SCIENCE AND TECHNOLOGY

Delhi Police's use of facial recognition technology

❖ **CONTEXT: Right to Information (RTI) responses received by the Internet Freedom Foundation, a New-Delhi based digital rights organisation, reveal that the Delhi Police treats matches of above 80% similarity generated by its facial recognition technology (FRT) system as positive results.**

❖ **Why is the Delhi Police using facial recognition technology?**

• The Delhi Police first obtained FRT for the purpose of tracing and identifying missing children. According to RTI responses received from the Delhi Police, the procurement was authorised as per a 2018 direction of the Delhi High Court in Sadhan Haldar vs NCT of Delhi. However, in 2018 itself, the Delhi Police submitted in the Delhi High Court that the accuracy of the technology procured by them was only 2% and "not good".

• Things took a turn after multiple reports came out that the Delhi Police was using FRT to surveil the anti-CAA protests in 2019.

• In 2020, the Delhi Police stated in an RTI response that, though they obtained FRT as per the Sadhan Haldar direction which related specifically to finding missing children, they were using FRT for police investigations.

• The widening of the purpose for FRT use clearly demonstrates an instance of 'function creep' wherein a technology or system gradually widens its scope from its original purpose to encompass and fulfil wider functions.

• The Delhi Police has consequently used FRT for investigation purposes and also specifically during the 2020 northeast Delhi riots, the 2021 Red Fort violence, and the 2022 Jahangirpuri riots.

❖ **What is facial recognition?**

• Facial recognition is an algorithm-based technology which creates a digital map of the face by identifying and mapping an individual's facial features, which it then matches against the database to which it has access.

• **It can be used for two purposes**:
  ➢ firstly, 1:1 verification of identity wherein the facial map is obtained for the purpose of matching it against the person's photograph on a database to authenticate their identity. For example, 1:1 verification is used to unlock phones. However, increasingly it is being used to provide access to any benefits or government schemes.
  ➢ Secondly, there is the 1:n identification of identity wherein the facial map is obtained from a photograph or video and then matched against the entire database to identify the person in the photograph or video. Law enforcement agencies such as the Delhi Police usually procure FRT for 1:n identification.

• For 1:n identification, FRT generates a probability or a match score between the suspect who is to be identified and the available database of identified criminals.

• A list of possible matches are generated on the basis of their likelihood to be the correct match with corresponding match scores.

• However, ultimately it is a human analyst who selects the final probable match from the list of matches generated by FRT. According to Internet Freedom Foundation's Project Panoptic, which tracks the spread of FRT in India, there are at least 124 government authorised FRT projects in the country.

❖ **Why is the use of FRT harmful?**

• India has seen the rapid deployment of FRT in recent years, both by the Union and State governments, without putting in place any law to regulate their use.

• **The use of FRT presents two issues**:

➢ **FIRST** : Issues related to misidentification due to inaccuracy of the technology

• Extensive research into the technology has revealed that its accuracy rates fall starkly based on race and gender. This can result in a false positive, where a person is misidentified as someone else, or a false negative where a person is not verified as themselves.

• Cases of a false positive result can lead to bias against the individual who has been misidentified.

• In 2018, the American Civil Liberties Union revealed that Amazon's facial recognition technology, Rekognition, incorrectly identified 28 Members of Congress as people who have been arrested for a crime. Of the 28, a disproportionate number were people of colour.

• Also in 2018, researchers Joy Buolamwini and Timnit Gebru found that facial recognition systems had higher error rates while identifying women and people of colour, with the error rate being the highest while identifying women of colour.

• The use of this technology by law enforcement authorities has already led to three people in the U.S. being wrongfully arrested. On the other hand, cases of false negative results can lead to exclusion of the individual from accessing essential schemes which may use FRT as means of providing access. One example of such exclusion is the failure of the biometric based authentication under Aadhaar which has led to many people being excluded from receiving essential government services which in turn has led to starvation deaths.

