them to both be a part of and see the process of a campaign from beginning to end.

Why is it so effective?

"[Experiential marketing] is so effective because we are emotional beings," said Esther Sauri, marketing professional at Linki Law. "When a brand connects with us in an emotional way, we not only buy it, [but we become] loyal customers."

By involving your customers with the story, they feel connected rather than sold to, and this is a significant difference in how they see your brand.

Take, for example, LeanCuisine's #WeighThis campaign. Women were invited to "weigh in" about something important about themselves, other than their weight. The responses were then collected and painted onto individual scales, which were displayed on a gallery wall in Grand Central Terminal. Responses ranged from "I care for 200 homeless children each day" to "I am back at college at 55 years old."

The brand then created a promo video that spoke to women about what they wrote and why.

The important aspect of Lean Cuisine's campaign was that at no time was anyone offered a Lean Cuisine product. The display was clearly branded with the company's Twitter handle and the #Weigh This hashtag, but that was it - Lean Cuisine depended on the gallery wall itself to draw people in and created an interactive experience around the message that women are more than a number on the scale. It worked, too – the campaign reached more than 204 million impressions.

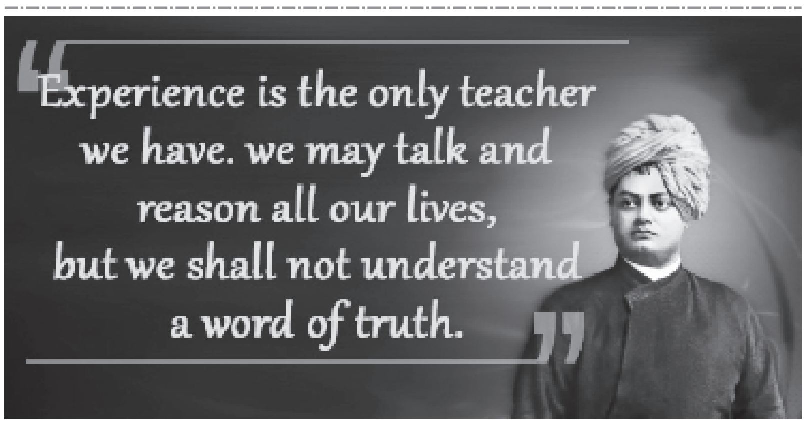
What to avoid

Experiential marketing can be a goldmine if leveraged correctly and a landmine if not. Many companies will attempt experiential marketing for the sake of it, knowing that it's a trendy and high-engagement practice, but without proper research and preparation, a campaign can very easily blow up in your face.

"The biggest pitfall in experiential marketing is to make the experience too salesy," said David Jacobson, founder and CEO of Triv Works. "Attendees don't want to feel like they're at a sales pitch. Make it too salesy, and you'll turn them off, or worse, they'll share that they had a negative experience."

Companies should try to create an experience that embodies their values, or, as Ashley Pontius, print campaign manager at News and Experts put it, "While experiential marketing is [mostly] brand building, focus [on making it] more brand being."

While the advertising world is most certainly moving toward a focus on experiential marketing, companies should think deeply before launching an engagement campaign. Is this right for your business? Can you devote the time, effort and money to doing it right? Do you have a clear goal in mind? If so, an experiential marketing campaign can launch your business with positive interactions and a loyal fan base.



Why Should One be An Entrepreneur ?

(Written By – Our Correspondent, Source – kingstonisc.com)

What is an entrepreneur?

An entrepreneur is someone who sets up and runs businesses. They may be an inventor: someone who has created a new product or service. It is a job which requires creativity, patience, great communication skills, and confidence.

Benefits of becoming an entrepreneur

Why become an entrepreneur?

There are many reasons to consider entrepreneurship, from its freedom and flexibility to the job satisfaction it can offer.

Be your own boss

If you're someone who likes to be in control, this is the career for you. You will make all the key decisions in the running of your business. You can have colleagues and advisors but ultimately, the running of the business is your responsibility. It's a chance to practise great leadership and get the best out of others too.

Potentially unlimited income

Unlike working for a company, where your salary is decided by someone else, when you run your own business, your income is decided by you alone. If you work hard and the business is a success, you can reward yourself. Being an entrepreneur is high risk, high reward – you could make millions, or you could make nothing at all. But the earning potential is higher than almost any other career.

Choose when and where you work

Being an entrepreneur is one of the most flexible jobs that exists. You set your own timetable, judging when to work hard and knowing when to take a break. It's a real gift to be able to fit a job around your lifestyle, and not the other way around.

Make a living doing what you love

Start-ups are some of the most exciting and fast-moving places to work. Things are constantly changing, so you won't get bored. You will enjoy the challenge of competing against other companies to provide the best service or product to your customers. You may also be able to create a successful business out of something you are truly passionate about.

Constant growth and development

Being your own boss is not easy and neither is running a business. You will need to be brave, take risks and believe in yourself. You will also need to be able to solve problems and admit when something has gone wrong. Staying positive, thinking creatively and being solution-minded are all valuable skills that will serve you well in life, as well as business.

Choose who you work with

When you run your own business, you build your own team. You can surround yourself with people who share your vision and work the way you want them to. Being able to nurture new talent and get the best out of your colleagues is one of the most rewarding things about being an entrepreneur.

Create a positive impact

Starting and running a business gives you the opportunity to make a positive impact. Whether it's uplifting society, creating jobs in your local community or leading the way in sustainable business and showing others how to protect the environment.

Fulfilling and rewarding

Building your own successful business is a big achievement. It will always have challenges, but this makes it more rewarding when things go well. You will be able to look at your achievements and know that they were due to your own hard work.

THE GENERAL KNOWLEDGE COLUMN

Current Affairs

States News

1. Karnataka govt launched 'FRUITS' software for farmer schemes

- **The Karnataka government** has launched **'The Farmer Registration & Unified Beneficiary Information System' or FRUITS** software for Aadhar-based, single-window registration for the schemes.
- FRUITS software will facilitate single registration using an Aadhar card and Karnataka's Bhoomi digitized land record system for authenticating ownership.
- Through the creation of single digital identification through FRUITS, farmers can access benefits of hosts of schemes such as Direct Benefit Transfer under PM Kisan, payment for **Minimum Support Prices (MSPs)** for crops, special financial assistance, caste certificate authentication, and ration cards.

Important takeaways for all competitive exams:

- Karnataka Governor: Thawar Chand Gehlot;
- Karnataka Chief Minister: Basavaraj Bommai;
- Karnataka Capital: Bengaluru.

Economy News

2. Retail inflation for May matches estimates at 7.04%

- According to data released by the **Ministry of Statistics and Programme Implementation,** India's headline **retail inflation** rate eased to **7.04 percent in May** from April's near-eight-year high of 7.79 percent thanks to a favourable base effect.
- The fall in inflation in May is unlikely to do much to slow down the Reserve Bank of India's (RBI) rate hike cycle. The **Consumer Price Index (CPI)** based inflation was **7.79 per cent in April.** In May 2021, the retail inflation stood at **6.3 per cent.**

Banking News

3. OmniCard becomes 1st RBI licensed PPI to launch cash withdrawal across all ATMs PAN India

- Payment solution provider, **OmniCard** has announced that it became the **1st RBI licensed PPI (prepaid payment instrument)** to launch cash withdrawal using a RuPay-powered card from any ATMs across the country.
- The move came in after RBI permitted the non-bank licensed entities to enable cash withdrawals from the digital wallets.
- OmniCard users can withdraw cash from any ATM at their convenience with full security from frauds like card theft, card cloning, and PIN skimming as the withdrawal facility comes with high safety & secure features and protects the user from exposing their money and bank account details.
- The company worked with the **National Payments Corporation of India (NPCI) team** to enable the facility.

Important takeaways for all competitive exams:

- Co-Founder and Chief Executive Officer (CEO) of OmniCard: Sanjeev Pandey.

Defence News

4. 38th India-Indonesia Coordinated Patrol Conducted in Andaman Sea

- **The 38th India-Indonesia Coordinated Patrol (IND-INDO CORPAT)** between the **Indian Navy Units of Andaman & Nicobar Command (ANC) and Indonesian Navy** is being conducted from June 13 to 24 2022 in the Andaman Sea and Straits of Malacca.
- The 38th CORPAT is the first post pandemic Coordinated Patrol (CORPAT) between the two countries.
- It includes a visit by the Indonesian Navy units to ANC at Port Blair from June 13 to 15, 2022 followed by a Sea Phase in the Andaman Sea and visit by IN Units to Sabang (Indonesia) from June 23 to 24, 2022.

Sports News

5. Haryana won Khelo India Youth Games 2021 title

- Hosts **Haryana** won the **Khelo India Youth Games (KIYG) 2021** title with **52 gold medals** on the final day.
- Haryana also won 39 silver and 46 bronze medals, taking their overall medal tally to 137 medals - the highest cumulative haul by any state. The late surge helped Haryana leapfrog the 2020 champions **Maharashtra** on the KIYG medals table.
- **Maharashtra,** meanwhile, managed 45 gold, 40 silver and 40 bronze medals to come second with 125 medals.
- **Karnataka,** with 22 gold, 17 silver and 28 bronze, finished third with 67 medals.

6. Angelo Mathews and Tuba Hassan crowned ICC Players of the Month for May

- **The International Cricket Council (ICC)** has announced that Sri Lanka's batting star **Angelo Mathews** and Pakistan's debutante spin sensation **Tuba Hassan** have been voted the **ICC Men's and Women's Players of the Month for May 2022.**
- Fans can continue to vote every month for their favourite male and female cricketers across all formats of international cricket as part of the ICC Player of the Month initiative by registering at **www.icc-cricket.com/awards.**

Important takeaways for all competitive exams:

- ICC Founded: 15 June 1909;
- ICC Chairman: Greg Barclay;
- ICC CEO: Geoff Allardice;
- ICC Headquarters: Dubai, United Arab Emirates.

7. Max Verstappen won Azerbaijan Grand Prix 2022

- Red Bull's **Max Verstappen** won the **Azerbaijan Formula One Grand Prix 2022** (his fifth victory of the season).
- In the process, Verstappen became the most successful driver in the Red Bull of all time. Red Bull's **Sergio Perez** came second and Mercedes' **George Russell** came at the third spot.

Important Days

8. World Blood Donor Day 2022 observed on 14th June

- **World Blood Donor Day** is observed globally on **14 June** every year. The day is celebrated to promote awareness about the need for blood donation and thank voluntary, unpaid blood donors for their life-saving gifts of blood.
- The day aims to promote regular blood donations to ensure that all individuals have access to affordable and timely supplies of safe blood in times of emergency needs.
- The host nation for World Blood Donor Day 2022 is **Mexico.** The global event will be held in **Mexico City on June 14, 2022.**
- The Theme for World Blood Donor Day 2022 is **"Donating blood is an act of solidarity. Join the effort and save lives".**
- The World Health Organization initiated and declared June 14, the birth anniversary of **Karl Landsteiner,** as World Blood Donor Day in **2004.**

9. NCPCR's Elimination of Child Labour Week: 12-20 June 2022

- **National Commission for Protection of Child Rights (NCPCR)** is celebrating **Elimination of Child Labour Week** in the honour of **World Day Against Child Labour.**
- It is being celebrated in 75 places as part of the "75th anniversary celebrations of India's independence – "Azadi ka Amrit Mahotsav" in different districts starting from **12th June to 20th June, 2022** as a significance to pay attention to the problem of child labour and to find ways to eradicate it.

Important takeaways for all competitive exams:

- NCPCR Founded: March 2007;
- NCPCR Chairman: Priyank Kanoongo;
- NCPCR Headquarters: New Delhi, India.

Obituaries News

10. Long distance running legend Hari Chand passes away

- Long distance great **Hari Chand,** a two-time Olympian and a **double Asian Games gold medallist,** passed away in Jalandhar. He was 69.
- Chand won the 5000 and 10,000m gold at the 1978 Bangkok Asiad and also the 10,000m title at the 1975 Asian Championships in Seoul.
- Chand, who hailed from Ghorewaha village in Punjab's Hoshiarpur District, made waves with his barefoot running and broke the 10,000m National record at the 1976 Montreal Olympics which stood for 32 years before falling to Surendra Singh.

Miscellaneous News

11. India's first centralised AC railway terminal in Bengaluru becomes operational

- The ultra luxury **Sir M Visvesvaraya Railway Terminal** in Karnataka's capital city **Bengaluru** was made operational. The Ernakulam Tri-Weekly Express chugged trough the station to mark this special occasion.
- According to the railway officials, the air-conditioned SMV Railway Terminal is a **Rs 314 crore project.** It has solar rooftop panels and rainwater harvesting mechanism.
- The railway terminal at the city's Baiyappanahalli area, named after **Bharat Ratna Sir M. Visvesvaraya,** is equipped with state-of-the-art facilities and claims to have an airport-like aura.

12. Asia's 'longest-tusked' elephant Bhogeshwara dies of natural causes

- **Bhogeshwara,** reportedly the elephant with the **longest tusks in Asia,** died of natural causes at the **age of 60.** The wild elephant, also known as **Mr Kabini,** was found dead in the Gundre range of **Karnataka's Bandipur Tiger Reserve.**
- According to forest department officials, Bhogeshwar's tusks were **2.54 meters and 2.34 meters long.** Known for its gentle temperament, the elephant frequented the Kabini backwaters for the last three decades.

13. India finalised deals for cheetahs from South Africa & Namibia

- **The Indian government** has finalized deals with **South Africa and Namibia** to get the planet's fastest animals, cheetahs that became extinct in India and will be released into the wild at **Kuno Palpur, Madhya Pradesh, by the end of 2022.**

Initially, a Memorandum of Understanding (MoU) will be signed for 10 years, which can be extended for another five years. There will be **12 cheetahs from South Africa and 8 from Namibia** and more will be followed in subsequent years.

THE EDITORIAL COLUMN

Role of Digital Infrastructure In The Post Pandemic World

(Written By – N.H Priya Garnaik, Editor, Iya News)

The coronavirus has provided a new start for digital infrastructure development. Digital infrastructure has emerged as a significant infrastructure necessity vis-àvis traditional infrastructure necessities such as buildings, roads, power and water supplies, etc. Using the cloud, big data and AI applications creates room for industries to develop and build new business models that help citizens withstand the severity of pandemic and ensure preventive measures. The COVID-19 pandemic has provided a major impetus to the ever- expanding digital infrastructure. The article outlines the need of digital revolution in India, in today's age and world, and the initiatives of the Indian Government thus far. The article also touches upon various enabling opportunities for India, by innovating and learning by doing, by investing public funding to help finance research and development in critical areas.

Economies across the globe are charting ways to make their digital infrastructure, comprising physical resources necessary for the use of data, computerized devices, methods, systems, and processes, more resilient, agile, and futuristic. Digital infrastructure has become indispensable for the functioning of a society and the quality of life of its citizens. All over the globe, countries have leveraged their digital infrastructure to proactively respond to the ongoing pandemic. Going forward, the resilience of a nation's digital infrastructure can be pivotal to successfully address adversities such as the COVID-19 pandemic. India, being one of the most populous countries in the world, is uniquely positioned in the global landscape and has the potential to become a leading digital force in the emerging world order.

The nearly half a billion internet users in India, a host of indigenous digital services, platforms, applications, content, and solutions, are expected to transform India's digital ecosystem. India could potentially see a five-fold increase in economic value from digital transformation by 2025 representing an attractive opportunity for global and local businesses, startups, and innovators to invest in emerging technologies (like AI, blockchain, or drones) in ways that are customized to India's needs. Although there has been rapid adoption of frontier technologies such as artificial intelligence, block-chain, and internet of things (IoT), the COVID-19 pandemic has put the digital infrastructure under immense pressure. It has led to an inevitable surge in the use of digital technologies due to social distancing norms and nationwide lockdowns. People and organizations all over the world have had to adjust to new ways of work and life.

An increase in digitalization is leading firms and educational institutions to shift to work-from-home (WFH). Blockchain technology will become important and will entail research on design and regulations. Gig workers and the gig economy is likely to increase in scale, raising questions of work allocation, collaboration, motivation, and aspects of work overload and presenteeism. Workplace monitoring and techno stress issues will become prominent with an increase in digital presence. Online fraud is likely to grow, along with research on managing security. The regulation of the internet, a key resource, will be crucial in the post-pandemic era. Digital money, too, with contact free usage, assumes importance in crisis situations and research will address their adoption, consequences, and mode. Aspects of surveillance and privacy gain importance with increased digital usage.

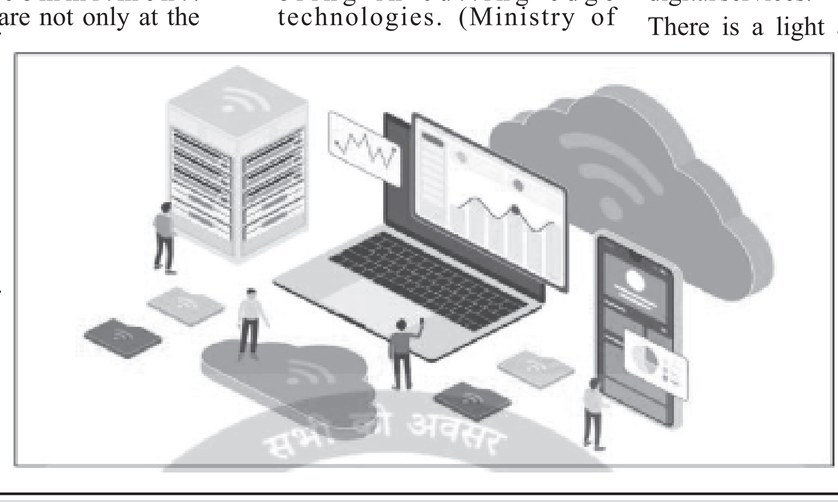
Digital Revolution: Need of the Hour

India's digital divide is narrowing fast as less affluent states and sections of society leapfrog to catch up with more affluent states. India can create up to $1 trillion of economic value from the digital economy by 2025 with half of the opportunity originating in new digital ecosystems that can spring up in diverse sectors of the economy. E-commerce platforms are expected to drive recovery of electronic consumer products - mobile devices, smart TVs, LED lighting, etc. - faster, and having a robust manufacturing ecosystem is essential to adequately address the rise in indigenous demand. An immediate need is to develop local supply chain networks, and efforts in this direction could result in enhanced indigenous electronics manufacturing.

Industry should develop quarterly short term strategies and calibrated decision making to address disruptions caused due to the COVID-19 pandemic. The 'Atmanirbhar Bharat' policy could give a much-needed fillip to the country's disrupted business operations by promoting indigenous manufacturing, export competitiveness, encouraging substitution of imports of low-technology goods, and encouraging local produce at lower prices (Electronics B2B, 2020). It is the need of the hour to promote and create a framework for the development of robust digital infrastructure especially connectivity and wide access, which could facilitate the adoption of emerging technology areas such as 5G, IoT, artificial intelligence, machine learning, drones, robotics, additive manufacturing, photonics, nano-devices etc., and their applications in areas such as defence, agriculture, health, cyber security, smart cities, and automation, with special focus on solving real-life problems.

The global electronics market is estimated to be over US$ 2 trillion. Although India's share in global electronics manufacturing has grown from 1.3 percent in 2012 to 3 percent in 2018 (Invest India, 2020), it is still considered to be minuscule as compared to some other countries. The electronics industry is a crucial part of the digital ecosystem of a nation, the industry and the government must make concerted efforts in this domain. Semiconductors, being the building block of electronics, are central to the global electronics ecosystem. The absence of a state-of-the-art semiconductor fab in India has been a major capability constraint. Semi-conductor manufacturing is a complex capital intensive and R&D intensive sector defined by rapid changes in technology - which require a sustained R&D and investment commitment. Semiconductors are not only at the heart of electronic products, but they also constitute a significant part of the total value of the final products.

The recent expression of interest for setting-up or expanding existing semiconductor wafer/device fabrication (fab) facilities in India or acquisition of semiconductor fabs outside India by the Ministry of Electronics and Information Technology is a welcome step. It is believed that acquiring a second-hand fab of 28 nm could take care of a large part of India's current need instead of going after the most modern fab (Financial Express, 2020). This will not cost more than US $500-700 million. In addition, a thrust on semiconductor fab manufacturing, including a Gallium Nitride (GaN)fab, with a milestone-based, time-bound approach, is also important.



The Initiatives of the Indian Government Thus Far

India has set itself an ambitious target of building a $5 trillion economy by 2024. Global macroeconomic factors coupled with a cautious outlook and muted domestic consumption poses a serious challenge to achieving that ambition. The moment has now come to think out of the box. It is necessary to break the old paradigms of economic growth and development by harnessing technology-led innovation. The digital economy alone can support 60-65 million jobs in the future (Financial Express, 2019), fuelled, of course, by enabling government policies, support, and initiatives. Some of the major initiatives include:

- The Digital India programme is one of the major initiatives of the Government, which has had a tremendous impact on the national digital infrastructure. Under this programme, the government aims to provide high-speed internet connectivity across the length and breadth of the country. In addition, it also aims to expand and leverage the unique identity (Aadhar) as a mode to ensure digital identity, financial inclusion, benefit distribution, and easy access to the common services centres (CSCs). The network of 3.59 lakh CSCs with a presence in 2.3 lakh gram (village) panchayats has become a robust mechanism for the digital delivery of services. The CSCs are delivering 50 Central and more than 300 State services. In this process, the CSCs have generated employment for more than 1.2 million persons in rural areas (Economic Times, 2019).
- The Government has set up National Centres of Excellence (CoEs) at the Indian Institute of Technology (IIT) Bombay for technology solutions in internal security and at the IIT Kanpur for flexible electronics. The Government has also set up a Centre of Excellence in Bangalore in collaboration with the National Association of Software and Services Companies (NASSCOM) for Internet of Things (IoT). These measures are also expected to bring in cutting edge technologies. (Ministry of Electronics & Information Technology, 2019)
- The Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme has been notified in April 2020, to address gaps, by providing support for the creation of world-class infrastructure along with common facilities and amenities, including Ready Built Factory (RBF) Sheds/Plug and Play facilities for attracting major global electronics manufacturers along with their supply chain to set up units in the country (Ministry of Electronics & Information Technology, 2021).
- The Scheme for Promotion of Manufacturing of Electronic Components and Semi-conductors (SPECS), April 2020, will help offset the deficiencies in domestic manufacturing of electronic components and semiconductors and strengthen the electronics manufacturing ecosystem in the country (Ministry of Electronics & Information Technology, 2020). z The Production Linked Incentive Scheme (PLI) for Large Scale Electronics Manufacturing, April 2020, offers a production linked incentive to boost domestic manufacturing and attract large investments in mobile phone manufacturing and specified electronic components, including Assembly, Testing, Marking and Packaging (ATMP) units (Ministry of Electronics & Information Technology, 2021).
- The National Policy on Electronics 2019 (NPE 2019), prepared after extensive stakeholder consultations, aims at positioning India as a global hub for ESDM with a thrust on exports by encouraging and driving capabilities in the country for developing core components, including chipsets, and creating an enabling environment for the industry to compete globally (Ministry of Electronics & Information Technology, 2019).

The vibrant IT-BPM, telecom, e-commerce, electronics sectors, the explosion of new digital startups equipped with technologies such as virtual reality (VR), augmented reality (AR), Blockchain, Artificial Intelligence (AI), robotics, analytics, automation, cloud, cyber-security, mobile, and social media, could help to achieve close to $250 billion in gross value added by 2025 (Financial Express, 2019). India has set itself an ambitious target of expanding its economy by 2024 to $5 trillion. It has made many efforts to become more digitalized and the Digital India Mission is envisioned to be created on digital security and trust. Building digital trust is a major effort for the whole society, business, and also for people using digital services.

There is a light at the end of the pandemic tunnel as many vaccines have been approved and vaccination has started in most of the countries of the world. India is in fact running the largest vaccination campaign in the world, with over a billion people to be vaccinated in record time. COVID-19 has however, changed our world for good including the way we work, our healthcare, and the importance of digitization. When the world came to a standstill, services and products were adjusted using digital systems to allow continuity of business and life. Speaking at the CoWIN Global Conclave on 5 July 2021, where 142 countries were represented, Prime Minister Narendra Modi offered CoWIN to any and all countries free of charge and as open source software. The software can be customised to any country according to local requirements. India had already made its Covid tracking and tracing app AarogyaSetu open source as soon as it was technically feasible. The Cowin platform had enabled inoculation of a large percentage of the world's population with ease, while simultaneously ensuring complete transparency.

Enabling Opportunities for India

India has been steadily rising in the Global Innovation Index (GII) rankings and currently is ranked in the 48th position 2020). The power of the 3rd largest scientific and technical manpower in the world (India Brand Equity Foundation, 2021) has MNCs like Samsung, Bosch, Microsoft; CISCO etc. have started focusing on India to leverage the capability India has to offer.

A young country with rising expectations: Working age population (between 15 and 64 years) to touch 1 billion, surpassing China by 2030, 65 per cent of India's population is below the age of 35 (ASSOCHAM India, 2015).

- **Employment Challenge:** Need 12 million new jobs a year to absorb the growing working population; 50 million people need to be skilled each year, current capacity only 3 million (India Today, 2020).
- **The growing middle class seeks new value propositions:** By 2021, India will have about 900 million people constituting the 'emerging middle and middle class' segment, which will provide new opportunities.
- To win in this market, companies will need to deploy a shift in mindset to achieve new value propositions delivered through innovative business models.
- India's gross expenditure on R&D (GERD) increased from Rs 65,961.33 crore (US$ 14.07 billion) in 2011- 12 to Rs 104,864.03 crore (US$ 16.27 billion) in 2016- 17. However, it is only about 0.7 percent of GDP and is likely to grow further.

Successful countries have grown their ability to innovate and learn by doing, by investing public funding to help finance research and development in critical areas. Everyone is involved - big and small, public, and private, rich, and poor.

Conclusion and Way Forward

A coalition of stakeholders (private and governmental) are supporting pharmaceutical enterprises with millions in funding to find a vaccine for the virus. To modernize, upgrade and update our digital infrastructure and to tackle this and future pandemics, different financial models will evolve such as Public-Private Partnership and consumption/ outcome-based models to alleviate the financial crisis during the development phase. It is now the moment for countries to fast-track the construction of new digital infrastructure, such as IoT along with AI, in addition to the hastening of vital projects and major infrastructure construction that's already included in countries' financial stimulus plans.

THE WOMEN EMPOWERMENT COLUMN

Empowering Girls Beyond Education

(Written By – Dr. Yogesh Suri & Ms. Shruti Khanna)

Embarking upon the journey to reach the 75th year of independence from British Rule, India has witnessed revolutionary changes on the front of women's status in the society - from the age of Sati and dowry to the 21st century India wherein women have outperformed their male counterparts at Tokyo Olympics. This change from subjugation and exploitation to a position of equality and empowerment merits looking at the levers and contributors of women's progress in the modern era.

India has successfully broken the "low literacy trap"

Female literacy has increased multi-fold since independence from 9% in 1951 to 65% in the Census 2011. While the same increased from 27% in 1951 to 81% in 2011 for males indicating a narrower but persisting gender gap in education. Until recently, not many girls would enroll or complete their primary education. However, several affirmative policy actions have contributed to the steep progress of gender equity, particularly in education. This is reflected in the increase in gross enrolment ratio of girls to 98.7% at the elementary level, 90.5% at the upper primary level, and 52.4% at higher secondary level in 2019-20, as per UDISE (Unified District Information System for Education)-data. Further, the UDISE+ Report of 2019- 20 reveals that the enrolment of girls from primary to secondary is more than 12.08 crore, showcasing a substantial increase by 14.08 lakh compared to 2018-19. Similarly, at the higher education level, narrowing the gap between girls and boys has been witnessed, with 49% of college students being females, according to the latest All India Survey on Higher Education. Nonetheless, more remains to be done. As revealed by a recent report by the National Commission for Protection of Child Rights, around 39.4% of girls aged 15-18 years are still not attending any educational institute across India. This problem is exacerbated by the ongoing Covid-19 pandemic, which has had a severe impact on females, threatening the decades of progress made in gender equality and women's rights.

Educating and empowering girls and women and closing the global gender gap is critical to achieving the Agenda 2030 and Sustainable Development Goals: Goal 5 - achieve gender equality, Goal 8 - promote full and productive employment and decent work for all, Goal 1 - end poverty, Goal 2 - achieve food security, Goal 3- ensure health, Goal 10 -reduce inequalities. However, it is important to note that girls' empowerment goes beyond bringing girls into the educational system. It is also about creating an equal world where everyone has the chance to complete all levels of education. It is about creating equal opportunities to acquire the knowledge and skills needed to succeed in an ever-changing world, make their own life decisions, and contribute to their communities and society. In this light, today's challenges for improving girls' education, skills, and job prospects have changed. The years after school/college require the most attention. With a rapidly transforming and globalizing world, there is a need to educate and equip girls and young women with skills that will enable them to have equal opportunities in the labor market and thereby become equal contributors to the country's growth.

World Bank has suggested a five-step framework called "Skills Towards Employment and Productivity" to achieve the above objectives. The framework underscores a system of sequenced combination of education, training, and labor market activities as per the life cycle of a person, a girl, in this case, to impart skills needed for productivity and economic growth. The good news is that for each step of the framework, the Government of India has already rolled out a series of interventions that have helped girls and young women to fulfill their potential to make strategic choices in life.

Steps to empower girls and young women beyond education- enhancing skills and job prospects:

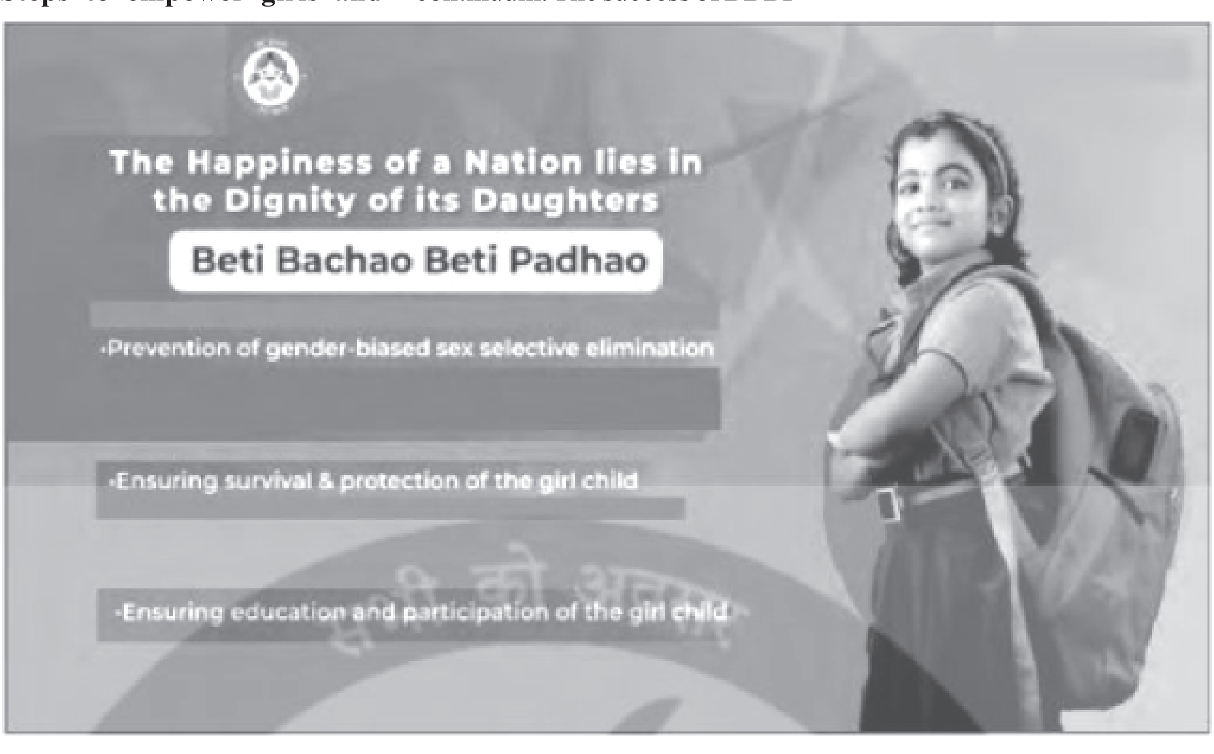
Step 1: Building a solid foundation through early childhood development (ECD). Research shows that shortcomings in early life are difficult to remedy, but with good ECD programs, one can avoid such disadvantages. ECD programs focus on building technical, cognitive, and behavioral skills conducive to high productivity in later life. The Government of India has implemented various schemes and programs emphasizing nutrition, stimulation, and cognitive skills in child development. Integrated Child Development Services (ICDS) Scheme focuses on the holistic development of children up to 6 years of age and on meeting the nutritional requirements of pregnant women and lactating mothers. National Nutrition Mission (NNM) - also known as POSHAN Abhiyaan is another step to cater to the nutrition as well as early developmental needs of the child; and Integrated Child Protection Scheme (ICPS) aims at creating a safe and secure environment for the overall development of children in need of care and protection in urban and semiurban areas.