➢ **SECOND**: Issues related to mass surveillance due to misuse of the technology.

• However, even if accurate, this technology can result in irreversible harm as it can be used as a tool to facilitate state sponsored mass surveillance.

• At present, India does not have a data protection law or a FRT specific regulation to protect against misuse.

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- In such a legal vacuum, there are no safeguards to ensure that authorities use FRT only for the purposes that they have been authorised to, as is the case with the Delhi Police.
- FRT can enable the constant surveillance of an individual resulting in the violation of their fundamental right to privacy.

❖ **What did the 2022 RTI responses by Delhi Police reveal?**

- The RTI responses dated July 25, 2022 were shared by the Delhi Police after Internet Freedom Foundation filed an appeal before the Central Information Commission for obtaining the information after being denied multiple times by the Delhi Police. In their response, the Delhi Police has revealed that matches above 80% similarity are treated as positive results while matches below 80% similarity are treated as false positive results which require additional "corroborative evidence".
- It is unclear why 80% has been chosen as the threshold between positive and false positive. There is no justification provided to support the Delhi Police's assertion that an above 80% match is sufficient to assume the results are correct.
- Secondly, the categorisation of below 80% results as false positive instead of negative shows that the Delhi Police may still further investigate below 80% results. Thus, people who share familial facial features, such as in extended families or communities, could end up being targeted. This could result in targeting of communities who have been historically over policed and have faced discrimination at the hands of law enforcement authorities.
- The responses also mention that the Delhi Police is matching the photographs/videos against photographs collected under Section three and four of the Identification of Prisoners Act, 1920, which has now been replaced by the Criminal Procedure (Identification) Act, 2022. This Act allows for wider categories of data to be collected from a wider section of people, i.e., "convicts and other persons for the purposes of identification and investigation of criminal matters".
- It is feared that the Act will lead to overbroad collection of personal data in violation of internationally recognised best practices for the collection and processing of data. This revelation raises multiple concerns as the use of facial recognition can lead to wrongful arrests and mass surveillance resulting in privacy violations.
- Delhi is not the only city where such surveillance is ongoing. Multiple cities, including Kolkata, Bengaluru, Hyderabad, Ahmedabad, and Lucknow are rolling out "Safe City" programmes which implement surveillance infrastructures to reduce gender-based violence, in the absence of any regulatory legal frameworks which would act as safeguards.

GEOGRAPHY

❖ **What are cloudburst incidents and are they rising across India?**

❖ **CONTEXT: Over 20 people have been killed in destruction caused by cloudbursts and flash floods in different parts of Himachal Pradesh and Uttarakhand over the last three days. Isolated areas in these two states have reported heavy rainfall during this time, triggering landslides and flash floods that have disrupted rail and road traffic, and resulted in house and wall collapses.**

❖ **What are cloudbursts?**

- A cloudburst is a localised but intense rainfall activity. Short spells of very heavy rainfall over a small geographical area can cause widespread destruction, especially in hilly regions where this phenomenon is the most common.
- Not all instances of very heavy rainfall, however, are cloudbursts. A cloudburst has a very specific definition: Rainfall of 10 cm or more in an hour over a roughly 10 km x 10-km area is classified as a cloudburst event. By this definition, 5 cm of rainfall in a half- hour period over the same area would also be categorized as a cloudburst.
- To put this in perspective, in a normal year, India, as a whole, receives about 116 cm of rainfall over the entire year. This means if the entire rainfall everywhere in India during a year was spread evenly over its area, the total accumulated water would be 116 cm high. There are, of course, huge geographical variations in rainfall within the country, and some areas receive over 10 times more than that amount in a year. But on average, any place in India can be expected to receive about 116 cm of rain in a year.
- During a cloudburst event, a place receives about 10% of this annual rainfall within an hour. It is a worse situation than what Mumbai had experienced on July 26, 2005, which is one of the most extreme instances of rainfall in India in recent years. At that time, Mumbai had received 94 cm of rain over a 24-hour period, resulting in deaths of over 400 people and more than USD 1 billion in economic losses.

❖ **How common are cloudbursts?**

- Cloudbursts are not uncommon events, particularly during the monsoon months. Most of these happen in the Himalayan states where the local topology, wind systems, and temperature gradients between the lower and upper atmosphere facilitate the occurrence of such events.
- However, not every event that is described as a cloudburst is actually, by definition, a cloudburst. That is because these events are highly localized. They take place in very small areas which are often devoid of rainfall measuring instruments.

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- The consequences of these events, however, are not confined to the small areas. Because of the nature of terrain, the heavy rainfall events often trigger landslides and flash floods, causing extensive destruction downstream.
- This is the reason why every sudden downpour that leads to destruction of life and property in the hilly areas gets described as a "cloudburst", irrespective of whether the amount of rainfall meets the defining criteria. At the same time, it is also possible that actual cloudburst events in remote locations aren't recorded.

❖ **Can cloudbursts be forecast?**
- The India Meteorological Department forecasts rainfall events well in advance, but it does not predict the quantum of rainfall — in fact, no meteorological agency does.
- The forecasts can be about light, heavy, or very heavy rainfall, but weather scientists do not have the capability to predict exactly how much rain is likely to fall at any given place.
- Additionally, the forecasts are for a relatively large geographical area, usually a region, a state, a meteorological sub-division, or at best a district. As they zoom in over smaller areas, the forecasts get more and more uncertain.
- Theoretically, it is not impossible to forecast rainfall over a very small area as well, but it requires a very dense network of weather instruments, and computing capabilities that seem unfeasible with current technologies.
- As a result, specific cloudburst events cannot be forecast. No forecast ever mentions a possibility of a cloudburst. But there are warnings for heavy to very heavy rainfall events, and these are routinely forecast four to five days in advance. Possibility of extremely heavy rainfall, which could result in cloudburst kind of situations, are forecast six to 12 hours in advance.

❖ **Are cloudburst incidents increasing?**
- There is no long-term trend that suggests that cloudbursts, as defined by the IMD, are rising. What is well established, however, is that incidents of extreme rainfall, as also other extreme weather events, are increasing — not just in India but across the world.
- While the overall amount of rainfall in India has not changed substantially, an increasing proportion of rainfall is happening in a short span of time. That means that the wet spells are very wet, and are interspersed with prolonged dry spells even in the rainy season.
- This kind of pattern, attributed to climate change, does suggest that cloudburst events might also be on the rise.

INTERNATIONAL AFFAIRS

❖ **The controversy around Nepal's new citizenship law**
❖ **CONTEXT: On August 16, Nepal President Bidhya Devi Bhandari sent back the Citizenship Amendment Act, 2006 to the Pratinidhi Sabha (House of Representatives), the lower house of the Nepal Parliament, urging the members to reconsider the Act. Ahead of the election season, this clash between the President and the Pratinidhi Sabha has ignited a heated debate over the question of citizenship in Nepal.**

❖ **What is the issue of citizenship in Nepal about?**
- Nepal transitioned into a democracy beginning with the fall of the monarchy in 2006 and the subsequent election of the Maoist government in 2008. The emergence of the multiparty system was followed by the adoption of a constitution on September 20, 2015.
- All Nepalese citizens born before this date got naturalised citizenship. But their children remained without citizenship as that was to be guided by a federal law which has not yet been framed.
- This amendment Act is expected to pave the way to citizenship for many such stateless youth as well as their parents.