Step 2: : Basic education - ensuring that all students learn by building stronger systems with clear learning standards, good teachers, adequate resources, and a proper environment. The central government has implemented a series of schemes/programs, including the Beti Bachao Beti Padhao (BBBP) scheme, which aims to bring behavioral changes in the society towards birth, education, and issues related to girls' empowerment over a life-cycle continuum. The success of BBBP is visible in terms of improvement in Sex Ratio at Birth from 918 in 2014-15 to 934 in 2019-20. Also, the gross enrolment ratio of girls at the secondary level improved from 77.45% to 81.32%, as per the progress report by the Ministry of Women and Child Development. Some major interventions undertaken by the central government to promote basic education by improving access and availability of good quality infrastructure include Mid-day Meals at school, Sarva Shiksha Abhiyaan, Right to Education Act, 2009, Sukanya Samridhi Yojana that aims to encourage parents to build a fund for the future education of their female child, and Samagra Shiksha - an Integrated Scheme for School Education (ISSE) implemented by Department of Education and Literacy, Ministry of Education, to increase participation of girls in education through interventions like providing free textbooks to girls up to Class VIII, giving stipend to girls with special needs. Further, both center and the state governments provide various scholarships to girl children to ease their access to education. Various state initiatives complement the center's efforts. Such initiatives include Ladli Yojana in Delhi and Haryana, Bhagyalaxmi Scheme in Karnataka, Saraswati bicycle scheme in Chhattisgarh.

Step 3: Focus on providing girls and young women with relevant job skills that employers demand by developing the right incentive framework for preemployment and on-the-job training programs and institutions. Despite implementing programs such as the Scheme for Adolescent Girls (SAG) to empower girls in the age group of 11-18 years through nutrition, life skills, home skills, and vocational training courses, the scope for girls to get equipped with job-relevant skills remains limited. One possible reason could be that vocational courses for girls are highly gendered - typing, tailoring, etc., which only allows them entry into low-paying jobs in the unorganized sector.

Step 4: Creating an environment that encourages investments in knowledge and creativity.

Step 5: Emphasis on matching the supply of skills with the demand by moving towards a more flexible, efficient, and secure labour market. Though India is making fast development in attaining parity in basic education, there is still a significant gender disparity in labour force participation, with young women having a lower participation rate than men. According to the United Nations Global Compact (UNGC) India Study, women's involvement in the domestic labour force has decreased from 34% in 2006 to 24.8% in 2020. Gender stereotypes and a lack of infrastructure cause women's exclusion from core industrial functions and, as a result, a reduced female presence in leadership positions. Women's economic empowerment promotes productivity, diversifies the economy, and increases income when they work more. For instance, UNGC India Study Report found that increased women's participation in the labour force to the same level as men will help in boosting India's GDP by 27%. For more women to enter into the labour force, the need of the hour is to invest more in equipping women with job-relevant skills while breaking the stereotypes associated with the work they can do. Transforming skills into actual employment matters more to the girls as they often have limited access to opportunities due to social and cultural barriers.



Thus, in addition to celebrating India's progress in improving gender equality in education, ensuring equal access to all levels of education and training to develop job-relevant skills and improved job prospects for women in society needs a tremendous collective effort.

When a girl child is educated, the entire family is educated. Let us all work together to ensure that all of our girls are empowered beyond education and contribute to creating a New India.

THE GOVERNMENT COLUMN

QUAD Summit 2022

(Written By – Our Correspondent, Source – employmentnews.gov.in)

Leaders of the 'Quadrilateral Security Dialogue', better known as Quad, met on 24th May 2022 in Tokyo, Japan. This was the Quad leaders' fourth summit and the second in-person meeting. Prime Minister Narendra Modi, US President Joe Biden, Prime Minister of Australia Anthony Albanese, and Prime Minister of Japan Fumio Kishida advanced the Quad's ambitious and diverse agenda for an inclusive and resilient Indo-Pacific.

The Quad is a strategic group comprising four nations India, United States of America, Australia and Japan. Established in the wake of the 2004 Indian Ocean Tsunami to coordinate humanitarian assistance and disaster relief, the Quad has since become a leading regional partnership dedicated to advancing a common vision of a free and open Indo-Pacific through practical cooperation on diverse 21st Century challenges. The leaders had their first virtual meeting in March 2021, in-person summit in Washington D.C. in September 2021 and virtual meeting in March 2022.

With six leader-level working groups-on COVID-19 Response and Global Health Security, Climate, Critical and Emerging Technologies, Cyber, Space, and Infrastructure-the Quad is building habits of cooperation among the four countries that supports a more peaceful and prosperous Indo-Pacific.

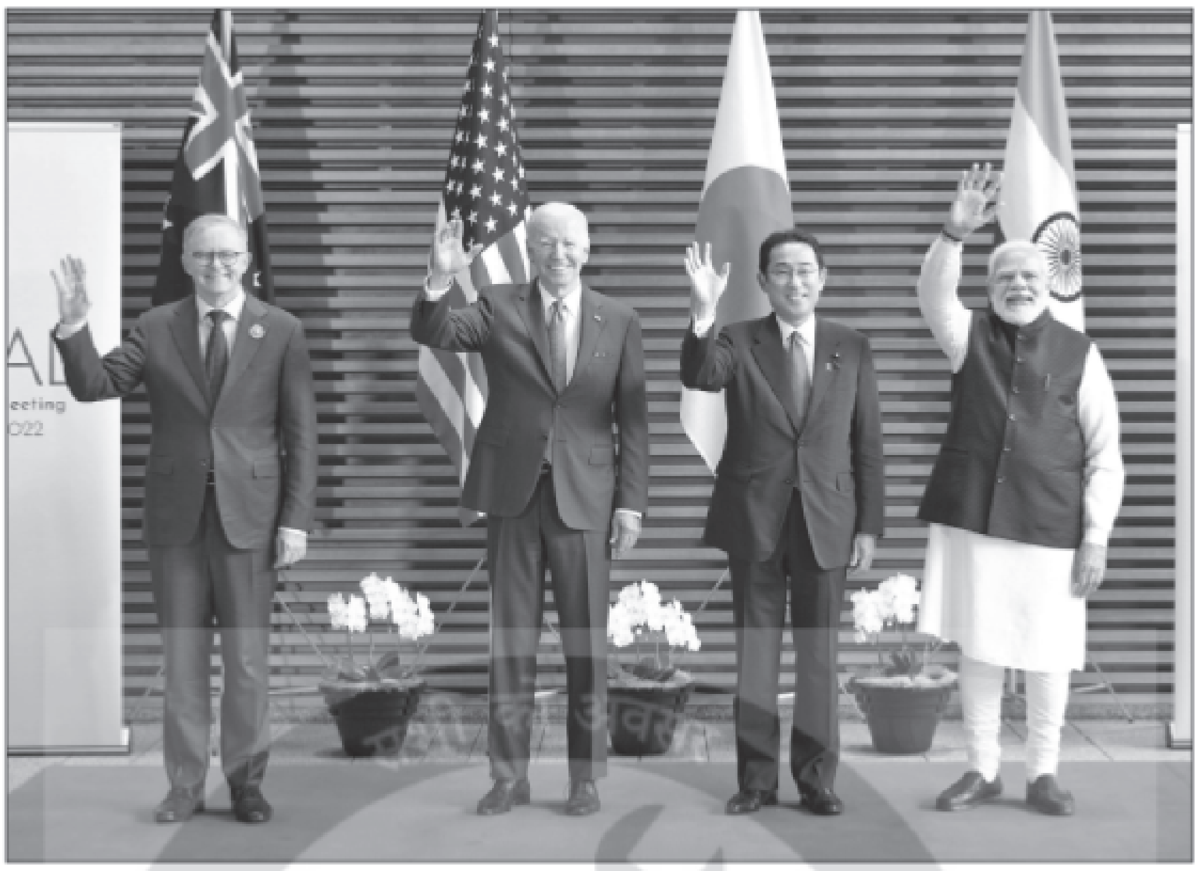
MAJOR TAKEAWAYS

Maritime Domain Awareness and HADR

A new maritime domain awareness initiative, the Indo Pacific Partnership for Maritime Domain Awareness (IPMDA), designed to work with regional partners to respond to humanitarian and natural disasters and combat illegal fishing, was announced. IPMDA will support and work in consultation with Indo-Pacific nations and regional information fusion centers in the Indian Ocean, Southeast Asia, and the Pacific Islands by providing technology and training to support enhanced, shared maritime domain awareness to promote stability and prosperity in our seas and oceans. IPMDA will build a faster, wider, and more accurate maritime picture of near-real-time activities in partners' waters. The benefits of this picture are vast: it will allow tracking of "dark shipping" and other tactical level activities, such as rendezvous at sea, as well as improve partners' ability to respond to climate and humanitarian events and to protect their fisheries.

Delivering on their commitment following the virtual meeting in March 2022, the establishment of the "Quad Partnership on Humanitarian Assistance and Disaster Relief (HADR) in the Indo-Pacific" was also announced. This Partnership is intended to further strengthen the collaboration between the member countries to effectively respond to disasters in the region.

SPOTLIGHT



Quad Fellowship

A new Quad Fellowship programme was at the Tokyo summit and is now open for application. This is a first-of-its kind scholarship program that will bring together the top minds of Australia, India, Japan, and the United States in science, technology, engineering, and mathematics. The Fellowship will sponsor one hundred students per year, 25 from each Quad country, to pursue master's and doctoral degrees at leading STEM graduate universities in the United States. The first class of Quad Fellows will begin their studies in the third quarter of 2023. The Fellowship will build a talented cohort of next generation STEM minds who will lead our countries in cutting edge research and innovation. The Quad Fellowship application is live (www.quadfellowship.org/apply) and will remain open until June 30, 2022.

COVID-19 and Global Health Security

The Quad reiterated its commitment to maintain its global leadership in responding to the COVID-19 pandemic and bolstering global health security. To date, Quad partners have collectively delivered over 670 million vaccine doses, including at least 265 million doses to Indo Pacific. In addition, the Quad partners have collectively pledged approximately USD $ 5.2 billion to the COVAX AMC. The Quad welcomed the progress on the expansion of J&J vaccine production at the Biological E facility in India under the Quad Vaccine Partnership.

Peace and Stability

The Quad discussed the member countries' respective responses to the conflict in Ukraine and the ongoing tragic humanitarian crisis, and assessed its implications for the Indo-Pacific. Quad leaders reiterated their resolve to maintain the peace and stability in the region. The Quad welcomed the EU's Joint Communication on the EU Strategy for Cooperation in the Indo-Pacific which was announced in September 2021 and increased European engagement in the Indo-Pacific region. Adherence to international law and the maintenance of freedom of navigation and over flight, to meet challenges to the maritime rules-based order, including in the East and South China Seas were also reiterated at the Summit.

The Quad reaffirmed the commitment to the complete denuclearization of the Korean Peninsula, consistent with United Nations Security Council Resolutions (UNSCRs) and also reconfirmed the necessity of immediate resolution of the issue of Japanese abductees. The Quad also expressed concern over the crisis in Myanmar and reaffirmed their fight against global terrorism.

Infrastructure

Reaffirming the shared commitment to deepen cooperation on infrastructure that is critical to driving productivity and prosperity in the Indo-Pacific region, Quad will seek to extend more than 50 billion USD of infrastructure assistance and investment in the Indo-Pacific, over the next five years.

The Quad shall work to strengthen capacities of the countries in need to cope with debt issues under the G20 Common Framework and by promoting debt sustainability and transparency in close collaboration with finance authorities of relevant countries, including through the 'Quad Debt Management Resource Portal', which consists of multiple bilateral and multilateral capacity building assistance.

Climate

The 'Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP)' was launched with 'mitigation' and 'adaptation' as its two themes. Q-CHAMP includes ongoing activities under the Quad Climate Working Group on: green shipping and ports aiming for a shared green corridor framework building on each Quad country's input; clean energy cooperation in clean hydrogen and methane emissions from the natural gas sector; strengthening clean energy supply chains, welcoming the contribution of the Sydney Energy Forum; climate information services for developing an engagement strategy with Pacific island countries; and disaster risk reduction, including disaster and climate resilient infrastructure such as the efforts through the Coalition for Disaster Resilient Infrastructure (CDRI). Its coverage includes new cooperation in clean fuel ammonia, CCUS/Carbon Recycling, cooperation and capacity building support to advance high integrity carbon markets under Article 6 of the Paris Agreement, climate smart agriculture, knowledge sharing on subnational climate actions, and ecosystem-based adaptation.

Cybersecurity

The Quad partners pledged to coordinate capacity building programs in the Indo-Pacific region under the 'Quad Cybersecurity Partnership'. A Quad Cybersecurity Day is also on the cards to help individual internet users across the member nations, the IndoPacific region, and beyond to better protect themselves from cyber threats.

Critical & Emerging Technologies

In the area of 5G and beyond 5G, while welcoming the Prague Proposals on Telecommunications Supplier Diversity, the Quad will advance interoperability and security through the signature of a new Memorandum of Cooperation on 5G Supplier Diversification and Open RAN. The Quad are also deepening their engagement with industry, including through Open RAN Track 1.5 events, and exploring ways to collaborate on the deployment of open and secure telecommunications technologies in the region. A Common Statement of Principles on Critical Technology Supply Chains was launched at the Summit. This advances Quad's cooperation on semiconductors and other critical technologies.

Space

The Quad member states pledged to work together to create an Earth observation based monitoring and sustainable development framework. They will endeavor to share space-based civil Earth observation data, along with providing a 'Quad Satellite Data Portal' that aggregates links to respective national satellite data resources. The Quad will work together to develop space applications, including in the area of Earth observations, and provide capacity building support to countries in the region, including with regards to partnering on using space capabilities to respond to extreme precipitation events.

THE EMPLOYMENT EXPRESS

Biotechnology Sector Driving Growth, Creating Jobs

(Written By – Ankita, Source – employmentnews.gov.in)

Biotechnology entrepreneurs are developing game changing innovations that will transform the way we heal, fuel, and feed the world. As more of these groundbreaking innovations come to market, they will not only provide enormous societal benefits, but will also serve as a growth engine for our economy.

Biotechnology, globally recognized as a rapidly emerging and far-reaching technology, is aptly described as the "technology of hope" for its promise of food, health and environmental sustainability. The recent and continuing advances in life sciences clearly unfold a scenario energized and driven by the new tools of biotechnology. There are a large number of therapeutic biotech drugs and vaccines that are currently being marketed, accounting for a US$40 billion market and benefiting over a hundred million people worldwide. Hundreds more are in the development stage. In addition to these, there are a large number of agribiotech and industrial biotech products that have enormously helped mankind.

India's Share in Biotech

India is among the top 12 destinations for biotechnology globally and third largest in the Asia Pacific region. In 2020, the Indian Biotech industry reached a market size of US$70.2 billion, growing by 12.3% as compared to the previous year. The bio economy has observed almost a 95% increase in valuation over the last five years, with COVID-19 pandemic boosting it even further. The Indian biotechnology industry amounted to US$ 63 billion in 2019 and is forecast to reach US$ 150 billion by 2025, with a CAGR of 16.4%. By 2025, the contribution of the Indian biotechnology industry in the global biotechnology market is expected to grow to 19% from 3% in 2017. The sector is also making an increasing contribution towards national GDP and is a key part of India's vision of reaching a US$ 5 trillion economy by 2024.

The growth can be attributed to a range of positive trends such as growing demand for healthcare services, increased demand for food & nutrition, intensive R&D activities and strong government initiatives. Presently, key drivers for growth in the biotech sector are increasing investments, outsourcing activities, exports and the government's focus on the sector. 100% Foreign Direct Investment (FDI) is allowed under the automatic route for Greenfield pharma. 100% Foreign Direct Investment (FDI) is allowed under the government route for Brownfield pharma if upto 74% FDI is under automatic route and beyond 74% is under government approval route. FDI up to 100% is allowed under the automatic route for the manufacturing of medical devices.