❖ **What are the issues with the Act?**
- The main criticism against the Citizenship Amendment Act, 2006 is that it goes against established parameters of gender justice. A cursory reading also reveals contradictions among various sections of the law.
- According to Article 11(2b), a person born to a father or a mother with Nepalese citizenship can get citizenship by descent.
- Article 11(5) of the constitution says a person who is born to a Nepalese mother (who has lived in the country) and an unidentified father will also get citizenship by descent. But this section appears humiliating for a mother as she has to declare that her husband is unidentified for the child to be eligible for citizenship. In case of a Nepalese father, such declarations are not required.
- Article 11(7) which says that a child born to a Nepalese mother and a father holding a foreign citizenship can get "naturalised citizenship" in accordance with the laws of Nepal appears to contradict Article 11(2b). It places a condition of permanent residency on the mother (and the child) which will determine the grant of citizenship for the child.

❖ **Why has the President refused to sign the Act?**
- Ms. Bhandari is the first female President of Nepal. Her refusal to sign the Act has drawn attention to certain sections in the constitution that thrusts greater responsibility on women. For example, Article 11 (5) says that a person who is born to a Nepalese mother and an unidentified father can be granted citizenship by descent. Next, it says that in case the unidentified father turns out to be a foreigner, the citizenship by descent would be converted to naturalised citizenship. Furthermore, it supports punitive action against the mother if the father is found later.

❖ **Why has the amendment been framed thus?**

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- There is an unarticulated concern in the orthodox sections of the country that as Nepalese men, particularly from the Terai region, continue to marry women from northern India, Nepalese identity would be undermined. Because of this "Beti-Roti" (Nepalese men marrying Indian women) issue, many women could not become citizens of Nepal as they were subjected to the infamous seven-year cooling off period before they could apply for citizenship in Nepal. As such women were stateless, children of such families were also often found to be without Nepalese citizenship.
- However, the new amendments have done away with the cooling off period for these stateless women. This will benefit the children of such families where the mother and children remained stateless for years.
- This has however created a division among the major political parties. The Communist Party of Nepal (Unified Marxist–Leninist) wanted to retain the cooling off period while the ruling Nepali Congress and the Maoist party of Pushpa Kamal Dahal Prachanda supported the removal of the cooling off period.
- Despite support from the Madhesi parties (parties formed from the Madhesi movement which advocated greater representation and equal citizenship rights for the people of the Terai region of Nepal) , the inter-ethnic nature of the citizenship dispute has come to the surface because of the controversy triggered by President Bhandari's rejection.

❖ **What is the road ahead for the Act?**
- Nepal Citizenshipless Struggle Committee held a protest in Kathmandu demanding that President Bhandari should ratify the Act that was passed again by the Pratinidhi Sabha for the second time.
- They argue that women of Indian origin, who were deprived of rights because of the cooling off period and bureaucratic procrastination, and their children will be stuck in a stateless condition if the Act is not recognised by the President's office.

PRELIMS

1. Hydrogen Fuel Cell Bus
❖ **CONTEXT: Union Minister of State & Technology; Minister of State Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh today launched India's first truly indigenously developed Hydrogen Fuel Cell Bus developed by KPIT-CSIR in Pune.**

❖ **About:**
- Green hydrogen is an excellent clean energy vector that enables deep decarbonization of difficult-to-abate emissions from the refining industry, fertiliser industry, steel industry, cement industry and also from the heavy commercial transportation sector.
- The fuel cell utilizes Hydrogen and Air to generate electricity to power the bus and the only effluent from the bus is water, therefore making it possibly the most environmentally friendly mode of transportation.
- For comparison, a single diesel bus plying on long distance routes typically emits 100 tons of CO_2 annually and there are over a million such buses in India.
- The high efficiency of fuel cell vehicles and the high energy density of hydrogen ensures that the operational costs in rupees per kilometre for fuel cell trucks and buses are lower than diesel powered vehicles and this can bring freight revolution in India.
- Fuel Cell vehicles also give zero green-house gas emissions.
- About 12-14% CO_2 emissions and particulate emissions come from diesel powered heavy commercial vehicles and these are decentralised emissions and hence difficult to capture. Hydrogen fuelled vehicles provide an excellent means to eliminate the on-road emissions from this sector.
- By achieving these, India can pole-vault from being net importer of fossil energy to becoming net exporter of clean hydrogen energy and thus, providing global leadership to India in hydrogen space by becoming a large green hydrogen producer and supplier of equipment for green hydrogen.
- The minister also Inaugurated the Bisphenol-A pilot plant in CSIR-NCL and these pilot plants have successfully demonstrated novel process technologies developed by NCL under CSIR's Covid-19 mission program and Bulk Chemicals mission program.
- Bisphenol-A (BPA) is an important feedstock for the production of epoxy resins, polycarbonate and other engineering plastics. The global market for Bisphenol-A is projected to reach 7.1 Million Tons by 2027, growing at a CAGR of 2% over the analysis period 2020-2027. The entire estimated annual demand of 1, 35,000 tons in India is imported today. It hoped that CSIR-NCL's technology will enable import substitution of this important raw material and help in India's Atmanirbhar initiative.

Bisphenol-A (BPA)
- BisphenolA (BPA) is a chemical compound and one of the simplest and best-known bisphenols.
- It is produced by the condensation of phenol and acetone, with an estimated 4 million tonnes of produced worldwide in 2015.
- It is a colourless solid which is soluble in organic solvents, but poorly soluble in water (0.344 wt % at 83 °C).
- BisphenolA (BPA) is a chemical produced in large quantities for use primarily in the production of polycarbonate plastics.
- It is found in various products including shatterproof windows, eyewear, water bottles, and epoxy resins that coat some metal food cans, bottle tops, and water supply pipes.

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- Bisphenol A can leach into food from the protective internal epoxy resin coatings of canned foods and from consumer products such as polycarbonate tableware, food storage containers, water bottles, and baby bottles.
- The degree to which BPA leaches from polycarbonate bottles into liquid may depend more on the temperature of the liquid or bottle, than the age of the container.
- BPA can also be found in breast milk.
- BPA is a known endocrine disruptor.
- Generally, BPA acts on hormonal level by distorting hormonal balance and inducing estrogenic effects through binding with estrogen-related receptors (ERR).
- The resultant effects are numerous of which hormonal related abnormalities have been mostly reported.

Fuel Cell
- A fuel cell is a device that generates electrical power through a chemical reaction by converting fuel (hydrogen) into electricity.
- Although fuel cells and batteries are both considered electrochemical cells and consist of similar structures, fuel cells require a continuous source of fuel and oxygen to run; similar to how an internal combustion engine needs a continuous flow of gasoline or diesel.
- A fuel cell needs three main components to create the chemical reaction: an anode, cathode, and electrolyte.
  - First, hydrogen fuel is channeled to the anode via flow fields. Hydrogen atoms become ionized (stripped of electrons) and now carry only a positive charge.
  - Then, oxygen enters the fuel cell at the cathode, where it combines with electrons returning from the electrical circuit and the ionized hydrogen atoms.
  - Next, after the oxygen atom picks up the electrons, it then travels through the electrolyte to combine with the hydrogen ion.
- The combination of oxygen and ionized hydrogen serve as the basis for the chemical reaction.
- At the end of the process, the positively charged hydrogen atoms react with the oxygen to form both water and heat while creating an electrical charge.
- In order to provide adequate power, individual fuel cells can be assembled together forming a stack.
- A fuel cell stack can be sized for just the right amount of energy for the application.