India is recognized as a mega bio-diversity country and biotechnology offers opportunities to convert our biological resources into economic wealth and employment opportunities. Innovative products and services that draw on renewable resources bring greater efficiency into industrial processes, check environmental degradation and deliver a more bio-based economy.

The Biotechnology sector is divided into five major segmentsBio-pharma, Bio-services, Bioagri, Bio-industrial, and Bioinformatics. The biopharmaceutical sector accounts for the largest share of the biotech industry with a share of 64% of total revenues, followed by bioservices with 18% market share. India is becoming a leading destination for clinical trials, contract research, and manufacturing activities, which is further fueling the growth of the bio-services sector. Bio-agri segments accounted for 14% of the biotech industry in 2015-16, while the remaining market is catered by bio-industrial (3%) and bio-informatics (1%). For a country like India, biotechnology is a powerful enabling technology that can revolutionize agriculture, healthcare, industrial processing and environmental sustainability.

There are several social concerns that need to be addressed in order to propel the emergence of biotechnology innovation in our country such as conserving bioresources and ensuring safety of products and processes. Government and industry have to play a dual role to advance the benefits of modern biotechnology while at the same time educate and protect the interests of the public. Wide utilization of new technologies would require clear demonstration of the new added value to all stakeholders. There has been substantial progress in terms of support for R&D, human resource generation and infrastructure development over the past decade. With the introduction of the product patent regime it is imperative to achieve higher levels of innovation in order to be globally competitive. The challenge now is to join the global biotech league.

This will require larger investments and an effective functioning of the innovation pathway. Capturing new opportunities and the potential economic, environmental, health and social benefits will challenge government policy, public awareness, and educational, scientific, technological, legal and institutional framework. The issue of access to the products arising from biotechnology research in both medicine and agriculture is of paramount importance. Therefore, there should be adequate support for public good research designed to reach the unreached in terms of technology empowerment. Both "public good" and "for profit" research should become mutually reinforcing. Public institutions and industry both have an important role in the process.

This is the time for investment in frontier technologies such as biotechnology. It is envisaged that clearly thought-out strategies will provide direction and enable action by various stakeholders to achieve the full potential of this exciting field for the social and economic wellbeing of the nation.

Areas of Synergy in Biotech Space

Maritime resource collaborations: The economic zone of the sea as a source of novel genes and gene products - biopolymers, novel enzymes, new therapeutic leads, and other value-added products such as osmotolerant crops - has hardly been explored. Marine organisms also present immense potential as biosensors for pollution monitoring as well as bioreactors for production of novel products. Besides, the study of deep-sea organisms including marine microbes has tremendous implications for human health. Expertise in these diverse areas is scattered across a number of agencies/ institutions.

Environment: Environmental issues concern everyone. Biotechnology has tremendous potential for application to a wide variety of environmental issues including conservation and characterization of rare or endangered taxa, afforestation and reforestation. It can help in rapid monitoring of environmental pollution, eco-restoration of degraded sites such as mining spoil dumps, treatment of effluents discharged by industries (oil refineries, dyeing and textile units, paper and pulp mills, tanneries, pesticide units etc.), treatment of solid waste, and so on. A number of technologies have already been generated and demonstrated in the country. The real challenge is their adoption by the industry, which has been somewhat uneven. In general, corporate groups have not been overly enthusiastic in adopting biotechnologies even where they have proven efficacy.

The goal of environmental biotechnology would be to provide cost-effective and clean alternatives for risk assessment and quality monitoring, ecorestoration of degraded habitats, conversion of toxic recalcitrant chemicals into harmless byproducts, bioremediation of wastes, value-added products from biomass, control of biological invasion through biotechnological interventions, greener process technologies, and effective ex situ conservation strategies. These can be fulfilled through a deeper understanding - and engineering - of the metabolic pathways for degradation of toxicants, environmental genomics and proteomics, and other molecular techniques.

Industrial Biotechnology: At present, a third wave of biotechnology - industrial biotechnology - is strongly developing. Industrial biotechnology (also referred to as white biotechnology) uses biological systems for the production of useful chemical entities. This technology is mainly based on biocatalysis and fermentation technology in combination with recent breakthroughs in the forefront of molecular genetics and metabolic engineering. This new technology has developed into a main contributor to the socalled green chemistry, in which renewable resources such as sugars or vegetable oils are converted into a wide variety of chemical substances such as fine and bulk chemicals, pharmaceuticals, bio-colorants, solvents, bio-plastics, vitamins, food additives, bio-pesticides and bio-fuels such as bioethanol and bio-diesel.

The application of industrial biotechnology offers significant ecological advantages. Agricultural crops are used as starting raw materials, instead of using fossil resources such as crude oil and gas. This technology consequently has a beneficial effect on greenhouse gas emissions and at the same time supports the agricultural sector producing these raw materials. Industrial biotechnology frequently shows significant performance benefits compared to conventional chemical technology.

Medical Biotechnology: A healthy population is essential for economic development. Important contributors to the total disease burden are infections like HIV-AIDS, tuberculosis, malaria, respiratory infections and chronic diseases affecting the heart and blood vessels, neuro-psychiatric disorders, diabetes and cancer. It is important to synchronize the technology and products with the local needs of the health system and to facilitate technology diffusion into health practice.

Increasing knowledge about pathogen genomes and subtypes, host responses to infectious challenges, molecular determinants of virulence and protective immunity and novel understanding mechanisms underlying escaped immunity and ways to develop novel immunogens will guide development of vaccines against infectious diseases. Translational research and ability to rapidly evaluate multiple candidates in clinical trials can help accelerate the pace of vaccine development.

New directions in manufacturing and delivery are emerging. Major opportunities to control costs are the more efficient processes for manufacturing of new pharmaceuticals, more efficient systems for production of therapeutic proteins and biomaterials and development of drug delivery systems that release drugs at a target site. A shift from parenteral to oral or transcutaneous administration of drugs and vaccine holds the promise of simplifying delivery in health systems.

Medical biotechnology offers a significant possibility for Indian industry to establish a strong pharmacy sector, a growing number of small and medium biotechnology companies, a large network of universities, research institutes, and medical schools and low cost of product evaluation. The medical biotechnology sector annually contributes over 2/3rd of the biotechnology industry turnover. The Indian vaccine industry has highlighted India's potential by emerging as an important source of low cost vaccine for the entire developing world.

Bio-informatics and IT - enabled Biotechnology

Bioinformatics has proved to be a powerful tool for advanced research and development in the field of biotechnology. Bioinformatics holds out strong expectations of reducing the cost and time of development of new products such as new drugs and vaccines, plants with specific properties and resistance to pests and diseases, new protein molecules and biological materials and properties. As the full genome sequences, data from micro arrays, proteomics as well as species data at the taxonomic level became available, integration of these databases require sophisticated bioinformatics tools. Organizing these data into suitable databases and developing appropriate software tools for analyzing the same are going to be major challenges. India has the potential to develop such resources at an affordable cost.

To conclude, Biotechnology can deliver the next wave of technological change that can be as radical and even more pervasive than that brought about by IT. Employment generation, intellectual wealth creation, expanding entrepreneurial opportunities, augmenting industrial growth are a few of the compelling factors that warrant a focused approach for this sector.

Biotechnology as a subject has grown rapidly and as far as employment is concerned it has become one of the fast-growing sectors. Employment record shows that biotechnology has a great scope in future. Biotechnologists can find careers with pharmaceutical companies, chemical, agricultural and allied companies. They can be employed in the areas of planning, production and management of bio-processing industries. There is a large scale employment in research laboratories run by the government as well as the corporate sectors.

Biotechnology students in India may find work in government based entity such as universities, research institutes or at private centres as research scientists/ assistants. Alternatively, they may find employment in specialized biotechnology companies or biotech-related companies such as pharmaceutical firms, food manufacturers, aquaculture and agricultural companies that are engaged in business related to life sciences ranging from equipment to chemicals to pharmaceuticals and diagnostics. The scope of work can range from research, sales, marketing, administration, quality control, breeding, technical support etc.

There is no doubt that Biotechnology sector is one of the sunrise sectors in India which has a potential to create millions of jobs. The government is investing substantially for creating human capital and infrastructure with a special focus on R&D to develop India into a world class bio manufacturing hub.

THE REVOLUTION EXPRESS

Quit India Movement : Character and Organization

(Written By – Our Correspondent, Image Source – Google)

The long drawn-out battle of India's struggle for freedom is a saga of supreme sacrifices made by the Indian people. There were several landmarks in this struggle against the mighty British Empire. The first mile-stone was the great revolt of 1857 which was spearheaded by Rani Lakshmi Bai, Tatya Tope, Azimullah and Nana Saheb. The failure of the uprising made the Indian intelligentsia aware of the ineffectiveness of armed resistance.

Towards the end of the 19th century and thereafter, the political scene took a new turn. The frustration arising out of delayed and unsatisfactory British reforms, pursuit of the 'Divide and Rule' policy and high[1]handed repression fomented an extreme type of national movement in Bengal and Maharashtra. The leaders of this movement were Lokamanya Tilak, Aurobindo Ghosh, Bipin Chandra Pal, Lala Lajpat Rai and others.

Gandhiji launched five movements of all-India character against the British rulers from 1919 to the attainment of Independence in 1947. These movements are known as the Non-Cooperation Movements of 1919 and 1921, the Civil Disobedience Movements of 1930 and 1932 and the 'Quit India' Movement of 1942.

The 'Quit India' Resolution of August 1942 marked the turning point in India's struggle for freedom. Gandhiji explained it as "a complete and immediate withdrawal of the British from India at least in reality and properly from all non-European possessions".

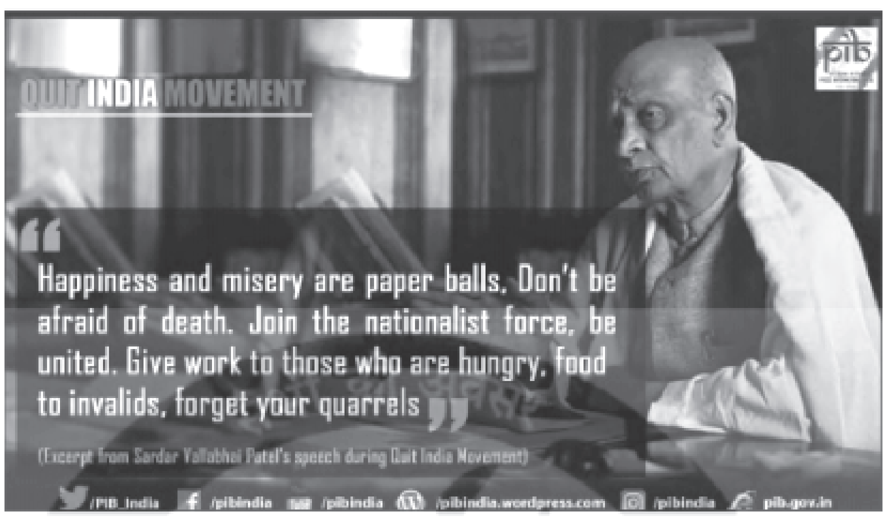
Gandhiji was arrested before he could unfold the strategy for the movement. He did not anticipate his arrest as pointed out by Maulana Abul Kalam Azad in his autobiography India Wins Freedom and believed that the "British would hesitate to take any drastic steps with the Japanese knocking at India's doors". He thought that this would give the Congress time and opportunity to organise an effective movement. In fact Gandhiji envisaged a period of negotiations before launching the struggle and his letter to the Viceroy, Lord Linlithgow (dated 14 August 1942) clearly brings out this fact. He referred to his speeches at the AICC in which he indicated an interval which could have been taken advantage of. The negotiations, according to D. S. Tendulkar (Mahatma — Life of Mohandas Karamchand Gandhi) were to cover at least a period of three weeks. Gandhiji was thus not able to finalise his programme due to his sudden arrest. According to Jawaharlal Nehru "even privately Gandhiji did not suggest any plans of the movement except saying that in the event of the failure of negotiations, he would appeal for some kind of non[1]cooperation and one-day cessation of all work in the country." However, the official biographer of the 'Mahatma' quotes verbatim the draft of instructions prepared by Gandhiji and marked confidential which was placed before the Working Committee on 7 August for consideration.

This draft of instructions and speeches of Gandhiji and other leaders at the AICC helps to give an idea of the movement contemplated. This finds further corroboration in the programme chalked out by Dr Rajendra Prasad for the guidance of the people of Bihar which is referred to in his autobiography. There were to be some significant departures from the earlier satyagrahas. "The movement was not to be confined to Congressmen only", Sardar Patel made it clear but it was intended to "take in all men who called themselves Indians". It was to be a mass movement and every element of the society, the princes, the peasants, the soldiers, the civilians, the workers and the students were called upon to play their role in this "final struggle". Unlike earlier movements people were not to court arrest voluntarily and if excesses were committed by the Government, resistance was to be offered. There was to be no submission to coercion or injustice. Soldiers were on the other hand, asked to refuse to shoot down their own brethren. Villagers and labourers were to refuse to vacate their farms and homes required for military purposes, unless suitable compensation was offered. "We do not want to hinder military activities but neither shall we submit to arbitrary highhandedness." Those employed in Government offices, Government factories, railways, post offices, were not to go on strike in the initial stages of the struggle. But they were expected to inform the authorities that they were with the Congress and it was "their clear duty to resign if asked to perpetrate excesses." Students were to boycott schools and colleges and those above 16 years of age were to participate in the struggle. Princes were warned to "read the sign of the times and part with the responsibilities of administration to their subjects; otherwise they would have no quarter in free India". The movement was to start with hartals but no one was to be coerced to close his shop. Processions and meetings were to be arranged only in villages where there was no fear of violence or disturbances. In case of arrest of a leader, another was to take his place and in the last resort, everyone was to be his own leader. Salt was to be manufactured wherever possible and those who had "the courage and are prepared to risk their all should refuse to pay even the land tax to the Government we cease to recognize." It was emphasised that if anybody had the spirit of communalism or harboured hatred or ill-will against Englishmen, he would best help the struggle by keeping aloof. The struggle was to be carried on ceaselessly and Gandhiji's last message to the nation immediately before his arrest was 'Do or Die'. "Every man is free to go to the fullest length under ahimsa by complete deadlock, strikes and all other non-violent means. Satyagrahis should go out to die and not to live. It is only when individuals go out to seek and face death that the nation will survive— Karenge Ya Marenge (we shall do or die)"

Gandhiji thus envisaged a movement which was to be more forceful and wider in scope than his earlier satyagrahas. But non-violence was to remain the sheet[1]anchor and secrecy was to be opposed.

The phraseology used by Gandhiji in his various statements in the months preceding his arrest as, "the contemplated struggle was to be a conflagration....I would not hesitate to take any risk howsoever great; after all it is an open rebellion....My intention is to make it as short and swift as possible...Leave India to God. If that is too much then leave her to anarchy...." (Harijan, 24 May) and his last message before arrest 'Do or Die' had no doubt similarity with the war slogans at least to the western ear, accustomed only to battles in which both parties are armed, but anyone who had been a careful follower of Gandhiji's speeches and writings, as pointed out by Horace Alexander of the Society of Friends, London, or one who had lived in the atmosphere of his mind as the millions in India had done, they must appear in quite another light. For Gandhiji any systematic breach of law, howsoever non-violent was open rebellion. It may be pointed out here that extracts from his writings had been torn from their context and a 'sinister' meaning put upon them by presenting them in a false setting.

A careful study of the available materials including Gandhiji's correspondence with the Government and the proceedings of the Working Committee and the All India Congress Committee and the statements made by the leaders like Pandit Jawaharlal Nehru, Sardar Vallabhbhai Patel and Maulana Abul Kalam Azad before and after their release, bring out clearly that "violence was never contemplated by Gandhiji at any stage." The main emphasis of the Bombay Resolution was that the People "must remember that non-violence is the basis of this movement." Even a revolutionary leader like Jaya Prakash Narayan made it clear in his open letter of instructions to all Fighters for Freedom that "Gandhiji is in no event prepared to depart from non-violence. With him it is a question of faith and life principle." The arrest of Gandhiji and other leaders who knew the working of his mind, left the responsibility of chalking out a programme of action on the shoulders of those who had escaped arrest. Included in them, were Achyut Patwardhan, Sucheta Kriplani, Ram Manohar Lohia, Gopinath Bardaoli and Sadiq Ali who prepared a sort of instructions from the All India Congress Committee to all Provincial Congress Committees regarding the programme of the movement. Later on Aruna Asaf Ali joined the group. The movement gained momentum after the escape of Jaya Prakash Narayan and his colleagues from Hazaribagh Jail in October 1942, when efforts were made to coordinate the activities in all the States.