2. **forever chemicals**
- ❖ **CONTEXT: A recent study published in Environment Science and Technology has found that rainwater from many places across the globe is contaminated with "per- and polyfluoroalkyl substances," (PFAs), which are called "forever chemicals" because of their tendency to stick around in the atmosphere, rainwater and soil for long periods of time.**
- ❖ What **are PFAs?**
- According to the US Centre for Disease Control and Prevention (CDC), PFAs are man-made chemicals used to make nonstick cookware, water-repellent clothing, stain-resistant fabrics, cosmetics, firefighting forms and many other products that resist grease, water and oil.
- PFAs can migrate to the soil, water and air during their production and use. Since most PFAs do not break down, they remain in the environment for long periods of time. Some of these PFAs can build up in people and animals if they are repeatedly exposed to the chemicals.
- ❖ **What harm do PFAs cause?**
- The United States Environmental Protection Agency (EPA) lists a variety of health risks that are attributed to PFA exposure, including decreased fertility, developmental effects in children, interference with body hormones, increased cholesterol levels and increased risk of some cancers.
- Recent research has also revealed that long-term low-level exposure to certain PFAs can make it difficult for humans to build antibodies after being vaccinated against various diseases.
- While the recently published research article did not include studies of samples collected in India, the nature of PFAs and the wide geographical breadth of samples and the nature of PFAs means that the results can be extrapolated to India
- ❖ **How can these chemicals be removed from rainwater?**
- While there is no known method that can extract and remove PFAs from the atmosphere itself, there are many effective, albeit expensive, methods to remove them from rainwater that has been collected through various rainwater harvesting methods.
- One way to do this would be to use a filtration system with activated carbon. The activated carbon will need to be removed and replaced regularly. Also, the old contaminated material must be destroyed.
- Recently, EPA researchers led by William Dichtel and Brittany Trang stumbled first placed a PFA compound in a solvent called DMSO (dimethyl sulfoxide). They then mixed it with sodium hydroxide (lye) in water. They found that when this mixture was heated up to boiling temperature, the PFA compound began to degrade. However, this method doesn't work for all PFAs and only works for certain PFA subsets.

3. **NAFIS**
- ❖ **CONTEXT: Union Home Minister Amit Shah inaugurated the National Automated Fingerprint Identification System (NAFIS). According to the Ministry of Home Affairs, NAFIS, which was developed**

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by the National Crime Records Bureau (NCRB), would help in the quick and easy disposal of cases with the help of a centralised fingerprint database. In April this year, Madhya Pradesh became the first state in the country to identify a deceased person through NAFIS, PTI reported.

❖ **What is NAFIS?**

- Conceptualized and managed by the NCRB at the Central Fingerprint Bureau (CFPB) in New Delhi, the National Automated Fingerprints Identification System (NAFIS) project is a country-wide searchable database of crime- and criminal-related fingerprints.
- The web-based application functions as a central information repository by consolidating fingerprint data from all states and Union Territories.
- According to a 2020 report by the NCRB, it enables law enforcement agencies to upload, trace, and retrieve data from the database in real time on a 24×7 basis.
- NAFIS assigns a unique 10-digit National Fingerprint Number (NFN) to each person arrested for a crime. This unique ID will be used for the person's lifetime, and different crimes registered under different FIRs will be linked to the same NFN.
- The 2020 report states that the ID's first two digits will be that of the state code in which the person arrested for a crime is registered, followed by a sequence number.
- By automating the collection, storage, and matching of fingerprints, along with digitizing the records of fingerprint data, NAFIS will provide the much-needed unique identifier for every arrested person in the CCTNS (Crime and Criminal Tracking Network & Systems) database as both are connected at the backend.

❖ **Is this the first time that such an automation project is being attempted?**

- Upon the recommendations of the National Police Commission in 1986, the Central Fingerprint Bureau first began to automate the fingerprint database by digitizing the existing manual records through India's first Automated Fingerprint Identification System (AFI) in 1992, called Fingerprint Analysis & Criminal Tracing System (FACTS 1.0)
- The latest iteration, FACTS 5.0, which was upgraded in 2007, was considered to have "outlived its shelf life", according to a 2018 report by the NCRB and thus needed to be replaced by NAFIS.