Programmes were framed with some reorientation and in a highly significant document entitled The Freedom Struggle Front, the Socialist leaders unfolded their strategy. Their plan envisaged "a combination, a joint enterprise, a common stand where every group, every party, every class, and section and every individual can find a place to fill without (losing) their separate identities", to push on the upsurge of a whole people. Different social groupings were to be roped in the struggle and "discontent and frustration in each layer of society was to be nursed into a disruptive force" to help the onward march of revolution. "The training of workers, the issue of leaflets, news sheets, slogans, the organisation of contacts, the raising of funds, frequent reviews of progress and issue of directions to the fighting line" were to be urgent administrative problems of the Freedom Struggle Front". The first circular issued under the signature of Jaya Prakash Narayan addressed to "All Fighters for Freedom" blamed the Congress for not placing any programme before the people when the first phase of the movement, i.e., uprooting of the British rule in many parts of the country had been over. He justified the use of arms to fight the British in terms of the Bombay resolution. His stress was on "intensive propaganda work among masses, peasants in villages, workers in factories, mines, railways and elsewhere". Then there was work to be done in the "Indian army and services in native States and on the frontiers of India", and Jaya Prakash's other appeals were addressed to American officers and soldiers to deter from shooting Indians, to students, to the peasants, and others. Programme followed programme and repeated attempts at re-organising were made in the hope of imparting new life" to the cause but by February 1943 the movement was practically over. Symbolic demonstrations however, continued on certain days of national importance as the Independence Day, Tilak Anniversary, ninth day of every month, Gandhiji's Birthday, etc., till Gandhiji's release in May 1944. The chief weakness of the movement was lack of coordination.

There was left no central agency after the arrests of the leaders to give directions or coordinate the activities in various provinces. The lack of organisation, according to Jaya Prakash Narayan, "was so considerable that even important Congressmen were not aware of the progress of the revolt and till late the course of rising remained a matter of debate in accordance with the Congress programme." Organisation meant secrecy which had no place in Gandhiji's conception of non-violent Satyagraha. No less important was the lack of a clear cut programme of action. When the first phase of the rising was over, there was no further programme placed before the people. Jaya Prakash cited the instance of Ballia and some other places where the people had seized power but did not know what to do next. A few days later a contingent of soldiers was able to restore British power without much resistance. The people, according to the Socialist leader, should have set up in these areas their own units of revolutionary Government and created their own police and militia. Lack of funds was another drawback and in this connection Jaya Prakash deplored the role of the wealthy who "have proved to be not only extremely selfish but also exceedingly small men." The movement was mostly confined to students, peasants and the lower middle classes. Clive Branson, a British soldier, who was in India during the period, was misinformed when he wrote that the proletariat and peasantry are almost completely quiet. Though the labour unions under Communist influence had decided against participation in the movement, workers did not lag behind and there were large scale strikes in mills in Kanpur, Jamshedpur and Ahmedabad. Muslims excepting the small group of nationalists followed the advice of the Muslim League leader M.A. Jinnah and kept aloof from the struggle. The Muslim League, in a resolution passed at its Bombay session on 16 August 1942, condemned the Congress in launching the movement for the liberation of the country and called on the Muslim masses to abstain from any participation in the movement initiated by the Congress and to continue to pursue their own normal peaceful life.

However, there were no communal clashes anywhere except on a very minor scale in isolated areas. In the earlier stages of the struggle, the Communists supported the Congress and preached violent overthrow of the British rule in India. However, in May 1943 when Russia joined hands with the Allies against the Axis, the Communist Party of India advocated the building of a "national united front of the entire freedom loving people of India for the defence of this country from Fascist oppression and for its liberation from Imperialist enslavement." Indian Communists henceforward openly opposed the movement which, to quote the General Secretary of the Communist Party, P.C. Joshi, "cuts the nation away from freedom's battle and divides progressive forces in Britain and India." According to Maulana Abul Kalam Azad, the Communists "openly joined the war propaganda and did everything to help the British war effort. M.N. Roy accepted funds from Government openly and carried on propaganda in favour of war." It must, however, be added that in spite of the Party's directive there were a number of Communists, mostly ex-terrorists and revolutionaries who refused to follow the Party's no-war policy.

The 'Quit India' Movement is a landmark in India's struggle for freedom. It was the last and, undoubtedly, the bitterest fight for freedom ever waged against the British in India. It surpassed all the earlier movements including the Great Revolt of 1857 in dimensions and intensity. It was spread over almost all the provinces from the Himalayas to Cape Comorin. The violent upsurge of the masses and their readiness to sacrifice everything for the emancipation of the motherland showed their grim determination to throw off the foreign yoke. It warned the British that they were not wanted in India and that "their belief that any section of Indian people—the Muslims, the depressed classes or the States' people—favoured continuance of their rule was a delusion."

The complete breakdown of law and order in many parts of the country and the setting up of parallel independent governments by the people made them realise that they could not hold their sway over India for long. Sardar Patel echoed the new mood of the people when he said "never before had such widespread upsurge happened in India in the history of the British raj, as they did during the last three years. We are proud of the spirit in which the people reacted... the leaders were all of a sudden kidnapped from the midst of the people and people acted on the spur of the moment. Non-violence had taken no doubt deep root but one had to face the reality that violence was the order of the day in the whole world. It would be like the Devil quoting the scriptures, if the world outside criticised India if she switched over from non-violent attempt to regain independence". The enthusiastic response of the people from one end of the country to the other, many instances of individual and collective heroism and bravery in the face of heavy odds and their untold sufferings and sacrifices hastened the British decision to quit India. Gandhiji had, after all, succeeded in convincing the British that they were not morally justified in keeping India under bondage and they had to quit.

THE RURAL DEVELOPMENT COLUMN

Panchayati Raj : Building The Nation From Grassroots

(Written By – Our Correspondent, Source – employmentnews.gov.in)

Decentralization is the process whereby authority is restructured between institutions of governance at the central, regional and local levels with power and functions transferred to the lowest institutional or social level. It is an important apparatus through which democracy becomes truly representative and real. Decentralization ensures people at the grassrootlevel participate in the decisionmaking process.

Decentralization of power to the local authorities is the most effective way to empower people. It not only helps in increasing efficiency but is a sure method to promote equitable growth. In India, Panchayati Raj system is identified as the prime instrument of decentralization through which democracy becomes truly representative and responsive. The Panchayati Raj Institutions are considered as local self-government meant for providing basic infrastructure facilities, empowering weaker sections of the society and initiating the development process in the rural parts of the country.

What is National Panchayati Raj Day?

The Constitution (73rd Amendment) Act, 1992 that came into force with effect from April 24, 1993 has vested constitutional status on Panchayati Raj Institutions. This date thus marks a defining moment in the history of decentralization of political power to the grassroots level. The impact of the 73rd Amendment in rural India is very visible as it has changed power equations irreversibly. Accordingly, the Government of India decided in 2010, in consultation with the States, to celebrate April 24 as National Panchayati Raj Day. The commemoration is anchored and celebrated by the Ministry of Panchayati Raj.

On the occasion, awards are given to the best performing Panchayats. These are namely, Deen Dayal Upadhyay Panchayat Sashaktikaran Puraskar (DDUPSP) in General and Thematic categories for all three levels of Panchayats, Nanaji Deshmukh Rashtriya Gaurav Gram Sabha Puraskar (NDRGGSP) to Gram Panchayats for outstanding performance of Gram Sabha, Gram Panchayat Development Plan (GPDP) Award to be conferred upon three best performing Gram Panchayats across the country, and Childfriendly Gram Panchayat Award.

Ever since the 73rd Amendment came into force, the process of political empowerment of the Panchayats has largely been achieved. While Panchayat elections have been regularly held in all the States and Union Territories, reservations have been provided to women, Scheduled Castes, Scheduled Tribes and Other Backward Classes in proportion to their share of the population in each panchayat area. There are several other landmark initiatives that the government has undertaken to empower the Panchayati Raj Institutions.

SVAMITVA

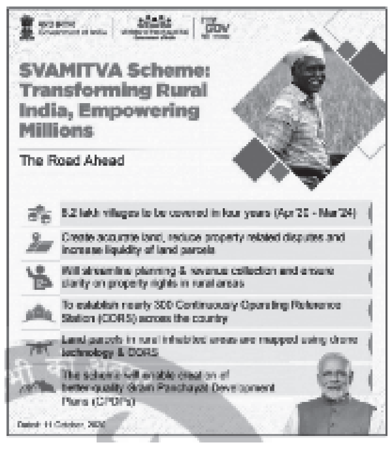
SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas) was launched by the Hon'ble Prime Minister on National Panchayati Raj Day in 2020, with a resolve to enable economic progress of rural India by providing "Record of Rights" to every rural household owner. The scheme aims to demarcate inhabited (Abadi) land in rural areas through the latest surveying drone-technology. It is a collaborative effort of the Ministry of Panchayati Raj, State Revenue Departments, State Panchayati Raj Departments and Survey of India. The scheme covers multifarious aspects viz. facilitating monetisation of properties and enabling bank loan, reducing property related disputes, and comprehensive village level planning that would be the stepping-stone towards achieving Gram Swaraj in true sense and making rural India Atmanirbhar.

Apart from demarcation of individual rural property, other Gram Panchayat and community assets like village roads, ponds, canals, open spaces, school, Anganwadi, Health sub-centres, etc. would also be surveyed and GIS maps would be created. Further, these GIS maps and spatial databases would also help in preparation of accurate work estimates for various works undertaken by Gram Panchayats and other Departments of State Government. These can also be used to prepare better-quality Gram Panchayat Development Plan (GPDP).

The main activities under the Scheme are:

I. Establishment of Continuous Operating Reference System: It is a network of reference stations that provide a virtual base station that allows access to long-range high accuracy network Real Time Kinematic (RTK) corrections with centimetre-level horizontal positioning. CORS network supports in accurate Geo-referencing, ground truthing and demarcation of lands.

ii. Large Scale mapping using Drones: Rural inhabited area would be mapped



by Survey of India using drone Survey. It would generate high resolution and accurate maps to confer ownership property rights. Based on these maps or data, property cards would be issued to the rural household owners

iii. Awareness program to sensitize the rural population about the surveying methodology and its benefits

iv. Setting of Programme management unit at National and State level

v. Development/Maintenance of Scheme Dashboard and integration of drone survey Spatial data/maps with Ministry's Spatial planning application to support in planning at local level

vi. Documentation of best practices/conducting National and Regional workshops

The objective of the Scheme is to provide right of the property to the household. It opens avenues for applying for loans from Financial Institutes by Property Owners. It will help reduce disputes related to property. With clear titles, accurate size determination and transparent land titles, SVAMITVA will provide the States with an unprecedented prospect of empowering the Gram Panchayats to levy and collect Property Tax, which would be available to the Panchayat for local use/ development work. This would provide financial wherewithal to the Gram Panchayats. The scheme will also enhance the socioeconomic profile of the Panchayats, making them selfsustainable.

e-Gram Swaraj e-Financial Management System

In order to strengthen eGovernance in Panchayati Raj Institutions (PRIs), eGramSwaraj, a Simplified Work Based Accounting Application for Panchayati Raj, was launched on the occasion of National Panchayati Raj Day on April 24, 2020.

e-GramSwaraj will assist in enhancing the credibility of Panchayat through inducing greater devolution of funds to PRIs. It aims to bring better transparency through decentralized planning, progress reporting and work-based accounting. Furthermore, the application provides a platform for effective monitoring by higher authorities. It has been developed amalgamating the functionalities of all the applications under e-panchayat Mission Mode Project (MMP). eGramSwaraj subsumes the eFMS applications and comprises of following modules:

- GP Profile: To maintain Panchayat profile with Election Details, Elected Members, Committee information etc.
- Panchayat Planning: To facilitate the planning of activities and action plan creation
- Physical Progress: To record the physical and financial progress of approved activities
- Financial Progress: To facilitate the work-based accounting and monitoring of funds
- Asset Directory: To store the details of all the immovable and movable assets of the Panchayats.
- Strong Authentication Mechanism based on open source technologies is also included

In order to enhance transparency and empower panchayats, the Ministry is integrating beneficiary details of various Union Ministries/ Departments with e-Gram SWARAJ Application. The information shall be available to Gram Panchayats, to read out in the course of the Gram Sabhas for public verification. This verification would be a landmark in ensuring accountability through digitalization and public participation. Further, the Ministry has enabled data sharing between eGramSwaraj, PFMS and Core Banking System (CBS) through PFMS integration. The process of Reverse Integration with respective State treasuries and eGramSwaraj Interface (eGSPI) has been envisaged to obviate the need to book the receipt vouchers manually in the application.

Rural Technology Advancements - Smart Vending Cart

In its efforts towards leveraging technology for rural development, MoPR has collaborated with Principal Scientific Advisor to Government of India, Department of Science and Technology and six IITs in developing Smart Vending Cart to be used by Vendors in the rural areas. The Smart Vending E-Cart, designed by IIT Bombay, has been demonstrated and found to be quite appropriate for use by the vendors/small businesses in rural, peri-urban and farm sectors.

The Smart Vending E-Cart has multifaceted user-friendly enabling technologies and features which provides proper storage and temperature for enhanced shelf life of perishable foods/items like vegetable & fruits etc. It has enhanced features for modularity, ergonomics, foldability, customer attraction, solar power LED lighting, mist cooling, weighing machine, mobile charging, radio, sitting facility, water, cash box, waste disposal bin, sanitizers, digital payment facility etc. IIT Bombay is collaborating with fabricators for mass production of the Smart Vending Carts through PPP model.

This Smart Vending Cart has been designed with a view to minimize loss to Vendors due to wastage of perishable food items, enhance their income from fresh & good quality items, beneficial employment to new vendors, delivering comfort and convenience to them in vending as well as in mobility of Cart and availability of fresh vegetable and fruits etc. at affordable price to the people near their surrounding throughout the year. The product has also been developed in various types, namely, retrofit, manual and smart 'e versions'.

MoPR's efforts to promote such ventures of technology adaptation will lead to development of rural entrepreneurship as well as effective and efficient provision of basic services to the rural citizens.

Vibrant Gram Sabha

Article 243 of the Constitution defines Gram Sabha as comprising of persons registered in the electoral rolls relating to the village. The Gram Sabhas have been envisaged in the Constitution as the unique institution to play stellar role in self-governance of the rural citizens, being the grass root level democratic platform and the authority for overseeing implementation of various development programmes of the Panchayati Raj Institutions (PRIs). MoPR has initiated efforts to revitalize the institution of Gram Sabhas, namely, 'Making Gram Sabhas Vibrant', in an effort towards strengthening the rural local self- governance by adopting a radical approach for augmenting rural economy through intensive implementation of development schemes for saturation.

Vibrant Gram Sabha portal is an integrated real time online monitoring system, where all the major performance parameters of the key focus areas at the GP/ Village levels are tracked and displayed in the public domain. It facilitates a completely automated online workflow configurable Gram Sabha management system, substituting paper-based manual processes. The primary objective of the "Vibrant Gram Sabha" portal is to make the Gram Sabha meetings more participatory, transparent and vibrant.

Credit and Banking in Rural Areas

(Written By – Our Correspondent)

You must be aware of the horrible trend of farmer suicides in our country. This is evidence of how worse the situation is. it makes one ponder over the conditions of rural India. One of the primary culprits of this is the poor credit services and rural banks of India. Let us analyse these further.

1. Credit System in Rural Areas

Credit is an important instrument for rural development. Most of the agricultural chores still depend on manual labour. It also involves techniques which are outdated and result in low outputs. The investment in rural areas has been on a low which effectively results in low output and productivity in all kinds of activities.

A capital infusion for a jump in productivity in reference to both agricultural and non-agricultural activities can be achieved by reforming credit and banking system. During the gestation period between sowing and harvesting seasons, farmers need credit to make ends meet, their general needs, initial requirements etc. Additionally, they also need credit to venture into modern agricultural techniques, to buy cattle, land etc.

2. The Development of Present Credit System

The difference in monetary activities of rural people relative to urban people led to the realization of NABARD (National Bank For Agricultural And Rural Development), in addition to the presence of RBI.