❖ **Since when has India relied on fingerprinting as a crime-fighting tool?**

- A system of fingerprinting identification first emerged in colonial India, where it was tested before it spread to Europe and beyond.
- At first, it was used by British colonial officials for administrative rather than criminal purposes.
- William Herschel, the chief administrator of the Hooghly district of Bengal, from the late-middle 1800s onwards, used fingerprinting to reduce fraud and forgeries, in order to ensure that the correct person was receiving government pensions, signing land transfer deeds, and mortgage bonds.
- The growing use of fingerprinting was deeply tied to how 19th century British officials understood crime in India.
- Entire social groups were categorized as racially distinct "criminal tribes" and were deemed to be "professional" criminals from time immemorial. However, the trouble that they faced was in identifying these groups from the ordinary criminals, something that the British found particularly difficult in such a diverse land.
- Anthropometry, the measurement of physical features of the body, was used by officials in India, but was soon replaced with a system of fingerprints, which were seen to be more accurate as it was believed that no two people can have identical sets of patterns, wrote the historian Simon A Cole in his book 'Suspect Identities: A History of Fingerprinting and Criminal Identification'.

❖ **How did the use of fingerprinting develop in crime fighting in India?**

- The uniqueness of every individual's fingerprints was first proposed in Europe by the German anatomist Johann Mayer in 1788, and was confirmed through detailed studies by the Scottish doctor Henry Faulds around the same time that Herschel had begun to implement fingerprinting as a means of identification in Bengal.
- Tracing a single set of fingerprints from a large collection of fingerprint cards required a workable system of classification, the historian Radhika Singha noted in her 2000 research article 'Settle, Mobilize, Verify: Identification Practices in Colonial India'. While similar attempts were made in England and beyond, the Bengal Police were able to create fingerprint records which replaced the use of anthropometric measurements by 1897, when the world's first Fingerprint Bureau was established in Calcutta, four years before a similar decision was taken in England.
- The Inspector General of the Bengal Police, Edward Henry, recruited two Indian sub-inspectors, Aziz-ul-Haq and H C Bose, for this task. According to Singha it was Haq who first devised a system of primary classification and a system for indexing names in court conviction registers.
- Henry, however, declined to acknowledge the crucial contributions of his Indian subordinates when he presented the so-called "Henry System of Classification" in England in 1901, and established a fingerprint bureau in Scotland Yard.
- It was only in 1925 that Henry admitted the invaluable efforts of Haq and Bose to the system of classification, for which the colonial state bestowed on them the titles of Khan Bahadur and Rai Bahadur respectively.

6

ANSWER WRITTING

Q. Analyse the importance of work culture as a component of effective governance. Discuss how Indian work culture is at variance with the Western work culture?

Introduction:

Work culture is regarded as a set of practices, values and shared beliefs within an organization. It has a significant role in the way an organization functions. It is a way of life at the workplace as well as for society. Components of work culture are its vision, values, practices, people, and place. Organizations are made of people & institutions, and work culture reflects the quality of both. Worldwide successful governments and organizations are those which have a good work culture apart from other factors.

Work culture as an important component of effective governance as mentioned below-:

- A good work culture imbibes the habit of punctuality and empathy which helps the officials/organization's members to serve their objective/duty in better ways.
- E.g.- The lackadaisical attitude of officials working in few government institutions, hinders overall growth and image of the institution in the eyes of the public.
- A healthy work culture promotes competition and spirit of the team in the organization which helps individuals to grow and work without fear.
- A work culture that respects diversity, attracts better talent, thus serves the public in the best possible manner while a work culture, showing partiality, favoritism, nepotism, etc. demotivates talented and hard-working people.
- A work culture where a team works in cooperation, helps people learn from each other's errors and success. Thereby bringing the best out of the team.

Difference between Indian and Western work culture: The differences can be seen in the work culture of both regions because work culture in any country or any organization is influenced by local cultural practice, attitude, laws, government policies, etc.

- In all Western countries, especially the USA, people strictly adhere to time. They attend the meetings sharply in scheduled timings. On the contrary, in India, they are not very imperative on deadlines and keep negotiating for extension of the timeline.
- One more major difference is the work-life balance. In Western work-culture, they give more value to the time spent on their personal life. Most of the Indians think the workplace as an opportunity to build their future and put forth extensive efforts to climb. Because of the same they carry a lot of pressure which impacts their personal life.
- The relationship between the boss and subordinates is believed to be more formal and hierarchical in India. Whereas in western work culture the relation between boss and subordinate is not more formal.
- In Indian work-culture, people do not accept change easily. A lot of resistance is encountered in order to implement change. In western work-culture, people are adaptive and conducive to change.