The post-independence period saw exploitation of rural poor in need of credit, by the hands of moneylenders and traders. Loans were granted at very high-interest rates which ultimately pulled defaulters into a debt trap, robbing them out of credit. To stop this exploitation NABARD was established to provide rural areas with easy credit. Although RBI is the national banking apex body, NABARD has been given powers that establish it as the apex banking body in rural India which regulates all the credit and banking activities of rural India.

3. Helping Hand of SHGs

Although NABARD has been proving to be a step in the right direction, the problem with formal banking system is that some kind of collateral is required. The rural poor in need of urgent credit, don't generally possess any collateral. Consequently, they are ruled out of the formal banking system. To help such kind of people self-help groups (SHG) emerged on the scene. They are successfully bridging the gap between formal credit system and rural poor.

Such groups dispense small credit to the needy members, who need to provide a minimum sum to the pool initially. Then loans can be taken from the sum collected at very cheap interest rates. For this reason, by March-end 2003, more than seven lakh SHGs were reported operational. Such credit provisions are referred to as micro-credit programmes.

4. Rural Banks

The banking and credit system in rural India has come a long way. With credit available at low-interest rates through operation of NABARD and microcredit generation by the various self-help groups, less poor are falling into the debt trap. After the advent of the green revolution, productivity in agriculture increased manifolds. In essence modern techniques, high yielding variety seeds, sustainable activities etc. have been promoting productivity and output.

But the formal banking system has been proving inadequate in lending to worthwhile borrowers and effective loan recovery. By and large, the number of loan defaulters is rising. The poor are forced to look in direction of informal moneylenders, who exploit them. Hence some changes are required.

5. Spectrum of change

The rural banks need to establish a banking relationship with the people and scrap away the image of just money lenders. The banking system in rural India needs a reform, considering the difference in livelihoods of urban and rural people. Leniency on the part of the government in the collection of taxes inculcated a habit of not repaying borrowed amounts among people which needs to be altered. Banks need to educate people about thrift generation and efficient utilization of financial resources to become feasible again.

THE SPORTS AFFAIRS COLUMN

Creating A Culture of Sports in the Country

(Written By – Vidhanshu Kumar, Image Source – Google)

Once India's legendary sportsperson Kapil Dev was asked why India doesn't win medals proportionate to its population.

Kapil Dev gave a unique insight into this. He said that India is not fulfilling her potential due to lack of 'sports culture' in the country. Elaborating on this he said, sports culture does not mean only few youthful individuals practising sports on a daily basis. According to him, the day grandfathers go out to jog in the morning with grandchildren, sports culture would arrive in the country. Sports and games should be inculcated as a habit among all the people, young and old, and then India can be a true sports superpower that she clearly deserves.

In the last four years, there are clear signs that the government wants to stress on sports not only to win medals at international events, but also to encourage all people to engage in some form of games and physical activity. The most encouraging sign is to see the Prime Minister himself taking huge interest and leading the nation towards fitness and playing physical games.

Khelo India

Among the many initiatives taken up by the Central Government, Khelo India is one that has caught everyone's attention. Khelo India School Games is a concept based on the Olympics model and was launched in January this year. This is a national level multi-disciplinary annual sports competition for under-17 school students of the country. Prime Minister launched this event at the Indira Gandhi Stadium in Delhi and said that sports should be given a 'central place' by the youth of the country. The PM has emphasized that Khelo India movement was not only about winning medals, it was also about building a mass movement for playing and engaging more and more people in sports. PM has stressed that as far as talent goes, India has no dearth of it but it is important for people to take up sports and devote time to play games and make sports a priority. Through sports, personality development can also be achieved in a great way.

From Khelo India to CWG Medal :

A number of achievements and records were broken in the inaugural edition of Khelo India School Games. A total of 209 gold medals were awarded in 16 disciplines that included Archery, Badminton, Basketball, Boxing, Football, Gymnastics, Hockey, Judo, Kabaddi, Kho Kho, Shooting, Swimming, Volleyball, Weight Lifting, Wrestling, and Track and Field events. Haryana won maximum medals, gold medals at 38 and 102 overall. Maharashtra was second with 110 medals and Delhi finished third with 94 medals to its kitty.

The quality of competition at the Khelo India School Games was top notch. What was most encouraging was to see some of the champions at the Khelo India Games win laurels at international stages including Common Wealth Games.

Teenagers Manu Bhaker (shooting) and Srihari Nataraj (swimming) broke many records at the Khelo India School Games and emerged as champions from the ambitious program launched by the government.

Manu won gold in 10 m Air Pistol with a new national record. Nataraj also broke national record in backstroke and won overall 6 gold and a silver medal at the Khelo India Games.

The two were rewarded with berths at the Common Wealth Games in Australia and they did not disappoint. Nataraj improved upon his record in 50 meters backstroke and reached the semifinals, but could not qualify for the finals.

Meanwhile Manu Bhaker won India's first gold medal at the CWG in Gold Coast. Manu set a new CWG record in 10 m Air Pistol and outshone many senior shooters including Heena Sidhu. Bhaker is already touted as the star for the future.

Khelo India - Taking Forward :

Government has ambitious plans to take this flagship sports event forward. Union Minister for Sports and Youth Affairs Shri Rajyavardhan Singh Rathore has said that there is no shortage of funds for this event. In its future endeavors the Ministry is planning to train more coaches at the grassroot community levels so that they are able to provide right coaching. Plans are also afoot to involve more girls in Khelo India initiative. Idea is to bring more behavioral changes and make playing sports a true culture in the country.

The Ministry is also developing an app that will give information about nearby grounds, playing facilities etc and also provide inputs on how to improve one's game. This app will fill the gaps in 'where to play' and 'how to play'. Government and PSU playing facilities location etc. can be accessed through this app. There will also be a number of 'how to play' videos in various disciplines.

Fitness Challenge :

Under the able leadership of PM, the Sports Ministry has also devised a number of unique programs that have far reaching effects.

Union Minister of Youth Affairs and Sports Col. Rajyavardhan Singh Rathore started a novel event called Fitness Challenge. Sports fraternity has huge respect for Rathore who is himself an Olympic medal winner. Rathore tweeted his video in which he is doing push-ups. The Minister also requested people to shoot their own fitness videos and tag others. Rathore tagged Indian cricket captain Virat Kohli, who accepted the challenge and posted his own video. Kohli tagged PM Shri Modi who also accepted the challenge. The Prime Minister also urged the nation to take up this drive. Soon this became a huge phenomenon on social media. Hashtag '#Hum Fit Toh India Fit' became viral and trended on various social media platforms.

At the IPL final, a wonderful commercial was played in which PM and other senior leaders along with a host of Bollywood and sports stars are seen taking the fitness challenge and cajoling people to get into some exercise regime.

Ever since, every day thousands of videos are uploaded online and this movement has escalated into a mass movement. People across states and regions, men and women, all age groups are participating in this fitness challenge. This has ignited a spark and for the movement to attain full benefits it is important that people inculcate fitness regime in their daily routine and not let it go after posting videos.

Target Olympic Podium :

The Government is also running a program that aims to see more Indian athletes at the winning pedestal of Olympic Games. The scheme is named as Target Olympic Podium (TOP) and it was launched in 2014 by the Ministry of Youth Affairs and Sports.

The objective of the scheme is to identify medal prospects for 2016 and 2020 Olympic Games and also support them in their training. In the first stage of TOP, seven disciplines - Athletics, Archery, Badminton, Boxing, Shooting, Wrestling and Yachting - were identified.

Around 100 athletes were selected in the stage who were provided financial assistance to undertake training at top institutes in India and abroad.

The Committee to identify players for this scheme was reconstituted and it got a new chairman in Abhinav Bindra in 2017. The other sportspersons in this ten-member committee are PT Usha, Prakash Padukone, Anajli Bhagwat and Karnam Malleswari.

This committee has the objective to identify and support players for 2020 and 2024 Olympic Games. The focused approach is expected to improve India's medals tally at Olympics as respected sportspersons have been roped in to lead this scheme. The current minister Shri Rajyavardhan Singh Rathore himself is an Olympic medal winner and carries a lot of expectation from sports lovers.

Expanding Sports Industry :

Many countries have ridden on the wave of sport economy. Sports is a multi-billion dollar global industry and the size of this industry is estimated to be around 600 billion US Dollars. But in this multi-billion dollar industry, India's contribution is a mere 2 billion US Dollars. The Indian government has identified this lacuna. The government wants to expand the sports industry too as this is one sector where India has not performed as well as a country can. The government believes that with active participation in sports and by winning enough laurels in the international arena, the ecosystem for sports industry can be strengthened. While inaugurating a world class synthetic track in Kerala, the PM said via video conference that a strong sporting culture can help the growth of a sporting economy. He said sports can help in creating employment in different segments like professional leagues, sports science, sports equipment and surfaces, sports medicine, merchandise and sports apparels, support staffs, nutrition, skill development, sports management etc.

India's performance in big events :

India's performance in multi discipline and multi country events has been constantly improving. A clear pattern of improved performance over the years emerges for India. The period of 2008-2012 sees a clear high in achievements with a slight dip in 2014-2016. From the lows of Beijing Asian Games in 1990 when India won a lone medal in Kabaddi, to finishing 8th in the 2014 Asian Games in Incheon, South Korea, India has come a long way. At the Incheon Asian Games that were held from 19 September to 4 October 2014, India won 11 gold medals, 10 silver medals and 36 Bronze medals. India won a total of 57 medals in 2014. This was however less as compared to 2010 Asian Games in Guangzou, China where India won 65 medals and finished 6th. Indian athletes are hoping to better their performance in the upcoming Asian Games in Jakarta and Pelembang, Indonesia.

In Common Wealth Games India's best ever performance was in 2010 when the nation won 101 medals with 38 gold, 27 silver and 36 bronze medals. India finished second overall in medals tally, just behind Australia. However there was a dip in 2014 when India won 15 gold medals, 30 silver medals and 19 bronze medals. But this tally was improved in the just concluded Common Wealth Games in Australia. India won 66 medals with 26 gold, 20 silver and 20 bronze medals. At the Summer Olympics too India 2012 London Olympics was India's best performance ever in terms of most medals won - 6 in all with 2 silvers and 4 bronze medals.

Gold medal has been elusive for India since Abhinav Bindra's gold in 2008, and before that 8 gold medals that Indian Hockey team has won over the years. In 2016 Rio Olympics, India could win two medals - one silver and one bronze.

India is hoping that the continued effort by government, sports federations and athletes and coaches will help improve results in coming events. Common Wealth Games of 2018 is a good sign of improvement and hopefully India will continue the good results at Asian Games and Tokyo Olympics. Other than multi-discipline events, Indian players have shown great improvements in the disciplines of badminton and shooting and marked improvement in table tennis, athletics, chess etc

THE STUDENT AFFAIRS COLUMN

Career Opportunities In Language Studies

(Written By – Chandan Sharma, Source – employmentnews.gov.in)

When asked "what best defines your personality?", we may be tempted to say that our fashion style, our face, knowledge as well as communication skill, all go into making who we are. But the fact is, it is our knowledge that is elaborated through our communication skills during interactions, negotiations, interviews and other occasions, that define our actual personality. This is certainly not an external attribute and does not develop in a few days. In fact it is earned through the study, learning and experience of several years. This skill not only opens new vistas of opportunities but also provides several other benefits in the society and amongst peer groups and colleagues, even in the classrooms.

But how can it be earned? This is a million dollar question. There are several ways to earn this skill but study of languages is the key in this concern. The present article will talk about the benefits of language studies. There are hundreds of languages in the world, and India is home to several of them. Many of them are listed as the official language of the country. The Constitution of India includes Articles 344(1) and 351 which deal with languages. These are included in the eighth schedule which recognizes 22 languages viz. Assamese, Bengali, Bodo, Dogri, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Maithili, Malayalam, Manipuri, Marathi, Nepali, Odia, Punjabi, Sanskrit, Santali, Sindhi, Tamil, Telugu, and Urdu.

Apart from these languages, there are over 7000 dialects that are spoken in various parts of the country. But there is a big difference between dialect and languages. While a dialect is unstructured and usually does not follow a grammar, a language is well structured and must have a rule book or grammar without any exception. This may be in the case of any language whether Indian or foreign.

Language and communication skill starts from first year of learning i.e. from kindergarten or nursery to higher studies. However, for specialized studies in Languages, you need to learn an advance set of grammar and vocabulary as compared to those used in common communication. There are several components associated with language studies. According to experts, language is nothing but a symbol of communication that is elaborated or represented through alphabets, sentences or various other forms of communication.

As we all know, knowledge cannot be transmitted or communicated without a language, so acquiring language skills is the first aim of education in any society. Even the hearing and speech impaired used special set of language tools in the process of learning and studying. Almost all major universities in India teach languages from undergraduate level to post graduate level with some having research level facilities too. In the last few years, the demand for linguists has witnessed a deep surge in the job market with the advent of the new media and information platforms and expansion of teaching and education.

Higher studies in language not only increases the chances of getting jobs, but also opens avenues of direct employment in the various domains that require expertise in language. In such a situation, it is not a surprise that some of the best institutions and colleges known for language studies demand astronomical marks in the qualifying examination for admission. But with the introduction of the CUET (Common University Entrance Test), aspirants who have scored lesser marks in qualifying examination will also be able to get admission in language courses if they score well in the CUET.

Career Opportunities in Languages

Teaching: Teaching of language is the best available opportunity for those pursuing language studies. According to an estimate, of about 20 lakh teachers in the government as well as private sector institutions in India, at least 20 percent are language teachers, mostly teaching English, Hindi, Sanskrit, Urdu and other vernacular languages. A good number of students pursuing higher studies in Linguists are selected for research fellowships. In addition to gaining a degree/diploma in the concerned language, a candidate needs to complete teacher training or Bachelor of Education (B.Ed.) if they want to pursue teaching career at school level. For teaching at the college or university level, one has to acquire Junior Research Fellowship or clear the National Eligibility Test (NET).

Institutions like IITs, IIMs as well as other institutions of technical studies also appoint teachers of Humanities, primarily in English, for teaching of communication skills, including technical communication and business communications. Some institutions also appoint experts of Hindi, Sanskrit and foreign languages for the enhancement of the communication skill of their students.

Translation and Interpretation: Translation is an important career option for the students of language. Several institutions including central and state governments' ministries and PSUs as well as various departments require the service of translators every now and then. Other bodies like the UPSC, Lok Sabha and Rajya Sabha secretariats too appoint translators. The UPSC conducts Junior Translators examination every year to fill vacancies of translators in various departments and ministries.

Rajbhasha Adhikari: This is a post that is found in most ministries, government departments, banks, PSUs. Rajbhasha Adhikari, as the name of indicates, requires expertise in Hindi. But at the same time, it also requires expertise in English too as a large number of their duties are related to translation from English to Hindi and vice versa.

Media: Media is another important field that has vast opportunities for students of language studies. Although, qualification in journalism or mass communication is a prerequisite for this field, language skill is an equally important aspect and requirement for becoming a media person. The media, be it print, electronic, or digital, convey information through the medium of language. Majority of positions held within a media house including that of content writer, sub-editor, assistant editor, editor as well as content manager, reporter, producer and correspondent, all need to have impeccable knowledge of the concerned language.

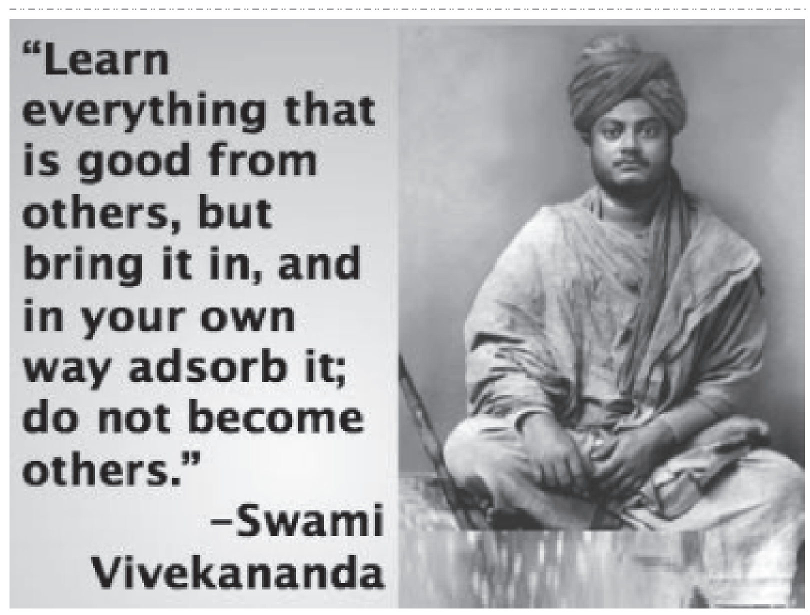
Publications: Book and publishing industry is another important domain for language professionals. Authors are not less than celebrities. But book and publishing industry have much more to offer to a language student. These include jobs like proof reader, editor, translator and much more. The publishing industry is a great place for part-time job seekers wishing to utilize their language skills.

Creative Writing: This is an important genre for the students of language. There are several opportunities for creative writers in the entertainment industry including films, advertising, theatre, digital platforms, websites, blogs, and other fields requiring content.

Public Relations: This is another domain where a language expert's services are required. Traditional PR skills, such as compelling writing and media relations, are always valuable. But due to advances in technology, additional skill like social media content creation has also gained traction. Public relations specialists work for a variety of organizations, including government, corporations, colleges and universities, schools, media buyers, and professional associations.

There are several institutions provides various courses in languages and allied studies. Here is the list of some prominent institutions:

- University of Delhi, New Delhi
- Jawahar Lal Nehru University, New Delhi
- Indian Institute of Mass Communication, New Delhi
- Mahatma Gandhi International Hindi University, Wardha, Maharashtra
- Indira Gandhi Open University
- Kendriya Anuvaad Sansthan, Agra
- Makhanlal Chaturvedi Patrakarita Vishwavidyalaya, Bhopal
- Banaras Hindu University, Varanasi
- NCERT (For B.Ed.)
- Patna University, Patna
- TM Bhagalpur University, Bhagalpur
- Allahabad University, Prayagraj
- Jamia Millia Islamia, New Delhi
- Kurukshetra University, Kurukshetra
- Madras University.



THE EMAMINATION COLUMN

Indian Statistical Service (ISS) Exam - An Overview

(Written By : Pradeep Kumar Panda, Economist)

The Indian Statistical Service (ISS) is an organized Group 'A' Central Service. ISS is a technical service with high degree of proficiency in Statistical methods and applications. With the main mandate of producing quality Official Statistics with better methods and techniques, provide solutions to the data and information needs and interpretation and analysis of statistics, a majority portion of the probationary training programme is to be devoted to acquiring of technical knowledge in the field of official statistics, economics, financial statistics, survey methodology etc. The posts are recruited through UPSC examination. The minimum eligibility criterion is Bachelor's degree with Statistics or Mathematical Statistics or Applied Statistics as one of the subject.

History: A committee under the chairmanship of Shri V.T.Krishnamachari, the then Deputy Chairman of erstwhile Planning Commission was constituted for examining the matter of establishing statistical cadres after the cabinet decision of 26 July 1952. The Committee submitted its report in September 1953 and recommended formation of 'Statistical and Economic Advisory Service'. However, Professor Prasanta Chandra Mahalanobis, the then Honorary Statistical Adviser to the Cabinet did not favor the idea of a combined Statistical and Economic Advisory Service and suggested an alternative scheme for creation of a Central Statistical Pool. After deliberating on various contradictory views, the Cabinet on 12 February 1958 decided that two separate services namely Statistical Service and Economic Service should be formed. This decision paved the way for formation of ISS and finally the service was constituted in 1961 as a cadre of qualified professional with core discipline of Statistics. The Indian Statistical Service along with Indian Economic Service (IES) was constituted as a Group-A Central Service on 1 November 1961 by a Gazette notification. Direct recruitment in the Service was initiated in 1967 through an examination organized by Union Public Service Commission (UPSC) and the first batch joined in October 1968. The Indian Statistical System is a decentralised system and the officers of Indian Statistical Service have pivotal role in compiling Official Statistics at central level for use of government and nongovernment entities.

About ISS Exam: The UPSC conducts a combined competitive examination for recruitment to Grade IV officers of the services of Indian Economic and Indian Statistic.

Eligibility Criteria

Education: The candidates must have obtained a Bachelor's Degree with Statistics/Mathematical Statistics/Applied Statistics as one of the subject or else the candidates should hold a Master's degree in Statistics/Mathematical Statistics/Applied Statistics from a recognized university or a foreign university approved by the Central Government of India from time to time.

Age: You must have attained the age of 21 years and must not have attained the age of 30 years on 1st August of the year of exam.

Exam Pattern:

Part I is written examination carrying a maximum of 1000 marks. The exam is of conventional type. Part II is viva-voce of such candidates as may be called by the Commission, carrying a maximum of 200 marks.

S.No.	Subject	Marks	Time
1	General English	100	3 hours
2	General Studies	100	3 hours
3	Statistics – I (Objective)	200	3 hours
4	Statistics – II (Objective)	200	3 hours
5	Statistics – III (Descriptive)	200	3 hours
6	Statistics – IV (Descriptive)	200	3 hours

ISS Exam Syllabus

ISS General English and General Studies Syllabus: The standard of papers in General English and General Studies will be such as may be expected of a graduate of an Indian University. The standard of papers in the other subjects will be that of the Master's degree examination of an Indian University in the relevant disciplines. The candidates will be expected to illustrate theory by facts, and to analyse problems with the help of theory. They will be expected to be particularly conversant with Indian problems in the field of Economic or Statistics.

General English: Candidates will be required to write an essay in English. Other questions will be designed to test their understanding of English and workmanlike use of words. Passages will usually be set for summary or precis.

General Studies: General Knowledge including knowledge of current events and of such matters of every day observation and experience in their scientific aspects as may be expected of an educated person who has not made a special study of any scientific subject. The paper will also include questions on Indian Polity including the political system and the Constitution of India, History of India and Geography of a nature which the candidate should be able to answer without special study.

STATISTICS – I (OBJECTIVE TYPE)

(i) Probability:

Classical and axiomatic definitions of Probability and consequences. Law of total probability, Conditional probability, Bayes' theorem and applications. Discrete and continuous random variables. Distribution functions and their properties. Standard discrete and continuous probability distributions - Bernoulli, Uniform, Binomial, Poisson, Geometric, Rectangular, Exponential, Normal, Cauchy, Hyper geometric, Multinomial, Laplace, Negative binomial, Beta, Gamma, Lognormal. Random vectors, Joint and marginal distributions, conditional distributions, Distributions of functions of random variables. Modes of convergences of sequences of random variables - in distribution, in probability, with probability one and in mean square. Mathematical expectation and conditional expectation. Characteristic function, moment and probability generating functions, Inversion, uniqueness and continuity theorems. Borel 0-1 law, Kolmogorov's 0-1 law. Tchebycheff's and Kolmogorov's inequalities. Laws of large numbers and central limit theorems for independent variables.

(ii) Statistical Methods:

Collection, compilation and presentation of data, charts, diagrams and histogram. Frequency distribution. Measures of location, dispersion, skewness and kurtosis. Bivariate and multivariate data. Association and contingency. Curve fitting and orthogonal polynomials. Bivariate normal distribution. Regression-linear, polynomial. Distribution of the correlation coefficient, Partial and multiple correlation, Intraclass correlation, Correlation ratio. Standard errors and large sample test. Sampling distributions of sample mean, sample variance, t, chi-square and F; tests of significance based on them, Small sample tests. Non-parametric tests-Goodness of fit, sign, median, run, Wilcoxon, Mann-Whitney, Wald-Wolfowitz and Kolmogorov-Smirnov. Order statistics-minimum, maximum, range and median. Concept of Asymptotic relative efficiency.

(iii) Numerical Analysis:

Finite differences of different orders: , E and D operators, factorial representation of a polynomial, separation of symbols, sub-division of intervals, differences of zero. Concept of interpolation and extrapolation: Newton Gregory's forward and backward interpolation formulae for equal intervals, divided differences and their properties, Newton's formula for divided difference, Lagrange's formula for unequal intervals, central difference formula due to Gauss, Sterling and Bessel, concept of error terms in interpolation formula. Inverse interpolation: Different methods of inverse interpolation. Numerical differentiation: Trapezoidal, Simpson's one-third and three-eight rule and Waddles rule. Summation of Series: Whose general term (i) is the first difference of a function (ii) is in geometric progression. Numerical solutions of differential equations: Euler's Method, Milne's Method, Picard's Method and Runge-Kutta Method.

(iv) Computer application and Data Processing:

Basics of Computer: Operations of a computer, Different units of a computer system like central processing unit, memory unit, arithmetic and logical unit, input unit, output unit etc., Hardware including different types of input, output and peripheral devices, Software, system and application software, number systems, Operating systems, packages and utilities, Low and High level languages, Compiler, Assembler, Memory – RAM, ROM, unit of computer memory (bits, bytes etc.), Network – LAN, WAN, internet, intranet, basics of computer security, virus, antivirus, firewall, spyware, malware etc.

Basics of Programming: Algorithm, Flowchart, Data, Information, Database, overview of different programming languages, frontend and backend of a project, variables, control structures, arrays and their usages, functions, modules, loops, conditional statements, exceptions, debugging and related concepts.

STATISTICS – II (OBJECTIVE TYPE)

(i) Linear Models:

Theory of linear estimation, Gauss-Markov linear models, estimable functions, error and estimation space, normal equations and least square estimators, estimation of error variance, estimation with correlated observations, properties of least square estimators, generalized inverse of a matrix and solution of normal equations, variances and covariances of least square estimators. One way and two-way classifications, fixed, random and mixed effects models. Analysis of variance (two-way classification only), multiple comparison tests due to Tukey, Scheffe and Student-Newmann-Keul-Duncan.

(ii) Statistical Inference and Hypothesis Testing:

Characteristics of good estimator. Estimation methods of maximum likelihood, minimum chisquare, moments and least squares. Optimal properties of maximum likelihood estimators. Minimum variance unbiased estimators. Minimum variance bound estimators. Cramer-Rao inequality. Bhattacharya bounds. Sufficient estimator. factorization theorem. Complete statistics. Rao-Blackwell theorem. Confidence interval estimation. Optimum confidence bounds. Resampling, Bootstrap and Jacknife.

Hypothesis testing: Simple and composite hypotheses. Two kinds of error. Critical region. Different types of critical regions and similar regions. Power function. Most powerful and uniformly most powerful tests. Neyman-Pearson fundamental lemma. Unbiased test. Randomized test. Likelihood ratio test. Wald's SPRT, OC and ASN functions. Elements of decision theory.

(iii) Official Statistics:

National and International official statistical system

Official Statistics: (a) Need, Uses, Users, Reliability, Relevance, Limitations, Transparency, its visibility (b) Compilation, Collection, Processing, Analysis and Dissemination, Agencies Involved, Methods National Statistical Organization: Vision and Mission, NSSO and CSO; roles and responsibilities; Important activities, Publications etc.

National Statistical Commission: Need, Constitution, its role, functions etc; Legal Acts/ Provisions/ Support for Official Statistics; Important Acts Index Numbers: Different Types, Need, Data Collection Mechanism, Periodicity, Agencies Involved, Uses.

सत्यमेव जयते

Government of India

Union Public Service Commission

Continued Page 19

Sector Wise Statistics: Agriculture, Health, Education, Women and Child etc. Important Surveys & Census, Indicators, Agencies and Usages etc.

National Accounts: Definition, Basic Concepts; issues; the Strategy, Collection of Data and Release.

Population Census: Need, Data Collected, Periodicity, Methods of data collection, dissemination, Agencies involved.

Misc: Socio Economic Indicators, Gender Awareness/Statistics, Important Surveys and Censuses.

STATISTICS – III (DESCRIPTIVE TYPE)

(i) Sampling Techniques:

Concept of population and sample, need for sampling, complete enumeration versus sampling, basic concepts in sampling, sampling and Non-sampling error, Methodologies in sample surveys (questionnaires, sampling design and methods followed in field investigation) by NSSO. Subjective or purposive sampling, probability sampling or random sampling, simple random sampling with and without replacement, estimation of population mean, population proportions and their standard errors. Stratified random sampling, proportional and optimum allocation, comparison with simple random sampling for fixed sample size. Covariance and Variance Function. Ratio, product and regression methods of estimation, estimation of population mean, evaluation of Bias and Variance to the first order of approximation, comparison with simple random sampling. Systematic sampling (when population size (N) is an integer multiple of sampling size (n)). Estimation of population mean and standard error of this estimate, comparison with simple random sampling. Sampling with probability proportional to size (with and without replacement method), Des Raj and Das estimators for n=2, Horvitz-Thomson's estimator

Equal size cluster sampling: estimators of population mean and total and their standard errors, comparison of cluster sampling with SRS in terms of intra-class correlation coefficient. Concept of multistage sampling and its application, two-stage sampling with equal number of second stage units, estimation of population mean and total.Double sampling in ratio and regression methods of estimation. Concept of Interpenetrating sub-sampling.

(ii) Econometrics:

Nature of econometrics, the general linear model (GLM) and its extensions, ordinary least squares (OLS) estimation and prediction, generalized least squares (GLS) estimation and prediction, heteroscedastic disturbances, pure and mixed estimation. Auto correlation, its consequences and tests. Theil BLUS procedure, estimation and prediction, multi-collinearity problem, its implications and tools for handling the problem, ridge regression. Linear regression and stochastic regression, instrumental variable estimation, errors in variables, autoregressive linear regression, lagged variables, distributed lag models, estimation of lags by OLS method, Koyck's geometric lag model. Simultaneous linear equations model and its generalization, identification problem, restrictions on structural parameters, rank and order conditions. Estimation in simultaneous equations model, recursive systems, 2 SLS estimators, limited information estimators, k-class estimators, 3 SLS estimator, full information maximum likelihood method, prediction and simultaneous confidence intervals.

(iii) Applied Statistics:

Index Numbers: Price relatives and quantity or volume relatives, Link and chain relatives composition of index numbers; Laspeyre's, Paasches', Marshal Edgeworth and Fisher index numbers; chain base index number, tests for index number, Construction of index numbers of wholesale and consumer prices, Income distribution-Pareto and Engel curves, Concentration curve, Methods of estimating national income, Inter-sectoral flows, Inter-industry table, Role of CSO. Demand Analysis

Time Series Analysis: Economic time series, different components, illustration, additive and multiplicative models, determination of trend, seasonal and cyclical fluctuations. Time-series as discrete parameter stochastic process, auto covariance and autocorrelation functions and their properties. Exploratory time Series analysis, tests for trend and seasonality, exponential and moving average smoothing. Holt and Winters smoothing, forecasting based on smoothing.

Detailed study of the stationary processes: (1) moving average (MA), (2) auto regressive (AR), (3) ARMA and (4) AR integrated MA (ARIMA) models. Box-Jenkins models, choice of AR and MA periods. Discussion (without proof) of estimation of mean, auto covariance and autocorrelation functions under large sample theory, estimation of ARIMA model parameters. Spectral analysis of weakly stationary process, periodogram and correlogram analyses, computations based on Fourier transform.

STATISTICS – IV (DESCRIPTIVE TYPE)

(Equal number of questions i.e. 50% weightage from all the subsections below and candidates have to choose any two subsections and answer)

(i) Operations Research and Reliability:

Definition and Scope of Operations Research: phases in Operation Research, models and their solutions, decision-making under uncertainty and risk, use of different criteria, sensitivity analysis. Transportation and assignment problems. Bellman's principle of optimality, general formulation, computational methods and application of dynamic programming to LPP. Decision-making in the face of competition, two-person games, pure and mixed strategies, existence of solution and uniqueness of value in zero-sum games, finding solutions in 2x2, 2xm and mxn games. Analytical structure of inventory problems, EOQ formula of Harris, its sensitivity analysis and extensions allowing quantity discounts and shortages. Multi-item inventory subject to constraints. Models with random demand, the static risk model. P and **Q- systems with constant and random lead times.**

Queuing models – specification and effectiveness measures. Steady-state solutions of M/M/1 and M/M/c models with associated distributions of queue-length and waiting time. M/G/1 queue and Pollazcek-Khinchine result. Sequencing and scheduling problems. 2-machine n-job and 3-machine n-job problems with identical machine sequence for all jobs Branch and Bound method for solving travelling salesman problem. Replacement problems – Block and age replacement policies.

PERT and CPM – basic concepts. Probability of project completion. Reliability concepts and measures, components and systems, coherent systems, reliability of coherent systems.

Life-distributions, reliability function, hazard rate, common univariate life distributions – exponential, weibull, gamma, etc. Bivariate exponential distributions. Estimation of parameters and tests in these models.