Bureaucratic hurdles and a laidback approach to work in the government circles could result in delays in processing, an overload of paperwork and a general lack of confidence in the system. Therefore immense patience is very much necessary for any business transaction in India. On the contrary western countries are known for their professional attitudes in every front.

Conclusion

Work culture is a consequence in an organization formed by a set of values and beliefs, carried forward for a long time and has a substantial impact on the behaviour, quality, and quantity of work done by the employee in an organization. A good work culture can shape the outcomes and the perception in the eyes of the public and it attracts the best available talent which in turn serves the organization better. Therefore the presence of a healthy and constructive work culture is of utmost importance.

MCQs

1. Bisphenol A (BPA), a cause of concern, is a structural/key component in the manufacture of which of the following kinds of plastics?
a) Low-density polyethylene
b) Polycarbonate
c) Polyethylene terephthalate
d) Polyvinyl chloride
2. With reference to 'fuel cells' in which hydrogen-rich fuel and oxygen are used to generate electricity, consider the following statements:
1. If pure hydrogen is used as a fuel, the fuel cell emits heat and water as by-products.
2. Fuel cells can be used for powering buildings and not for small devices like laptop computers.
3. Fuel cells produce electricity in the form of Alternating Current (AC)
Which of the statements given above is/are correct?
a) 1 only
b) 2 and 3 only
c) 1 and 3 only
d) All of the above
3. "Project Panoptic" recently seen in news is associated with which of the following?
a) Fuel cell technology

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b) **Facial Recognition Technology**
c) National bio fuel policy
d) Battery swap policy

4. Consider the following statements with respect to National Crime Records Bureau (NCRB)
1. It is a non-statutory body and responsible for collecting and analyzing crime data as defined by the Indian Penal Code (IPC).
2. It functions under the Ministry of Home Affairs.
3. It is the implementing and monitoring agency for implementation of Crime and Criminal Tracking Network System (CCTNS).
   Which of the statement/s given above is/are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) All of the above

5. With reference to India, consider the following statements :
1. There is only one citizenship and one domicile.
2. A citizen by birth only can become the Head of State.
3. A foreigner once granted the citizenship cannot be deprived of it under any circumstances.
   Which of the statements given above is/are correct?
a) 1 only
b) 2 only
c) 1 and 2
d) 2 and 3

6. "Henry System of Classification" often mentioned in news is related to which of the following?
a) Classification of Birds footprint
b) Climate classification
c) Finger print classification
d) Iris classification

7. The article named 'Settle, Mobilize, Verify: Identification Practices in Colonial India' was written by which of the following?
a) Seema Alavi
b) Ahmad Yadgar
c) Radhika Singha
d) Boria Majumdar

8. With reference to National Automated Fingerprint Identification System (NAFIS) consider the following statements
1. NAFIS assigns a unique National Fingerprint Number (NFN) to each person arrested for a crime which is valid for lifetime of that person
2. The NFN consist of 10-digit with first two numbers are state code in which the person was arrested and the following numbers are representing the persons permanent resident codes.
Choose the correct statement using the codes given below
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

9. Consider the following statements, with reference to "per- and polyfluoroalkyl substances," (PFAs) which is seen in news
1. It is a man-made chemical used to make nonstick cookware, and water-repellent clothing.
2. Most of the PFA substance don't break down so they remain in environment for longer duration
3. They can also lead to bioaccumulation.
Select the correct answer using the code given below:
a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) All of the above

10. Madhesi movement often seen in news is associated with which of the following country?
a) Bhutan
b) Nepal
c) Sri Lanka
d) Bangladesh

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