Notions of aging – IFR, IFRA, NBU, DMRL and NBUE classes and their duals. Loss of memory property of the exponential distribution.

Reliability estimation based on failure times in variously censored life-tests and in tests with replacement of failed items. Stress-strength reliability and its estimation.

(ii) Demography and Vital Statistics:

Sources of demographic data, census, registration, ad-hoc surveys, Hospital records, Demographic profiles of the Indian Census. Complete life table and its main features, Uses of life table. Makehams and Gompertz curves. National life tables. UN model life tables. Abridged life tables. Stable and stationary populations.

Measurement of Fertility: Crude birth rate, General fertility rate, Age specific birth rate, Total fertility rate, Gross reproduction rate, Net reproduction rate.

Measurement of Mortality: Crude death rate, Standardized death rates, Age-specific death rates, Infant Mortality rate, Death rate by cause.

Internal migration and its measurement, migration models, concept of international migration. Net migration. International and postcensal estimates. Projection method including logistic curve fitting. Decennial population census in India.

(iii) Survival Analysis and Clinical Trial:

Concept of time, order and random censoring, likelihood in the distributions – exponential, gamma, Weibull, lognormal, Pareto, Linear failure rate, inference for these distribution. Life tables, failure rate, mean residual life and their elementary classes and their properties. Estimation of survival function – actuarial estimator, Kaplan – Meier estimator, estimation under the assumption of IFR/DFR, tests of exponentiality against non-parametric classes, total time on test. Two sample problem – Gehan test, log rank test.

Semi-parametric regression for failure rate – Cox's proportional hazards model with one and several covariates, rank test for the regression coefficient. Competing risk model, parametric and non-parametric inference for this model.

Introduction to clinical trials: the need and ethics of clinical trials, bias and random error in clinical studies, conduct of clinical trials, overview of Phase I – IV trials, multicenter trials.

Data management: data definitions, case report forms, database design, data collection systems for good clinical practice.

Design of clinical trials: parallel vs. cross-over designs, cross-sectional vs. longitudinal designs,

review of factorial designs, objectives and endpoints of clinical trials, design of Phase I trials, design of single-stage and multi-stage Phase II trials, design and monitoring of phase III trials with sequential stopping,

Reporting and analysis: analysis of categorical outcomes from Phase I – III trials, analysis of survival data from clinical trials.

(iv) Quality Control:

Statistical process and product control: Quality of a product, need for quality control, basic concept of process control, process capability and product control, general theory of control charts, causes of variation in quality, control limits, sub grouping summary of out of control criteria, charts for attributes p chart, np chart, c-chart, V chart, charts for variables: R, $(\bar{X}, R)$, $(\bar{X}, \sigma)$ charts.

Basic concepts of process monitoring and control; process capability and process optimization. General theory and review of control charts for attribute and variable data; O.C. and A.R.L. of control charts; control by gauging; moving average and exponentially weighted moving average charts; Cu-Sum charts using V-masks and decision intervals; Economic design of X-bar chart. Acceptance sampling plans for attributes inspection; single and double sampling plans and their properties; plans for inspection by variables for one-sided and two sided specification.

(v) Multivariate Analysis:

Multivariate normal distribution and its properties. Random sampling from multivariate normal distribution. Maximum likelihood estimators of parameters, distribution of sample mean vector.

Wishart matrix – its distribution and properties, distribution of sample generalized variance, null and non-null distribution of multiple correlation coefficients. Hotelling's T and its sampling distribution, application in test on mean vector for one and more multivariate normal population and also on equality of components of a mean vector in multivariate normal population.

Classification problem: Standards of good classification, procedure of classification based on

multivariate normal distributions. Principal components, dimension reduction, canonical variates and canonical correlation — definition, use, estimation and computation.

(vi) Design and Analysis of Experiments:

Analysis of variance for one way and two way classifications, Need for design of experiments, basic principle of experimental design (randomization, replication and local control), complete analysis and layout of completely randomized design, randomized block design and Latin square design, Missing plot technique. Split Plot Design and Strip Plot Design.

Factorial experiments and confounding in 2 and 3 experiments. Analysis of covariance. Analysis of non-orthogonal data. Analysis of missing data.

(vii) Computing with C and R :

Basics of C: Components of C language, structure of a C program, Data type, basic data types, Enumerated data types, Derived data types, variable declaration, Local, Global, Parametric variables, Assignment of Variables, Numeric, Character, Real and String constants, Arithmetic, Relation and Logical operators, Assignment operators, Increment and decrement operators, conditional operators, Bitwise operators, Type modifiers and expressions, writing and interpreting expressions, using expressions in statements. Basic input/output.

Control statements: conditional statements, if - else, nesting of if - else, else if ladder, switch statements, loops in c, for, while, do - while loops, break, continue, exit ( ), goto and label declarations, One dimensional two dimensional and multidimensional arrays.

Storage classes: Automatic variables, External variables, Static variables, Scope and lifetime of declarations.

Functions: classification of functions, functions definition and declaration, assessing a function, return statement, parameter passing in functions. Pointers (concept only).

Structure: Definition and declaration; structure (initialization) comparison of structure variable;

Array of structures : array within structures, structures within structures, passing structures to functions; Unions accessing a union member, union of structure, initialization of a union variable, uses of union. Introduction to linked list, linear linked list, insertion of a node in list, removal of a node from list.

Climate Change & Food System

(Written By : Pradeep Kumar Panda, Economist)

Climate change is a growing threat to our food systems, with grim implications for food and nutrition security, livelihoods, and overall well-being, especially for poor and vulnerable people around the world. The imperative for urgent action on climate change — both to achieve the major emissions reductions needed to limit global warming and to increase adaptive capacity and resilience — is drawing global attention.

Pineal Gland is situated at the centInternational Food Policy Research Institute (IFPRI) has recently published Global Food Policy Report 2022. The report sets out a broad range of opportunities for accelerated action that should be considered in policy and investment decision-making for climate change adaptation, mitigation, and resilience.

The impacts of global warming are becoming increasingly evident. Higher temperatures, changing precipitation patterns, sea level rise, and growing frequency and intensity of extreme weather events such as droughts, floods, extreme heat, and cyclones are already reducing agricultural productivity and disrupting food supply chains. Beyond its direct impacts on production, climate change will create cascading effects on livelihoods, communities, and sustainability through interconnections among economic, environmental, social, and political spheres. At the same time, food systems are estimated to contribute more than a third of global greenhouse gas (GHG) emissions responsible for climate change, placing food production at the center of attention as both a contributor to global warming and a critical sector for mounting an adaptive response to climate change.

Even in the absence of climate change, food systems face enormous challenges and demands. Hunger and malnutrition are rising, and over 3 billion people currently cannot afford a healthy diet. Food systems are the world's largest “employer,” but for many, particularly women, youth, and other vulnerable groups, agriculture-based livelihoods are precarious. In addition, food systems are major contributors to environmental degradation beyond GHG emissions, including deterioration of water resources and loss of habitat and biodiversity, which compromise the environmental services that support food production.

Yet global aspirations for food systems are extremely high. As was made clear in 2021 at both the UN Food Systems Summit (UNFSS) and UNFCCC COP26, food systems must play a central role in achieving multiple, pressing sustainable development and climate goals, from the local to the global level. These aspirations envision food systems that are far more nature-positive, deliver improved and more resilient livelihoods, empower disadvantaged groups, and produce a healthy mix of foods at affordable prices. Food systems are called on to accomplish all these goals in the context of a rapidly changing climate and while making a substantial contribution to achieving net zero GHG emissions by 2050. Action to address climate change has begun, but it urgently needs to be accelerated by hastening innovation, reforming policies, resetting market incentives, and increasing financing for sustainable food systems transformation, as well as promoting healthy diets and building resilience.

The world remains far from achieving the emissions reductions needed to constrain warming to 1.5°C above pre-industrial levels. While this goal remains feasible, the longer we wait, the more difficult achieving it will become. Looking forward, scenarios from IFPRI's IMPACT model indicate that rising temperatures will negatively impact agricultural yields, driving up prices and resulting in increased hunger, especially in Africa. Unless action is taken now, this toll will add to the many people pushed into poverty and hunger by extreme weather events, as well as by local shocks and global crises, such as COVID-19 and the current war in Ukraine, that disrupt food systems and raise food prices. Food production, distribution, and consumption practices must be adapted to climate change to better support rural livelihoods and provide healthy diets for all, even as population and income growth increase the demand for food. At the farm level, adaptation must address changing growing conditions, water scarcity, droughts and floods, increased risks of destructive weather events, and related risks of disease and pests. Along value chains, storage and logistics will also be affected by climate change, and price volatility will increase, with implications for processors, traders, and consumers as well as farmers.

Climate change will put increasing pressure on scarce natural resources, which can increase the risk of conflicts. Such conflicts can affect entire value chains and are a major driver of increases in global food insecurity and hunger. Recent experience with the COVID-19 pandemic has shown us how disruptions in one part of a value chain can have wide-reaching impacts. But it has also shown us how food systems, including public and private sector actors, can respond and adapt quickly to severe shocks. A number of promising innovations show potential to support adaptation and build resilience while also increasing productivity. These climate-smart innovations include new crop varieties that better withstand climate shocks and improve yields, solar energy for product storage, and digital technologies that expand access to knowledge and services for rural producers.

Many climate-smart innovations, such as no-till farming, agroforestry, and landscape management, will also support mitigation by sequestering carbon or reducing emissions. However, technical innovations will never reach their full potential without the right enabling environments, including policy incentives and governance approaches that promote climate-positive change and inclusion of all food systems actors. Policies and institutions at the local, national, and international levels need to incentivize the development and adoption of new technologies and practices and ensure adequate finance is available. They must recognize potential trade-offs — in terms of yields and efficiency — between sustainable systems and existing or other modern farming practices and between sectors, such as energy and water. Policies must also facilitate coordinated action across stakeholders and ensure equitable systemic transformation for all.

Despite international commitments to reduce GHG emissions, total net anthropogenic GHG emissions continue to rise. Stepped-up efforts to reduce GHG emissions are required of developed economies, and progress by developing and emerging economies is also necessary, but it is important to bear in mind that the least developed countries accounted for only 3.3% of global GHG emissions in 2019. Food systems are estimated to generate as much as 34% of total GHG emissions, which stem from agriculture and land use, storage, transport, packaging, processing, retail, and consumption. Continued progress in energy and transport sector technologies can reduce fossil-fuel use and emissions throughout food systems, including in irrigation, processing, transport, cold storage, and waste recycling. However, two-thirds of food systems GHG emissions — or about 21% of total emissions from all sources — are from agriculture, forestry, and other land use (AFOLU). AFOLU has potential to deliver substantial emissions reductions and carbon sequestration. It is the only economic sector with serious potential to become a net emissions sink — pulling more GHGs out of the atmosphere than it emits — through creation and protection of carbon sinks such as forests. Of AFOLU CO_2 emissions, almost half are from land use change and management.

Net agricultural land expansion is now concentrated in the developing world, primarily in Africa and South America, while land use change in some developed countries is offsetting emissions. Some developed countries have scope for creating larger net sinks for emissions, but developing countries should prioritize fostering agricultural practices that both raise productivity and turn the tide on AFOLU emissions. Significant GHG mitigation can also be achieved by reducing nitrous oxide emissions from fertilizers and methane emissions from paddy rice and enteric fermentation (from cattle and other ruminant digestion) as well as decreasing emissions intensity through sustainable production systems and reduced food loss and waste. Shifting food consumption toward healthy diets has also been found to have substantial potential for emissions reduction. Combined, these efforts could move the world toward net zero emissions.

Promising policy responses for adaptation, mitigation, and resilience to climate change are explored in the report. A portfolio of current technology innovations could accelerate sustainable food systems transformation. Many of these innovations have proven potential to both raise productivity and reduce GHG emissions intensity in agrifood production. Irrigation technologies, such as drip irrigation and solar power pumps, can both improve yields and reduce emissions. New genome-editing technologies, such as CRISPR, have proven capable of rapidly developing crop varieties suited for climate change adaptation and mitigation. Improved cold chain technologies powered by solar energy and new drying methods are increasing food quality and availability and reducing food waste, particularly for perishable nutritious foods. Digital innovations are revolutionizing production, markets, and delivery throughout food systems, with great potential for improving productivity and quality and reducing natural resource use and food loss and waste. This broad array of innovations in data use stretches from precision agriculture and improved weather forecasting to blockchain-based product quality and sustainability traceability and to e-logistics and e-commerce for enhanced value chain efficiency. Development and adoption of such “disruptive” innovations requires investment in R&D. A review of evidence on the benefits of past investments in R&D for innovation in agrifood systems finds that the benefit-cost ratio of such investments can be at least 10 to 1, contributing much more to reducing poverty and hunger than other development investments. In addition, investment in development and adaptation of “green” innovations for use in low- and middle-income countries (LMICs) could help reduce AFOLU emissions by some 40 to 50 percent. Despite these substantial benefits, food systems R&D is notably underfunded, especially in LMICs, with only a small share for adaptation and mitigation.

Public investments in R&D for productivityincreasing and emissions-reducing innovations should be doubled from current levels, with at least US$15 billion of the increase for innovations benefiting food systems in LMICs. R & D investment should focus on innovations for sustainable intensification in LMICs, both on and beyond the farm. Global and regional mechanisms for knowledge sharing, such as the CGIAR system, should be enhanced and strengthened to facilitate technology diffusion that benefits countries with limited domestic research capacity. Governments should create stronger enabling environments to attract private sector investment for agrifood innovations and to spur adoption of improved technologies and practices, including resetting distortionary market incentives created by agricultural support and trade regulations and improving regulation for safe adoption and market acceptance of new technologies.

Improved efficiency of natural resource use will be essential to increasing productivity while reducing environmental degradation and GHG emissions. The close links among water, energy, land use, and food systems demand integrated policy responses to climate change and effective institutions to prevent undesirable trade-offs among development goals. Use of modern energy technologies, for example, is essential for raising productivity — including for pumping of irrigation water and storage, transport, and processing of food products — but fossil-fuel use contributes to GHG emissions. Expanding access to clean energy sources, such as solar power, in the agrifood sector is therefore critical, but brings its own risks of increased exploitation of water and other farm inputs. Governance through integrated landscape approaches has potential to achieve sustainable use of land, water, forest, and energy resources, including long-term productivity and greater sequestration of CO2. However, integrated landscape management is complex; it requires effective stakeholder engagement, inclusive governance, adequate coordination between local, regional, and cross-border natural resource management, and compromises among diverging economic and political interests.

To promote holistic, inclusive, and integrated landscape approaches for sustainability Agricultural, food, and climate change policies should explicitly consider landscape dimensions and provide incentives for integrated landscape management through local governance, including development of multistakeholder platforms that can build support and capacity for collective action. Land tenure and access rights to other natural resources for farmers, rural households, and communities should be strengthened to motivate investments in sustainability and participation in landscape governance. Governments should promote adoption of clean energy sources in agrifood systems through an enabling environment and appropriate financial incentives for the use of wind and solar power and decentralized electricity grids. Identification of productive-use locations that could jointly support energy, water, and food security can attract investments that increase productivity and sustainability.

Globally, undernourishment and micronutrient deficiency continue to rise even as overweight and obesity are becoming more prevalent. These forms of malnutrition now affect about a quarter of the world's population, and poor diets are among the largest global health risks. Making healthy diets affordable and influencing consumers to make healthier choices is key to overcoming these global nutrition challenges and can be well aligned with addressing climate change. The ecological footprint of healthy diets — without excessive consumption of highly processed foods and red meats — has been found to be much lower than that of prevailing diets across the world, but especially those in advanced countries. Key policy directions to change dietary habits include the following:

Continued Page 5

Printed & Published By Narahari Priya Garnaik on Behalf of Indian Youth Association And Printed At M/s Shree Mandir Publications, At : Plot No. - 512, At/Po - Saheed Nagar, Bhubaneswar, District - Khordha, Pin - 751007, State - Odisha And Published At : Plot No. - 945, At/Po - Baramunda, In Front of New Jagannath Temple, Bhubaneswar, District - Khordha, Pin - 751003, State - Odisha, Editor - Narahari Priya Garnaik

Ph. : +91-8637258113 ; Mail : iyanews.india@gmail.com ; Web : www.iyanews.com, FOUNDER : JIBAN JYOTI GARNAIK (ADVOCATE, ORISSA HIGH COURT)
All Disputed Matters In Bhubaneswar (Odisha) Jurisdiction Only